



REDD, forest governance and rural livelihoods

The emerging agenda

Edited by Oliver Springate-Baginski and Eva Wollenberg

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ISBN: 978-602-8693-15-8

Springate-Baginski, O. and Wollenberg, E. (eds.) 2010 REDD, forest governance and rural livelihoods: the emerging agenda. CIFOR, Bogor, Indonesia.

Cover photo by Jhon Roy Sirait

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Center for International Forestry Research

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Executive summary

Reducing emissions from deforestation and forest degradation (REDD) initiatives are more likely to be effective in reducing emissions if they build on, rather than conflict with, the interests of local communities and indigenous groups (referred to henceforth as 'forest communities'). To show how REDD could most benefit forest communities, lessons from incentive-based forest programmes and recent experiences in six countries were reviewed at an international workshop held at the University of East Anglia (UEA) in Norwich, United Kingdom, in the Spring of 2009.

Workshop participants included researchers from the Center for International Forest Research (CIFOR) and UEA, and REDD experts from six focus countries: Brazil, Indonesia, Madagascar, Tanzania, Mexico and Nepal.

REDD offers a critical opportunity to enhance the well being of forest communities, a principle upheld by several international agreements and widely accepted voluntary standards related to REDD. The workshop discussions focussed on how best to achieve this.

The proceedings of the workshop are organised in two sections. In the first section, experiences from incentive-based forest management are examined for their effects on the livelihoods of local communities. In the second section, case studies from the six case study countries provide a snapshot of REDD developments to date and identify design features for REDD that would support benefits for forest communities. An introductory chapter provides a synthesis and overview of the workshop findings.

Reviews of incentive-based experiences related to payments for environmental services, volunteer carbon markets and the Clean Development Mechanism show that incentives can be successful in supporting forest conservation. However, programmes tended to not benefit the poor, and marginalised some groups even further. Programmes tended to be biased towards particular geographic regions, and populations that were better off. The poor often could not afford to participate because of high transaction costs and, where carbon markets led to more formalised rights than existed previously, the poorest often lost rights. Clear, formal rights supported implementation of programmes. Where rights are unclear, conflict over carbon benefits can be expected.

The papers from case study countries described their preparedness for REDD in the lead up to the December 2009 UN Copenhagen meetings. Brazil and Indonesia, as two of the world's highest emitters of forest-related carbon, have taken significant steps to establish policy and project frameworks for REDD. Most countries have Readiness Plans for the World Bank's Forest Carbon Facility. Madagascar and Tanzania plan to build on existing policies for participatory forestry or conservation. The main concerns in all countries were how to design REDD to reduce emissions effectively: how to establish relevant baseline levels, how to reduce leakage and how to assess additionality. Little attention has been given to helping forest communities participate in REDD decision

making processes that will affect their livelihoods. Only two of the countries so far, Brazil and Indonesia, have developed ways to distribute REDD-related benefits to different stakeholders and provide multi-tiered benefits to forest communities. Assuring transparency and accountability, free, prior and informed consent, and participation in REDD decisions will be necessary to ensure even ‘good enough’ governance in REDD. The workshop findings show that to make REDD work for forest communities there will need to be clear links between incentives, drivers and benefits at multiple scales. There will need to be long-term development opportunities. Not least, forest communities will need to be involved in making REDD decisions that affect them. National REDD programmes will need to be complemented by pro-poor programmes adapted to local conditions.

The introduction to these proceedings presents a framework for analysing the design of REDD in terms of these multiple requirements and different groups. The framework allows REDD strategies to be analysed according to the extent to which interest groups at different levels and scales (e.g. households, communities, local government and the timber industry 1) share the burden for forest management beyond forest communities, 2) provide pro-poor, locally adapted incentives that are linked to long-term development opportunities and 3) create safety nets and livelihood options for forest communities that link and cross multiple levels. The framework can also be used to assess equity (e.g. across different kinds of forests, including areas most at threat of deforestation and conserved forests), the mix of private and public benefits, or other equity attributes of interest.

Workshop participants identified research priorities for understanding the links between REDD and forest communities. These address four main questions:

1. How can REDD support the deeper structural changes needed to stabilise climate and economies in the future?
2. Where should REDD initiatives in the landscape focus (in relation, for instance, to carbon density, opportunity costs and potential for co-benefits)?
3. What are the substantive practical concerns in the design and implementation of REDD, and what are the roles of different stakeholders (in setting baselines, capacity for monitoring, incentive structures)? and
4. What are the links between REDD processes and the political, economic and social structures that affect what sorts of REDD projects are established and how they are defined?

Acknowledgements

The authors wish to thank Thomas Sikor, Bruce Campbell, the workshop participants, Elena Petkova, University of East Anglia, CIFOR, and the University of Vermont. The Department for International Development, UK provided funding for the workshop.

Chapter 1

Introduction

Eva Wollenberg and Oliver Springate-Baginski

How can reducing emissions from deforestation and forest degradation (REDD) initiatives enhance the livelihoods and political participation of people living in or near forests? This question was the focus of a workshop held 6-8 April 2009 in Norwich, UK, by the University of East Anglia and Center for International Forestry Research.

Whilst REDD must reduce emissions, REDD mechanisms are more likely to be successful if they build on, rather than conflict with, the interests of local communities and indigenous groups ('forest communities'). REDD initiatives will directly affect 1 to 1.6 billion people who depend on forests and are amongst the world's poorest. Therefore, workshop participants considered how REDD might best achieve poverty alleviation and governance outcomes. The workshop presentations and discussions are summarised in this volume. The chapters provide guidance for the design of REDD initiatives, and indicate critical areas for research on REDD initiatives.

In 2007, the Intergovernmental Panel on Climate Change (IPCC) concluded that reducing deforestation would have a large and rapid effect on reducing global carbon emissions. Emissions from deforestation in the 1990s were estimated to be 5.8 GtCO₂ (gigatonnes of carbon dioxide) a year, about 20% of the global total. The United Nations Framework Convention on Climate Change (UNFCCC) 13th Conference of the Parties in Bali, December 2007, then adopted the Bali Action Plan, which launched a formal process to support REDD.

The decision on REDD is a mandate for parties to:

1. Explore a range of actions, identify options and undertake demonstration activities to address drivers of deforestation and enhance forest carbon stocks through sustainable management of forests; and
2. Support 'capacity-building, technical assistance, and transfer of technology relating to methodological and technical needs and institutional needs of developing countries'.

The decision on REDD also recognises that:

- Reducing emissions from deforestation and forest degradation in developing countries can lead to co-benefits and may complement the aims and objectives of other international conventions and agreements; and
- The needs of local and indigenous communities should be addressed in actions to reduce emissions from deforestation and forest degradation in developing countries.

In addition, the Bali Action Plan recognised that ‘economic and social development and poverty eradication are global priorities’. These provisions in the Action Plan create a clear mandate for REDD initiatives to improve the livelihoods of forest communities and forest governance.

A separate initiative, which has emerged in response to the voluntary carbon market, also supports the need to address local livelihoods and governance in REDD. The voluntary Community, Climate Change and Biodiversity Project Design Standard states that ‘The project must generate net positive impacts on the social and economic well-being of communities and ensure that costs and benefits are equitably shared amongst community members and constituent groups during the project lifetime’ (Standard CM1 in CCBA 2008, 25).

Regardless of whether REDD is incorporated into a 2012 post-Kyoto Protocol UN agreement, REDD-type programmes are essential if the world is to address climate change. In early 2009 at least 144 REDD initiatives were already underway (Cotula and Mayers 2009). These initiatives demonstrate a diversity of options for designing REDD programmes. They include multilateral schemes (e.g. the World Bank Carbon Partnership Facility), bilateral schemes (e.g. the Norwegian Agency for Development Cooperation Climate and Forest Initiative Funding Scheme), nongovernmental organisation initiatives (Conservation International in Madagascar) and innovative private-public partnerships (Government of Aceh, Fauna and Flora International, Carbon Conservation with investment from Merrill Lynch and the US states of California, Illinois and Wisconsin). The Brazilian Development Bank has also independently created a country fund and scheme for payments related to ecosystem services.

As attention turns to how to translate REDD into action on the ground, it is widely recognised that if programmes are to benefit forest communities, they will need to ensure that (Angelsen 2008; Robledo *et al.* 2008; Griffiths 2009):

1. Incentives address relevant drivers of deforestation;
2. Benefits are equitably distributed;
3. Meaningful political participation of forest communities is linked to processes at the national and international levels; and
4. The rights of forest communities, particularly tenure, are recognised, secured and strengthened.

Achieving this mix of outcomes will be contingent on the architecture¹ of REDD initiatives at the international, national and subnational levels. The complexity of deforestation and forest degradation, the many different interests, and the evolving science of climate change suggest that achieving these co-benefits will not be a predictable process. Each country contemplating REDD or REDD-like initiatives confronts an interplay of conflicting policy objectives, varying levels of management and enforcement

1 Here used to mean the institutional and organisational arrangements, and the incentive and disincentive structures they create or modify.

capacity, and power struggles over forest access, control and use. Influencing land use decisions on the ground across geographically extensive, variable and remote forest areas through global and national policies is thus a challenge. Close attention will need to be given to the successes and failures of existing efforts, and potential scenarios, to inform REDD decisions on policy and practice. The papers in this proceedings support that learning process.

The proceedings are divided into two sections. Section I lays out the scope of REDD and draws lessons from previous experience, including payments for environmental services schemes, the voluntary carbon market and the Clean Development Mechanism. Section II reviews the development of REDD in six countries where REDD preparations are under way: Brazil, Indonesia, Madagascar,² Tanzania, Mexico and Nepal. These chapters capture an exciting moment in the history of the collective global effort to reduce emissions by providing snapshots of the status of REDD and associated institutional mechanisms in the six countries. Taken together, they provide guidance for designing REDD initiatives and point to areas where further research is needed. We provide an overview of these insights here.

Learning from recent experience

Building on the experiences of past programmes is essential to informing REDD. Five common incentive-based strategies have been used to balance broad ‘public’ needs for reducing deforestation and forest degradation with the livelihoods needs of forest communities: payments for environmental services (PES), voluntary carbon markets (‘carbon forestry’), the Clean Development Mechanism (CDM), integrated conservation and development programmes (ICDPs), and community forestry (social forestry, joint forest management, and participatory forest management). These incentive-based strategies include measures such as:

- **Performance-based payments** or other benefits in exchange for reducing carbon emissions or sequestering carbon, good forest and land stewardship, meeting conservation targets, managing forests sustainably (including fire protection) and restoring forests.
- **More secure tenure** through formal legal recognition of local rights to forests, forest land or forest products and rights to shared benefits. This strategy assumes that people will protect and invest in forest if these activities yield direct benefits.
- **Alternative livelihood options and alternative sources of forest products** that reduce pressure on forests. Examples include practicing agriculture on nonforest land, resettling forest dwellers, restructuring local economies, creating substitutes for natural forest products (e.g. woodfuel from woodlots), providing transition support payments³ and training.

² The chapter on Madagascar was not originally presented in the workshop, but added afterwards to provide geographic balance.

³ For example, a project in Para, Brazil, offers smallholders based near the trans-Amazon highway transition funds to build a new regional economy.

- **Higher land use efficiency** to intensify production on non-forest lands and reduce pressure on forest lands. This strategy bears the risk that any land use generating high returns may expand into forest areas.
- **Sanctions, law enforcement and policing**, for example Forest Law Enforcement and Governance (FLEG) processes that create disincentives, especially for illegal logging or unsustainable forest management. These strategies are useful where they support communities' own efforts to regulate forest use and challenge illicit, outside users. However, forest-related law has been weakly enforced in many countries. These measures have had poor results and the livelihoods of forest communities have rarely improved.

The payments and benefits offered in these measures can take the form of:

- Compensation for opportunity costs, transaction costs, implementation costs, or other disincentives;
- Transition payments (e.g. resettlement funds);
- More livelihood opportunities; and
- Public infrastructure, such as health, education or roads or access to assets (e.g. land) that will lead to benefits in the future.

The main strategies discussed in the workshop were payments for environmental services and reform of tenure. The workshop presentations showed that there is significant experience and research-based understanding about these programmes that can inform REDD.

Social equity

By equity we mean fairness in the processes and outcomes related to social justice and how costs and benefits are distributed. We consider fairness as a principle that should be embodied in any REDD action. Workshop participants reported that payments for environmental services (PES), Clean Development Mechanism (CDM), and carbon forestry interventions have tended to reinforce existing power structures and allow elites to capture benefits. Brown (Chapter 3) observes that tradeoffs exist between efficiency and equity in CDM and voluntary markets. The distribution of projects and certified emission reductions (CERs) has been geographically uneven. Weak collective action has allowed the wealthiest to accumulate benefits. Non-utilitarian values (i.e. appreciation of forests for characteristics not related to use) have often gone unrecognised and uncompensated. However, the tradeoff between efficiency and equity can be resolved. Brown suggests that levies on certain kinds of CDM projects, geographical quotas and voluntary standards for sustainable development would help CDM improve social equity.

Sunderlin (Chapter 3) reports that early results from REDD demonstration sites show that the level of compensation is low relative to community expectations and the return from other land use options. Low levels of compensation might suggest that there is

a lack of incentive to participate in REDD, but Martin (Chapter 3) found that, in Mexico and Uganda, people participated in PES despite low levels of compensation. He suggests that they probably took part because of the non-income benefits and incidental environmental services they gained.

Martin also observes that to achieve pro-poor outcomes through REDD the transaction costs for buyers of carbon must be reduced to enable them to engage with many small sellers. Likewise, the poor would be more likely to take part if the opportunity costs of participation were lower. These measures would enhance forest governance at the local level. Collective organisation and apex federations of local groups could play critical roles in reducing transaction costs and allowing collective bargaining over terms of engagement in REDD schemes.

Rights and tenure

Rights to carbon, forest and land affect who is accountable for managing forest carbon and who should receive incentives (Robledo *et al.* 2008). However, many forest communities continue to lack secure formal tenure. With governments claiming statutory rights to one-third (Latin America), two-thirds (Asia) or nearly all (98% in Africa) of forests in their territory, the customary rights and informal access that many indigenous or traditional forest communities' claims to state land are not recognised. Historically, forest products have been appropriated by states and commercial interests.

Tenure reforms in the last three decades have re-empowered some communities, although their rights to carbon are often still not clear. In Nepal and Mexico community-based forest management models are well established. In Tanzania and Madagascar new programme exist although implementation has been slow. In Brazil reforms have led to slower deforestation. Indonesia has legalised customary land and community forest concessions, although few communities have been able to take advantage of the new options. In Mexico, linking PES schemes to local property rights has been essential for successful PES outcomes (Corbera *et al.* 2009). In PES schemes, informal rights holders were more likely to be excluded from benefits than formal rights holders (See Chapter 3).

What if rights are ill defined, ambiguous and either not enforced or selectively enforced? Sunderlin (Chapter 3) reports that where rights are not defined, the elite, claimants to large areas of forest, or the state are likely to capture most REDD contracts and benefits. Channelling REDD through political and commercial elites (which might be expedient to gain rapid reductions in emissions) risks increasing inequality and ineffectiveness in the long term. More state control could lead to evictions of forest dwellers and breed resentment, conflict and sabotage, reducing REDD effectiveness and efficiency further. Historically, as discussed in the case studies in this volume, insecure tenure has been one of the main drivers of deforestation in many countries.

Forest carbon markets have led to the formalisation of rights, but such formalisation can marginalise the poor and disempower customary authority structures. Access to formal legal processes and adjudication can be expensive and beyond the reach of forest communities or forest dwellers. Ambiguities in rights on the other hand, often can enable the poorest to access resources from which they might otherwise be excluded.

Whilst defining clear rights is desirable, rights must be widely accepted as legitimate and stable or problems will persist. Defining clear, legitimate tenure takes time and should not be rushed just to meet the schedule for REDD implementation. In the short term, the focus should be on shared rights and benefits, and explicit mechanisms for acknowledging the rights of the poor. Legal reforms should be pursued simultaneously, but laws should not be rushed through without thorough consultations. What remains to be seen is what types of bundles of rights related to land, forest and carbon will be sufficiently clear and secure for REDD implementation to be effective and equitable. There are also issues concerning which rights are politically possible to secure and if rights will create entitlements to REDD benefits. Also, how might the granting of entitlements to some affect the incentives to implement REDD for others (Cotula and Mayers 2009)?

Meaningful political participation and good governance

Governance⁴ has been one of the biggest concerns for effective implementation of REDD (Robedo *et al.* 2008). Much current deforestation and forest degradation is occurring because of poor governance (i.e. illegal felling or land conversion). Improving governance is an inherently political process and is likely to face powerful opposition from those benefiting from the *status quo*. Wertz-Kanounnikoff in Chapter 2 points out that any international REDD agreement relies ultimately on implementation by sovereign nations. As the country cases indicate, much deforestation has occurred because there were large profits to be made, because elites captured those profits, because civil society and local government weren't involved, because there was corruption, or because laws were not, or were only selectively, enforced.

There has been, therefore, much scepticism about the potential for REDD to work in view of historically dismal efforts to slow, let alone halt, deforestation in many countries. Initial analysis⁵ of the World Bank Forest Carbon Partnership R-PINs (Readiness Project Idea Notes) already suggests that governments may try to use REDD funds to support business-as-usual forestry operations and that governance aspects are not yet embedded in REDD or fully acknowledged.

Achieving 'good forest governance' for REDD is an ambitious agenda that covers more than the institutional architecture for administering funds and monitoring results. Good governance involves a range of issues, including:

⁴ Meaning the use of institutions, structures of authority and even collaboration to allocate resources and coordinate or control activity in society or the economy (Bell 2002).

⁵ Dooley *et al.* 2008.

- Recognition and enforcement of forest, land or carbon rights, including those of indigenous groups;
- Inclusion, participation and influence of forest communities and civil society in policy processes, institutional arrangements and setting management priorities;
- Effective, transparent and accountable forest management practices, and third party verification and scientific advisory groups to provide technical input;
- Effective, fair and proportionate enforcement and sanctions for illegal activities (including corruption);
- Responsive decentralised government, coordination between local and higher levels of government, inter-sectoral coordination, checks and balances to prevent domination by any one level or branch of government; and
- Mechanisms for managing conflict effectively.

Workshop participants acknowledged the importance of these measures for effective REDD, but repeatedly questioned whether such measures realistically could be put in place. Whilst forest community issues are often acknowledged, the scope for local voice and influence has been consistently limited in REDD-type projects.

Forest communities need to have a say in how REDD is designed and implemented, especially if national REDD policies are developed (Rights and Resources and the Rainforest Foundation Norway 2008). Having a role in decisions that affect them is also a social justice issue (Lovera 2008). Decades of community-based forest management have demonstrated the value of such input in both designing appropriate projects and their evolution. More decentralisation of decisions to local government or community-based forestry projects has created better opportunities for community input.

Some parties, therefore, have suggested that ‘good enough’ governance is sufficient, given the urgency of REDD and the ambitious good governance agenda. A more realistic approach may be for REDD initiatives to support, and certainly take care not to hinder, the emergence of good governance in the long term.

REDD schemes of any kind tend to suffer from high transaction costs, capture of benefits by intermediaries, a legacy of weak institutions and poor equity outcomes. The schemes are valuable to the extent that they facilitate constructive and durable reform in policy and practice. But, if this legacy withers after the lifetime of a programme, they may be at best a distraction, and at worst a disruption of existing systems (cf. forestry schemes in India, Springate-Baginski and Blaikie 2007).

It is also important to consider the politics of reform. The political challenges to initiating interventions like REDD typically require an opportunistic approach on the part of advocates and depend on in-country processes, which have their own pace. Reform is normally a step-by-step process; dramatic reforms are rare. As we see from the country chapters, countries have responded to REDD at different rates. Getting the agreement

and buy-in of powerful gatekeepers and stakeholders has inevitably involved political horse-trading and compromise.

Local governance

Although REDD currently favours national programmes, a consistent message from the workshop was that previous programmes were most successful when they involved local governance (i.e. decision making by local institutions, including local government, civil society organisations and customary institutions). Martin in Chapter 3 observes that we should be concerned about ‘the appropriate mix’ between national and local governance, rather than whether a national or local approach is best. As Wertz-Kanounnikoff (Chapter 2) and the authors of the country chapters indicate, a nested approach (Angelsen 2008) seems most likely to be successful. Nested approaches can integrate national efforts that address leakage within a country and large scale forces for deforestation, with complementary subnational efforts that reflect locally relevant drivers of deforestation and institutional conditions.

Martin (Chapter 3) found that payments for environmental services were more successful when tailored to local contexts, and that programmes should not be ‘clinical and uniform’. User costs tended to vary in market-based systems, so strategies with one-size-fits-all programmes resulted in uneven net benefits. Productivity varied between sites, as did informal property rights, cultural conditions and political agendas. Martin observed that user-funded PES schemes were generally more effective than government PES schemes.

Martin suggests, however, that local institutions bring their own challenges to PES schemes and can have higher transaction costs and limited capacities. Brown (Chapter 3) also notes that working at smaller scales is complex and costly. A lack of knowledge, capacities and ineffective communication constrained PES in Mexico. Local institutions that facilitated community participation were not always the best for implementing PES. Local institutions also were not always easy for outside entities to observe or assess for accountability. The capacities of local institutions tended to be limited relative to what PES proponents wanted to achieve. Local institutions did not act in isolation and needed to be understood in relation to other institutions, such as local government, ethnic associations, development organisations, or neighbouring communities. The costs and lack of local capacities raise questions about how REDD can be implemented effectively in the short term whilst still taking local conditions and needs into account. Also, how much should be invested now to avoid incurring costs due to ineffective REDD in the long run? Previous experiences indicate that working with existing local institutions, both constitutionally mandated local government structures and informal customary institutions, is often preferable to the dangers of creating new *ad hoc* local organisations that can confuse local political structures and tend to stagnate without long-term external support.

Designing REDD for the future

The success of REDD, and the effects of REDD on forest communities will depend on how incentives, benefits, rights and political participation are distributed amongst, for example, households, communities, districts, timber industries, and national and local government entities. Designing REDD schemes to benefit forest communities requires putting in place and balancing complementary measures at other levels and in other sectors. To secure benefits for local people:

1. The burden for forest management must be shared amongst all entities affecting deforestation and not disproportionately placed on forest communities;
2. Nationally designed REDD programmes must balance locally adapted and pro-poor measures with incentives that are linked to long-term development opportunities; and
3. Benefits must be shared across levels and sectors to create safety nets and enhanced livelihood options for forest communities at multiple scales.

Sharing the burden

Focusing only on incentives at the local level can be compared to trying to stop the flow of a river through a series of dams by closing only the last dam. The pressure on the final dam is immense. Even partially closing some of the upstream dams reduces the pressure on the final dam. Likewise by spreading the pressure for reducing deforestation across the many parties involved, local people bear less of the burden and have more space for negotiating and adapting measures to meet their needs.

Finding the right balance is a challenge, however, as decades of efforts to control deforestation have shown. Although the drivers of deforestation are well known they are difficult to control. Drivers of deforestation outside of the forestry sector also need to be addressed to take account of competing land use options. Care needs to be taken to ensure that REDD schemes do not take advantage of the weak political status of forest communities and make them the major target for REDD compliance because they are less costly or easier to influence.

The challenge for REDD, therefore, will be to determine where there is the most leverage to reduce deforestation, whilst taking into account the need to not burden forest communities. A suite of measures will undoubtedly be required. For example, scenarios for REDD in Indonesia (Chapter 5) suggest the following measures would be complementary:

1. Incentives for concession holders to practice reduced impact logging (RIL);
2. Incentives to redirect planned oil palm or other estate crops to degraded lands;
3. Livelihood enhancement programmes (e.g. building on integrated conservation and development experiences) to reduce encroachment and illegal logging;
4. Environmental service-type payments for entrepreneurial measures that increase carbon sequestration.

Distribute benefits across multiple scales and levels

The country case studies demonstrate a range of models for distributing the benefits from REDD-like programmes. The distribution of benefits should create incentives at different levels and meet pro-poor objectives. It may be necessary to create safety nets and enhanced livelihood options for forest communities at multiple scales. Nationally, Brazil has developed a model for balancing incentives amongst states with different levels of deforestation and conservation practices. Stella *et al.* (Chapter 4) describe a benefit structure with three types of compensation:

1. The opportunity cost related to deforestation reduction as calculated by the Instituto de Pesquisa Ambiental na Amazônia (IPAM) and Woods Hole Research Center in their REDD Report launched at COP 13, in Bali (Nepstad *et al.* 2007);
2. Compensation for forest conservation based on an estimated cost for the management of protected areas in the Amazon;
3. Compensation to those states that achieve deforestation reduction targets.

Stella *et al.* explain that the ‘rationale behind the above combination is to guarantee a fair and equitable compensation amongst States with high historic deforestation rates (Mato Grosso, for example) and those with low deforestation rates, but high forest conservation (such as Amazonas)’.

Brazil has adopted other innovative measures as well. A project in Para offers smallholders near the trans-Amazon highway transition funds to build a new regional economy. Brazil’s Bolsa Floresta creates multi-level benefits for communities through monthly payments to families, regular payments to communities and grants to various social organisations that work with communities.

Indonesia has a different model of benefits, allocating a percentage of funds to the government, communities and the REDD developer (Chapter 5) according to the type of permit issued by the state for forest use. However, communities have been unaware of these formal permits. Few have applied for customary status and most do not even know that a permit is legally available to them or how to apply. Overlaps between permit holders and customary communities are inevitable.

The chapter on Mexico (Chapter 6) describes a spatial approach to understanding the distribution of incentives and benefits. The Forest Carbon Partnership proposes to produce maps that show areas threatened by imminent deforestation together with overlays showing the incentives required to reduce deforestation (based on opportunity costs), levels of social marginalisation and community organisation.

In Tanzania, Malimbwi and Zahabu (Chapter 7) stress the importance of linking incentives to relevant sectors, for example mining, to address competing land use options that would be disincentives for REDD. They also note that incentives and co-benefits should be weighted according to the level of risk involved. Integrated assessments should be used to understand how co-benefits as well as emissions change. Risk analysis should

consider elite capture, market pressures, changes in cultural values related to conservation and how powerful groups might take advantage of marginalised groups.

Local people's voice and influence

Griffiths (2009) has criticised REDD processes for:

1. Poor involvement of indigenous and forest communities in negotiations; and
2. The lack of clear commitments in intergovernmental REDD proposals to address the rights and equity of local people.

Whilst REDD acknowledges the need to consider forest communities' views, the scope for forest communities to voice their concerns and influence decisions has been poor. Similarly, whilst the Climate, Community and Biodiversity Alliance Project Design Standards (CCBA 2008) include principles concerning the need for consultations with communities, community engagement with projects, employment of community members, worker rights and safety, and understanding community conditions (including land rights, conflict and presence of indigenous peoples), they do not address the role of communities in making decisions. Likewise, free, prior and informed consent is only mentioned with reference to assessing infringements on local property rights.

This needs to change. Forest communities need to have a say in how REDD is designed and implemented, especially for national REDD policies. Mayers and Bass (2004) comprehensive study of forest policy processes are that good policy *content* comes from good policy *processes* and that we cannot have one without the other. Inclusive policy development processes are, therefore, essential if REDD is to be effective. The right for forest communities to have a role in making decisions that affect them is also a social justice issue and can support more effective REDD. Decades of experience with community-based forest management demonstrate the value of such input in designing appropriate projects. More decentralisation of decisions to local government or local projects has created better opportunities for community input.

The country chapters demonstrate different kinds of efforts that can be made to involve local people. In Mexico, Corbera and Estrada (Chapter 6) observe that locally appropriate financial networks were needed to distribute funds to the right actors and account for leakage and non-permanence. In Tanzania and Madagascar (Chapters 7 and 8) government participatory or community-forestry programmes were already in place and can serve as the 'building blocks' of a REDD programme. In Brazil, the system for compensating indigenous and traditional people, specifically in the Bolsa Floresta project, may be a model for ensuring that forest communities can participate in REDD and influence its directions (Chapter 4). A registry approach to REDD, as in the Registry of Socio-environmental Responsibility in the Xingu River Headwaters Region (RSRX) in the Xingu River headwaters in Brazil, gives forest community members the option to voluntarily choose to join a REDD-type project.

All the country case studies stress the need for stakeholder consultations and participatory processes, whilst acknowledging that implementing these processes in a meaningful way is a challenge. Documentation of stakeholder dialogues or the existence of a communication and consultation plan, as required by the CCBA standards, does not mean that agreements have been reached. Many national forestry ministries are accustomed to command-and-control style operations. Stronger efforts by civil society will be needed to support local people's interests. Countries are setting up national structures (e.g. national coordination bodies, national technical committees, national action plans, national monitoring organisations, and usually a focal ministry) to support coordination, transparency and informed decision-making, but they have been less successful in building in participation at subnational levels.

Putting it all together

REDD's impacts on forest communities will depend on two factors: (1) the incentives offered to the different entities affecting deforestation and forest communities' livelihoods, and (2) the mix of benefits, rights and participation for forest communities associated with different incentives and the entities using them.

Table 1.1 provides a tool for examining how REDD incentives across different entities affect the livelihoods and governance of forest communities. The columns indicate different entities that can influence deforestation and local people's well-being. The rows show the related incentives and implications for local livelihoods and governance. Analysis of the table indicates the distribution of responsibilities and impacts, as well as the link between incentives and desired outcomes. For example, REDD strategies can be analysed by looking at how they:

1. Share the burden for forest management beyond forest communities;
2. Provide pro-poor, locally adapted incentives that are linked to long-term development opportunities;
3. Create safety nets and livelihood options for forest communities across multiple entities; and
4. Do not conflict or create undesirable tradeoffs for other entities.

The table can also be used to assess equity (e.g. across different kinds of forests, including high deforestation threat areas and conserved forests), the mix of private and public benefits, or other distributional attributes of interest.

As REDD initiatives get under way, key governance and livelihood questions will need attention. These include:

1. How the balance of incentives, benefits, rights and political participation across interest groups, and different levels of decision making and administration can **assure local benefits** to forest communities?

2. How incentives can go beyond providing compensation to **be actively pro-poor**?⁶ Compensation implies a payment of equal value to what has been lost and, hence, does not lessen poverty. How can REDD also guard against harm to forest communities? Incentives and co-benefits need to be weighted by the level of risk to forest communities (See Malimbwi and Zahabu, Chapter 7). Risk analysis should consider capture of benefits by elites, market pressures, changes in cultural values related to conservation and risks that marginalised groups become more marginalised.
3. How can **‘breathing space’ for local livelihoods** be created for forest communities to maintain aspects of their forest-dependent livelihoods if they need or choose to do so? From a social justice perspective, some continuity in livelihood practices should be an option for indigenous groups, long-term residents or the very poor. Alternative livelihoods may not be readily available options for these groups. Changing livelihood strategies or participating in new programmes may be too risky or unattractive. If Annex I countries are entitled to cap-and-trade options, perhaps forest communities should have analogous options to continue some level of economic activity in the short-term.

Table 1.1 A matrix for analysing REDD’s impacts on local livelihoods and governance

	Households	Community	Local government	Timber industry
REDD incentive	Payment for reduced deforestation	More efficient land use	Payment for conservation targets	Compensation for shift to plantations
Type of benefit	Compensation for income opportunities foregone	Payment in-kind for meeting target, e.g. improving roads	Payment for managing conservation	Transition payment covering transaction costs
Links to development results (positive and negative)	Income generation; loss of traditional forest uses?	Investment in public asset; increased settlement and market development?	Investment in long-term ecological sustainability	New jobs created; Displacement of existing land users to make way for plantations?
Mechanism for participation in decisions	Voluntary participation; informal feedback to programme implementers	Community representative in project steering committee	None. Mandated national programme	Industry representative on advisory committee

6 By ‘pro-poor’ we mean that efforts to address poverty are prioritised such that poor households conditions are improved, both in absolute terms and relative to other wealth groups, thereby reducing inequality.

4. What is required to **change deforestation behaviour**? Financial payments are only one of many possible strategies to encourage forest conservation and restoration. Payments may prove to be less important than other measures. In Mexico and Uganda, for example, people participated in PES even when they were not paid very much (Kosoy *et al.* 2008), probably because non-income benefits and incidental environmental services compensated for small payments (Martin, Chapter 3). In Madagascar, a local nongovernmental organisation and policing may have influenced forest conservation more than the allocation of funds to the community. With the current focus on payments, other factors affecting how people can contribute to REDD aims may be overlooked.
5. How can REDD **overcome the bias towards benefiting elites** that has occurred in other forest programmes? Payments for environmental services (PES), the Clean Development Mechanism and voluntary carbon forestry programmes have tended to reinforce existing power relationships and disproportionately benefit elites (Brown, Chapter 3). For REDD to achieve pro-poor outcomes, transaction costs need to be lower for both buyers of carbon and the poor. Aggregating or organising groups of small providers (e.g. Federation of Community Forest Users, Nepal - FECOFUN) would lower costs for both buyers and sellers of carbon and improve the negotiating power of forest communities.
6. How can governance structures and processes **ensure local rights** to carbon, forest and land, and adherence to the principle of free, prior and informed consent (Colchester 2007)?
7. What are the roles of local government and what institutional arrangements would **facilitate meaningful political participation** by local indigenous groups and communities?
8. What would be the advantages and tradeoffs of **adapting community-based approaches** for forest management (e.g. community forestry, PES) to include REDD? How can these programmes be scaled up and strengthened?
9. How can national REDD programmes best use a nested approach to **account for diverse local conditions**?
10. What constitutes '**good enough**' REDD governance to reduce deforestation and forest degradation? How should REDD governance differ from forest governance?
11. What kinds of checks and balances need to be put in place across levels of governance and amongst different interest groups to **ensure that marginalised groups have a say** in the REDD decisions that affect them?
12. **How will we know whether REDD is working?** Precise data on changes in forest cover or quality are in short supply; national governments often have limited capacity or political will to provide this. REDD requires much more transparent, accountable and precise governance of data sets, even for identifying priority areas, let alone tracking change over time. Until such information is available, special interests will take advantage of the lack of data to either attract REDD benefits or divert REDD disincentives.

Conclusion: localising REDD and an agenda for change

Localising REDD

Significant efforts have already been invested in REDD at the national and international level. To implement REDD successfully, similar attention now needs to be given to how to translate REDD into action on the ground. Incentives for REDD need to respond to local deforestation conditions, local capacities and local development opportunities. Analysis of local contexts and patterns of deforestation, including deforestation rates, will be important. Whilst baselines and definitions will most likely need to be defined at higher levels to standardise assessments of leakage, local people will need to understand these in ways that are relevant to them. Programmes will have to explore how to standardise monitoring of carbon and benefits, and how to mobilise local entities to undertake these tasks. Programmes will need to consider how the distribution of REDD incentives, benefits and political participation across different levels of decision making and interest groups affect local forest communities.

Improved understanding of these issues in different contexts is needed to inform the design of future REDD programmes and lower the costs of developing relevant interventions. Learning must take place at multiple scales, including the local level, and lessons should be shared with policy makers at the national and international levels to support global learning about REDD.

Sharing lessons across countries means opportunities and potential problems can be identified more quickly. As the case study chapters illustrate, country experiences with REDD have been diverse and illustrate how countries are coping with different institutional landscapes, capacities, incentive opportunities and schedules for engagement in REDD. Brazil has sophisticated deforestation models with which to work. Madagascar has a strong conservation legacy on which it is building. Nepal is coping with the uncertainty inherent in recent political upheaval and conflict. Tanzania is exploring integrated methods for assessing co-benefits and how to include these in monitoring. Mexico has relatively low levels of conflict over tenure and successful PES programmes on which it can build. Indonesia has developed a mechanism for sharing benefits with communities. Whilst each country has a unique context, research across countries will enable more rigorous comparison of what works, as well as cross-fertilising ideas and innovation.

An agenda for change

The workshop concluded by setting priorities for future research.

The most important questions address the broader changes required to achieve a **stable climate and economy in the future**.

- 1.1 How can REDD funds be invested to lead to optimal carbon landscapes? How will these landscapes address needs for energy? How will these landscapes affect forest economies?

- 1.2 How can REDD funds be invested to create the structural changes necessary to achieve a low carbon future? Can REDD cover the costs of the transition to a low carbon economy?

Another set of priorities is related to the need to ensure efficiency and effectiveness (Angelsen 2008). The scale of REDD will require careful targeting of funds. These priorities address **where to invest in the landscape** for highest cost effectiveness:

- 2.1 Identify REDD hotspots (e.g. Amazon map of carbon density as carbon can range from 30-300 tons/ha). Analyse human, governance and structural dimensions in hotspots to understand the threats, alternatives and capacities (e.g. the United Nations Environment Programme World Conservation Monitoring Centre is currently producing biodiversity overlays). Compare hot spots with current REDD demonstration sites.
- 2.2 Analyse types of projects to identify (a) the least expensive with the lowest opportunity costs, (b) those with high opportunity costs, and (c) those with most potential for co-benefits.

Substantial research will be needed to address **practical design and operational issues for REDD**:

- 3.1 How can local, national and international entities coordinate to determine relevant baselines, deforestation rates and opportunity costs?
- 3.2 What incentives are necessary to reduce deforestation and degradation, and what other factors than incentives need to be considered to change people's behaviour related to deforestation and degradation?
- 3.3 Who gets REDD benefits and how are they used?
- 3.4 How does equity affect REDD efficiency and effectiveness?
- 3.5 How does REDD affect poverty?
- 3.6 How can REDD funds administered by national governments lead to devolved benefits for communities?
- 3.7 What are the different benefits for different stakeholders?
- 3.8 How do efficiency, effectiveness and equity vary at different scales of REDD?
- 3.9 What kinds of governance features are desirable in REDD?
- 3.10 How can incentives be created for projects that are doing well so that they keep performing well and conserve the forest?
- 3.11 What interventions would improve REDD?
- 3.12 How can the REDD learning process be improved?

Research should also reflect the **power structures and social processes** affecting how REDD is designed and implemented. This research may explain why benefits do not reach the poor and support debate and reform of REDD architecture. Priority areas include:

- 4.1 Analysis of factors that determine what kinds of REDD projects are established (e.g. policy processes, corporate behaviour, donors' behaviour).
- 4.2 Analysis of the politics underlying setting baselines and defining forests and degradation.

Research will need to be translated into action if the desired changes are to happen. Important actions that will need to be taken to support forest communities' livelihoods and governance are to:

- Give forest dwellers a meaningful voice in permitting, conceptualising, designing, testing and monitoring REDD programmes;
- Promote instruments that improve the local voice in REDD (e.g. free prior and informed consent (FPIC), UN Declaration on the Rights of Indigenous Peoples (UNDRIP); Civil Society Advisory Group (CSAG));
- Inform local people about REDD policies and rights;
- Clarify and strengthen local tenure, prior to REDD, within projects and at wider scales. Clarify rights, not just to land, but also to non-timber forest products, forest carbon and ecosystem services that are linked to forests. Close the gap between rights on paper and rights in practice. Acknowledge rights specific to indigenous groups;
- Give special attention to women and minority groups in REDD to achieve greater equity;
- Develop clear legal frameworks for resolving uncertainties and disputes. Establish independent judicial arbitration systems. Address areas where overlapping authorities occur;
- Strengthen the capacity of government and civil society groups to design and implement REDD.

Research will play an important role in adapting REDD and creating socially desirable outcomes for forests and local people. Analysis across countries should help to illuminate principles and standards for localising REDD in ways that benefit local livelihoods and governance. This volume draws lessons from the past, and from experience in six countries, to inform the design of REDD programmes. Incorporating the insights summarised here should help to build a strong foundation for successful REDD in the future.

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Section I

Framing the issues

Chapter 2

Global REDD negotiations

Update and key issues

Sheila Wertz-Kanounnikoff

This chapter gives a brief update of the global negotiations on REDD and related key issues drawn mainly from a recent Center for International Forestry Research (CIFOR), Overseas Development Institute (ODI) and Instituto de Pesquisa Ambiental da Amazônia (IPAM) publication on REDD (Angelsen 2008a and associated presentation). The focus is on key issues particularly relevant for REDD and the livelihoods of forest communities.

Forests in international climate negotiations

Table 2.1 summarises the emergence of REDD in international climate negotiations.

Table 2.1 Emergence of REDD in international climate negotiations

1992	United Nations Framework Convention on Climate Change established.
1997	Kyoto Protocol adopted: Annex I countries commit to reduce emissions (average emissions in 2008–2012 to be 5% lower than 1990 levels).
2001	Marrakesh Agreements: role of forests in the Clean Development Mechanism defined, but only afforestation/reforestation, excluding avoided deforestation.
2005	Proposal of Rainforest Coalition (group of rainforest countries) to include avoided deforestation in Kyoto Protocol. Launch of a two-year consultation on the role of avoided deforestation in climate policy. Two studies provided additional support for reconsidering the role of avoided deforestation as a climate change mitigation measure: i) the 4th Assessment Report of the IPCC (2007) which reported that almost 20% of global greenhouse gas emissions originate from forestry, and ii) the Stern Review (2006) which argued that emissions reductions from deforestation can be low cost (\$5/tonne).
2007	Bali Action Plan: at the end of the two-year consultation, REDD was included in the Bali Action Plan (the roadmap for negotiations on the post-2012 climate agreement). Early action and demonstration activities were encouraged. Numerous issues remained unresolved.
2009	Copenhagen Agreement: it is expected that the negotiations at COP-15 in Copenhagen will result in a new post-2012 agreement. The commitments to global emission reductions and the role of REDD will be particularly relevant.

Since Bali, several activities have begun. Amongst the major initiatives is the Forest Carbon Partnership Facility (FCPF). This is administered by the World Bank and has received funds from Australia, Finland, France, Germany, Japan, the Netherlands, Norway, Spain, Switzerland, the United Kingdom and the United States. The FCPF has two windows, one is a readiness fund (expected funds of US \$100 million) and the other is a carbon finance mechanism (expected funds of US \$200 million). By early April 2009, 25 developing countries had submitted REDD project identification notes (R-PINs) to the FCPF to request funds for developing R-Plans (a more detailed version of an R-PIN), and implementing REDD strategies and other readiness activities (Figure 2.1). By July 2009, 35 countries had submitted an R-PIN and three countries had their R-Plans (Indonesia, Guyana and Panama) approved.

Another major initiative is the UN-REDD Fund, which is administered jointly by the United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP) and the Food and Agriculture Organization (FAO). So far, the UN-REDD Fund has received major funding from the Norwegian Government and has identified nine pilot countries (Figure 2.1).

CIFOR has made a quick inventory of emerging REDD activities around the world (Figure 2.2). The survey took place between November and December 2008, with updates in early 2009. By March 2009, we had identified 43 'REDD demonstration activities' where REDD is the primary project objective (NB: there is no widely accepted definition of 'REDD demonstration activity'). We further identified 12 projects where REDD was either not the primary objective or had been added as an objective afterwards. We call these 'REDD components'. Finally, we identified 53 REDD 'readiness activities'. These are investments or initiatives in institutional frameworks (monitoring, reporting and verification) or capacity building in preparation for REDD. The current initiatives under the FCPF and UN-REDD fall in this category.

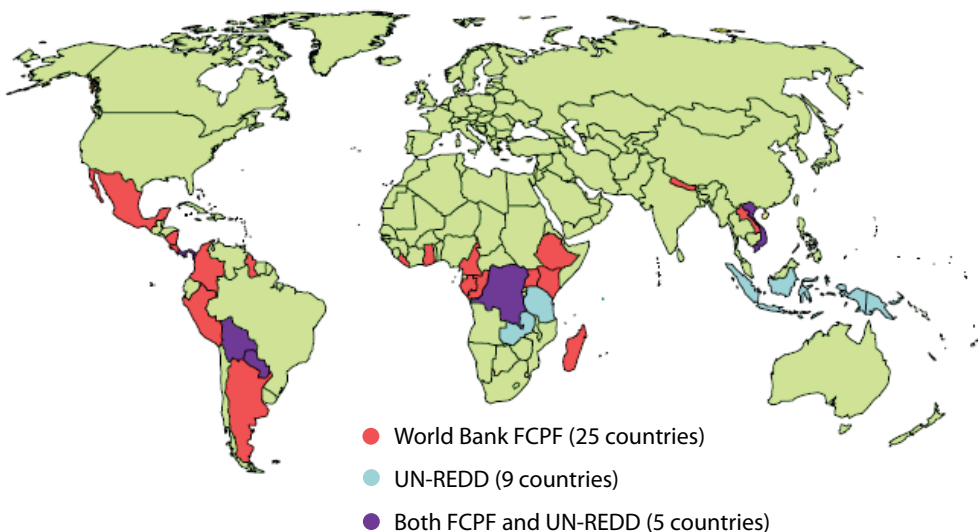


Figure 2.1 FCPF and UN-REDD Countries (March 2009)

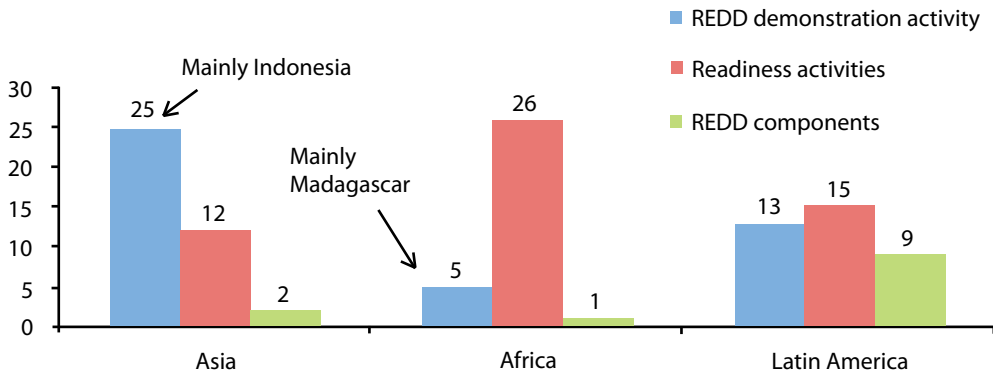


Figure 2.2 Emerging REDD activities in Asia, Africa and Latin America, as of March 2009

Source: Wertz-Kanounnikoff and Kongphan-Apirak 2009

Outstanding issues in the REDD negotiations

A number of key issues remain to be resolved in the international negotiations on REDD. These include the following (see also Angelsen 2008b):

1. Scope of REDD;
2. Crediting: input- or output-based, emissions or stocks;
3. Scale: national, subnational or nested;
4. Funding: market- or fund-based;
5. Reference levels;
6. Monitoring, reporting and verification (MRV);
7. Co-benefits;
8. Distribution.

1. Scope of REDD

Deciding the scope of REDD is a major challenge. Whilst early discussions focused on reducing negative changes (avoided deforestation, avoided degradation), more recent debates consider enhancing positive changes (forest restoration, afforestation and reforestation) (Figure 2.3).

The ultimate decision on scope will probably be driven politically. Including afforestation and reforestation (A/R) in a global REDD scheme would provide a coherent framework for the role of forestry in climate change mitigation. This can be illustrated by showing where tropical forest countries lie along the forest transition curve (Figure 2.4). Because they are at different stages along the curve, countries would have different opportunities for participating in a global REDD scheme:

- Stage 1: Countries at this stage would avoid leakage and future deforestation (e.g. Democratic Republic of Congo, Ghana);

- Stage 2: Countries at this stage would avoid deforestation (e.g. Indonesia, Brazil);
- Stage 3: Countries at this stage would continue forest conservation (e.g. India, Costa Rica); and
- Stage 4: Countries at this stage would continue afforestation and reforestation (e.g. Vietnam, China).

Changes in:	Reduced negative change	Enhanced positive change
Forest area (hectare)	Avoided deforestation	Afforestation and reforestation (A/R)
Carbon density (carbon per hectare)	Avoided degradation	Forest regeneration and rehabilitation (carbon stock enhancement)

Figure 2.3 Framework for the role of forestry in REDD

Source: Angelsen and Wertz-Kanounnikoff 2008

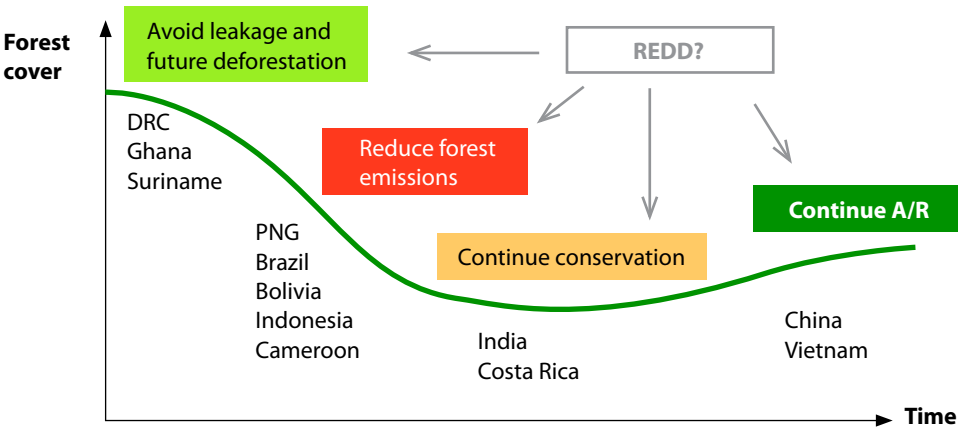


Figure 2.4 Position of tropical forest countries along the forest transition curve and opportunities to participate in REDD

Source: Adapted from Cortez and Rudell 2008

2. Crediting

Another question to be resolved is what to credit. According to UN Framework Convention for Climate Change (UNFCCC) requirements, only output-based approaches can earn credits (Figure 2.5). Amongst the output-based approaches, there are emissions-based approaches (that measure the change in forest cover over a specific period) and stock-based approaches (that consider total forest cover).

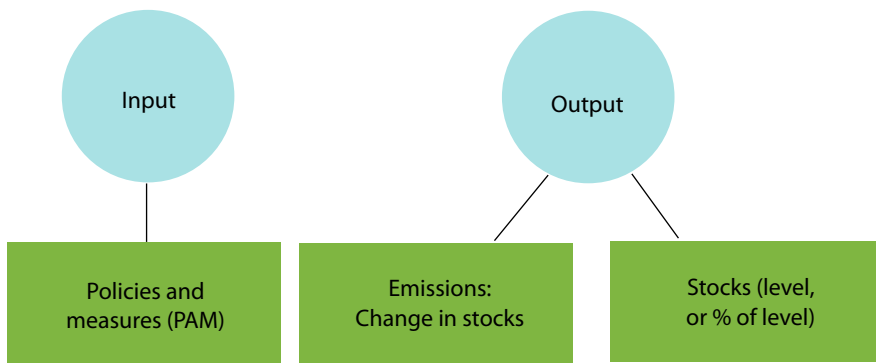


Figure 2.5 Input- versus output-based approaches for crediting

Source: Angelsen and Wertz-Kanounnikoff 2008

There are strong arguments for emissions-based approaches. First, they target the source of the problem (emissions) and, second, they generate tradable REDD credits and take advantage of carbon markets. Arguments for emissions-based approaches also stem from the problems associated with stock-based approaches, which include the risk of low additionality and, ultimately, the risk of watering down the mechanism.

3. Scale

The current REDD negotiations seem to favour a national approach to crediting rather than a subnational approach, as in the case of the Clean Development Mechanism (CDM). An intermediate approach is the nested approach, where credits are awarded at both national and subnational levels (Figure 2.6). Despite the seeming preference of

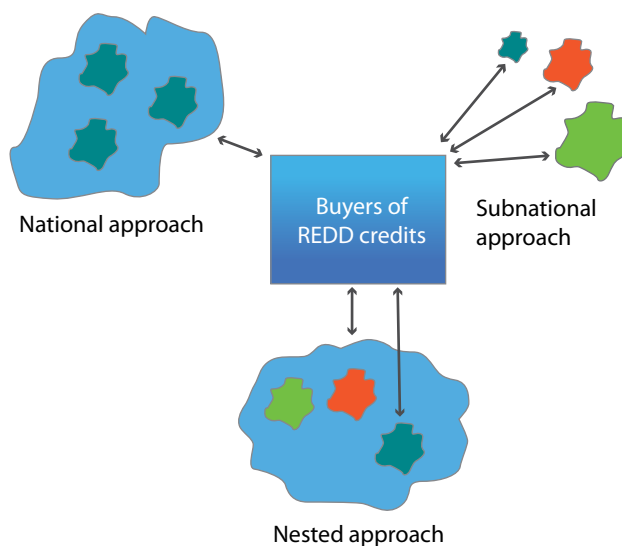


Figure 2.6 Scales for REDD crediting

Source: Angelsen *et al.* 2008

most negotiating parties for a national approach, several countries continue to prefer a subnational approach (e.g. some Latin American countries).

There are pros and cons for each. The national approach can address domestic leakage and wider drivers of deforestation and degradation. The subnational approach allows REDD programmes to get underway earlier and attract private sector finance. A nested approach is more flexible and realistic in the short run, but raises questions of harmonisation and credit sharing.

4. Financing

REDD must also leverage funds to provide incentives for REDD. According to the Stern Review (2006), US \$5-15 billion a year will be needed to cut global deforestation by 50%. The two main financing options are markets and funds (Figure 2.7). Given the value of

	Market	Fund
\$-source	Credit trading	- Voluntary donations - Auction revenues - Tax/fee linked to carbon markets
Potential	Potential to generate large amounts of money	Emission reductions are additional
Concerns	- Reduces focus on energy emission reductions - Risk of adverse impacts on carbon markets	- Risk of insufficient levels of funding

Figure 2.7 REDD financing options

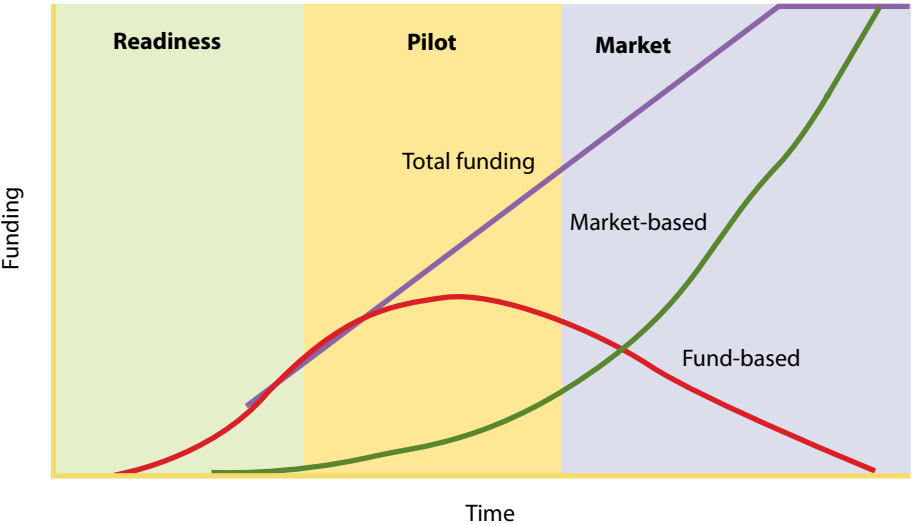


Figure 2.8 Likely evolution of REDD funding

Source: Adapted from Eliasch 2008

global carbon markets (US \$64 billion in 2007) there are expectations that they will generate the necessary funds. However, market-based finance is not feasible in the short term because of the scale of investment needed to establish an enabling framework for output-based REDD deals. The more recent debate, therefore, recognises that a variety of funding sources will be needed for the different phases of REDD (Figure 2.8 and Angelsen *et al.* 2009).

5. Reference levels

The debate about reference levels is another key issue. Conceptually, it is useful to distinguish between three types of reference levels (Figure 2.9): i) historical baselines, ii) business-as-usual (BAU) scenarios (in the absence of REDD payments, these need to consider national circumstances), and iii) the crediting line, which can, but does not have to be the same as the business-as-usual scenario (i.e. BAU + common, but differentiated, responsibilities). To encourage developing countries to reduce emissions, some argue that the crediting line needs to be different from the business-as-usual scenario. This could take the form of a 'no-lose system' where payments are only made once a country has reduced its emissions beyond a self-set or agreed-upon target, but where the country is not penalised in the case of non-compliance. The decision on the reference levels will, again, be political. Ultimately, it will be a compromise between the risk of tropical 'hot air' and the risk of discouraging developing countries acceptance and participation in REDD (Angelsen 2008a).

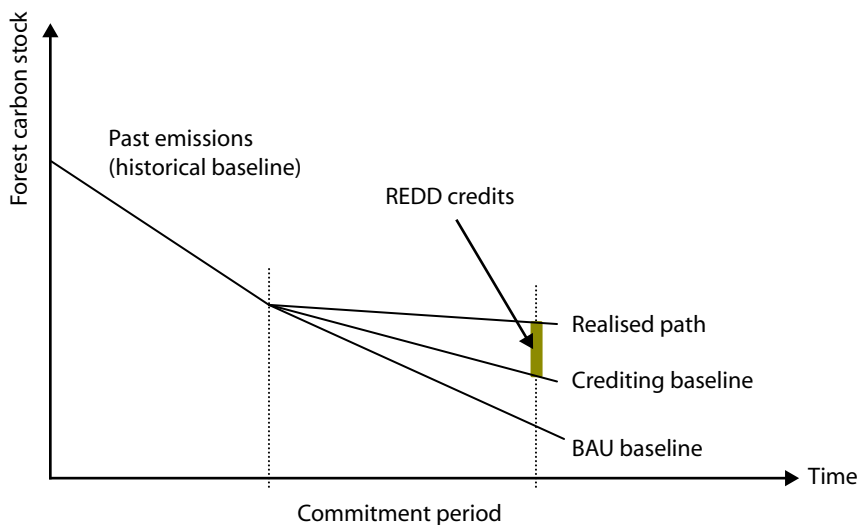


Figure 2.9 Reference levels for REDD

Source: Angelsen 2008a

6. Monitoring, reporting and verification

The discussions on monitoring, reporting and verification (MRV) in the international REDD negotiations seem almost to have reached a consensus. There are two major approaches to estimating emission reductions from forestry (Figure 2.10) – a stock-based approach and a gain-loss approach.

MRV is thus not an obstacle to moving ahead but does impose limitations on what can be done. Although the International Panel on Climate Change (IPCC) guidelines for MRV are fairly clear on deforestation, they are less so on degradation and work is still underway on the tradeoff between costs and accuracy. Meantime, in the absence of affordable MRV methods, and to avoid overestimation of emissions reduced (and hence: ‘hot air’), support is growing for application of the conservative principle. Going ahead on the conservative principle whilst providing rewards for improving MRV would offer developing countries further incentives to build more sophisticated MRV systems for REDD.

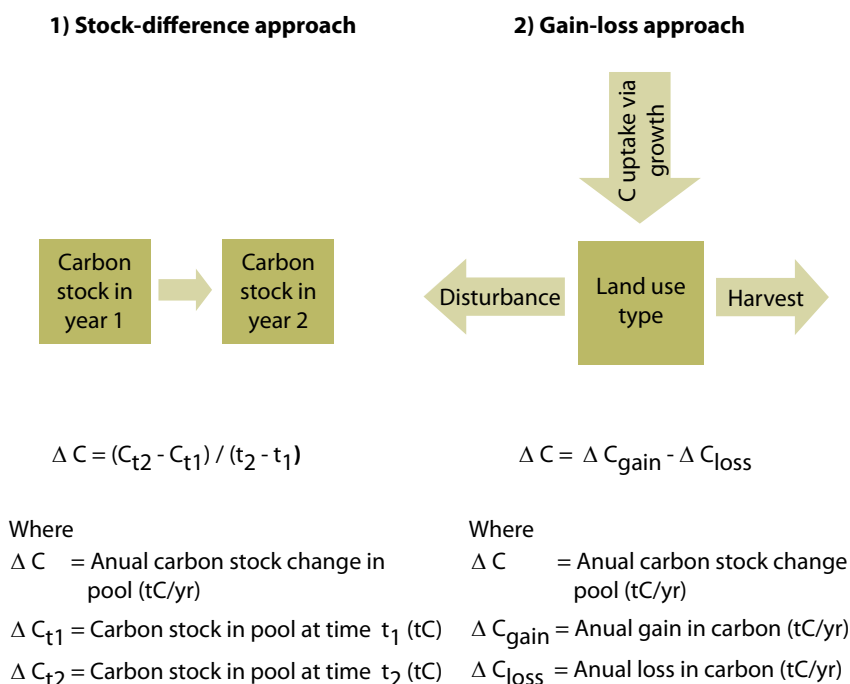


Figure 2.10 Approaches to estimating emission reductions from forestry

Source: Wertz-Kanounnikoff *et al.* 2008

7. Co-benefits

Securing co-benefits (biodiversity conservation, poverty reduction) is another key challenge in REDD. There are concerns and questions about whether or not REDD might negatively affect ecosystems and social systems particularly in:

- Indigenous and forest-dependent communities; and
- High biodiversity or low carbon areas.

One important issue to consider here is political: international negotiations (and agreements) must respect national sovereignty. This leads some to argue that one cannot expect a REDD agreement to cover safeguards against negative impacts as well as measures to maximise co-benefits.

Nevertheless, promising avenues to promote REDD co-benefits are emerging:

- Particular attention is being paid to pro-poor REDD design, especially with respect to substantial public/ODA funding for REDD 'readiness activities' (see above);
- Explicit consultation platforms and advisory bodies are being set up; and
- Voluntary standards and certification of national REDD activities are being developed (e.g. by the Climate, Community and Biodiversity Alliance (CCBA) and CARE).

There is still, however, a need for further work and practical advice on how to secure REDD co-benefits.

8. Distribution

Distribution is more a political-economic challenge and I borrow the arguments presented here from the book 'Moving ahead with REDD' by Arild Angelsen (2008b).

The REDD negotiations have been characterised by at least two games: a collective action game (to address global climate change that affects us all), and the development aid game (aid transfers from Northern to Southern countries). These 'games' have led to very high expectations with regard to REDD, with different groups having very different perceptions and interests:

- 'Squeeze the lemon' (developing countries) to get as much money for as little action as possible; and
- Avoid massive financial transfers (developed countries) to get as much action for as little money as possible.

So, what is the best way forward? Given the urgency and importance of mitigating climate change, the only possibility is to 'play the game' whilst keeping in mind the importance of performance-based support (conditionality) and long-term targets (incentives for REDD).

Outlook

In sum, the negotiations around REDD are dynamic and there are still many issues to be tackled. Technical solutions for REDD often involve tradeoffs and political issues. There is a need to manage expectations. To benefit from REDD and inform a post-2012 climate

mitigation regime, it is necessary to start implementing and experimenting. Different country circumstances demand flexibility. A learning process (learning by doing) should be used. A phased approach (for MRV, scale, finance) is emerging as a useful strategy for implementing the international REDD architecture. Looking forward to Copenhagen (COP-15), the ideal outcome would be a 'Copenhagen Agreement' committing countries to stabilise the global temperature increase at a maximum of 2° Celsius which—for its realisation—would require REDD.

Further resources and information on REDD negotiations

UNFCCC REDD: http://unfccc.int/methods_science/redd/items/4531.php

Earth Negotiation Bulletin, IISD: www.iisd.ca/process/climate_atm.htm

REDD Monitor: www.redd-monitor.org/

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Chapter 3

Learning from experience

Forest community approaches to improving livelihoods and reducing deforestation

A variety of approaches to reduce deforestation whilst improving local livelihoods have been taken since at least the 1980s, when social and community forestry programmes became popular. Over the years the approaches have grown in sophistication and scope. REDD demonstration projects and programmes with REDD components are building on these experiences.

Three workshop presentations synthesised the major lessons learned about tenure reform, payments for environmental services, the Clean Development Mechanism and carbon markets. These presentations, by Sunderlin, Martin and Brown respectively, are a starting point for informing REDD. We provide the text of the presentations here in outline form as full papers are not available. The aim is to make the information accessible to a broad audience as quickly as possible. References are provided throughout the text.

Tenure: what will REDD mean for forest communities?

William Sunderlin

The mechanics of REDD

- Objective is to compensate people to keep forests standing and reduce greenhouse gas emissions;
- Compensation at both individual and community levels as well as at higher levels;
- Sources of funding include Overseas Development Assistance, compliance offset markets, global fund;
- Assumption that REDD will place a value on standing forests.

In the best of all possible worlds ...

- REDD succeeds in reducing greenhouse gases (effectiveness) in a cost effective way (efficiency) and in a way that is fair to forest peoples (equity);
- Supposition that equity will assure meaningful income to a significant number of forest people;
- Supposition that it is important to address forest poverty because it is severe (high rate, depth, chronic) and it drives deforestation;
- The need to resolve tenure issues prior to REDD is sometimes invoked.

But in the real world there are problems

- The poor record of some major forest and rural development projects:
 - Local people sometimes have little or no say;
 - Failure of some projects (e.g. integrated conservation and development projects);
 - Environmental concerns in the driver's seat;
 - REDD as the newest and biggest incarnation of this tradition?
- In developing countries strong government control of forests, contestation, lack of clarity and conflict;
- Perverse incentives/moral hazards in rewarding the deforester and ignoring the forest protector;
- Division of opinion on whether or not to participate in REDD;
- Strong objections to turning forest carbon into a global market commodity;
- REDD funding stream could get diverted;
- Too much attention to on-site factors and not enough to society-wide drivers?
- Early reports from several demonstration sites:
 - Low levels of compensation;
 - No reports of any tenure problems to address.
- Be on guard for demonstration sites not being representative of the real world.

What are forest tenure and rights?

- Forest tenure is the right, whether defined in customary or statutory terms, that determines who can hold and use forestlands and resources, for how long and under what conditions;
- Customary tenure: Determined at local level. 'Community owns the forest';
- Statutory tenure: Determined by governments. 'Government owns most forests'; Forestland and resource tenure are strongly related to other rights: citizenship, civil, human and gender.

Classic property rights systems

Bundles of rights

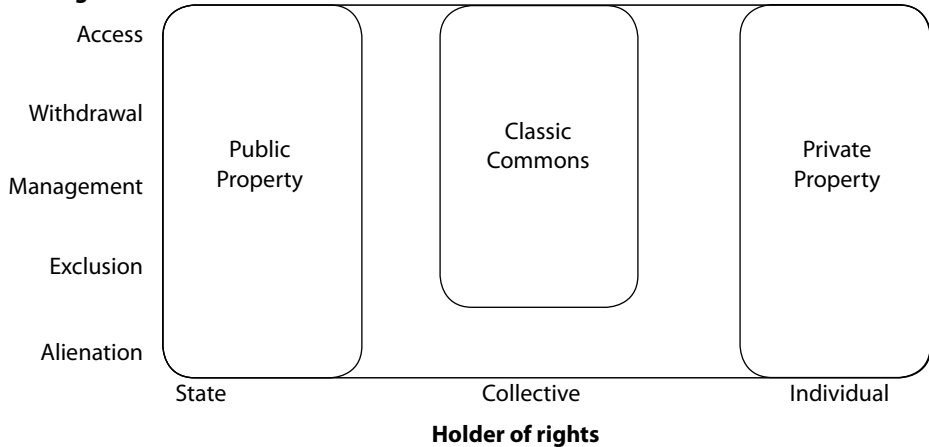


Figure 3.1 Classic property rights systems

Source: From Meinzen-Dick 2006

Why forest tenure is so important

- Strong government control in most countries. Treatment of people as trespassers in their own homes;
- Contest between statutory and customary systems;
- Lack of clarity, and both vertical and horizontal conflict;
- Even where statutory tenure is clear, and devolved to communities through access or ownership rights, it is often unenforced;
- Tenure is most contested in areas of deforestation and degradation;
- Tenure insecurity for local people, and the inability to exclude, is related to forest management problems.

Strong tenure at community level presumed to lead to

- Improved livelihoods and wellbeing and less poverty (via exclusion of claimants, incentive for investment, diminished conflict, etc.);
- Viable community forest enterprises (e.g. in Mexico);
- Improved forest management and conservation (exclusion of claimants, incentive for protection, diminished conflict, etc.);
- Stable forest sector investment and economic growth at regional level;
- An essential precondition for equitable, effective and efficient REDD schemes.

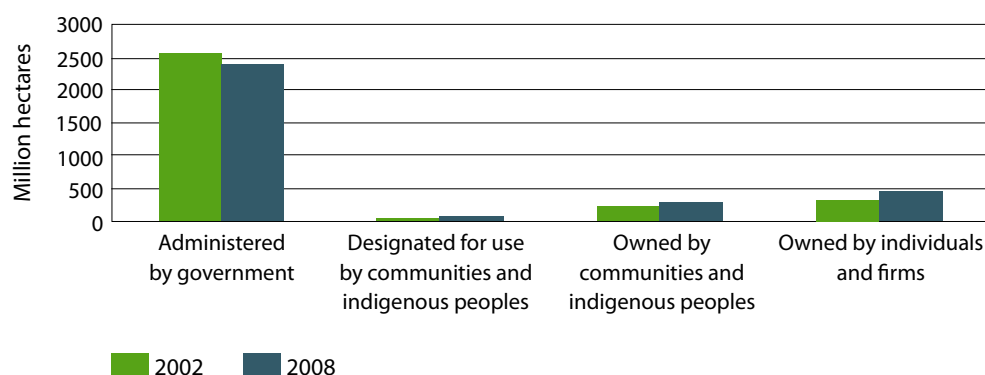


Figure 3.2 Statutory forest tenure change, 2002 and 2008 in 25 of the 30 most forested countries

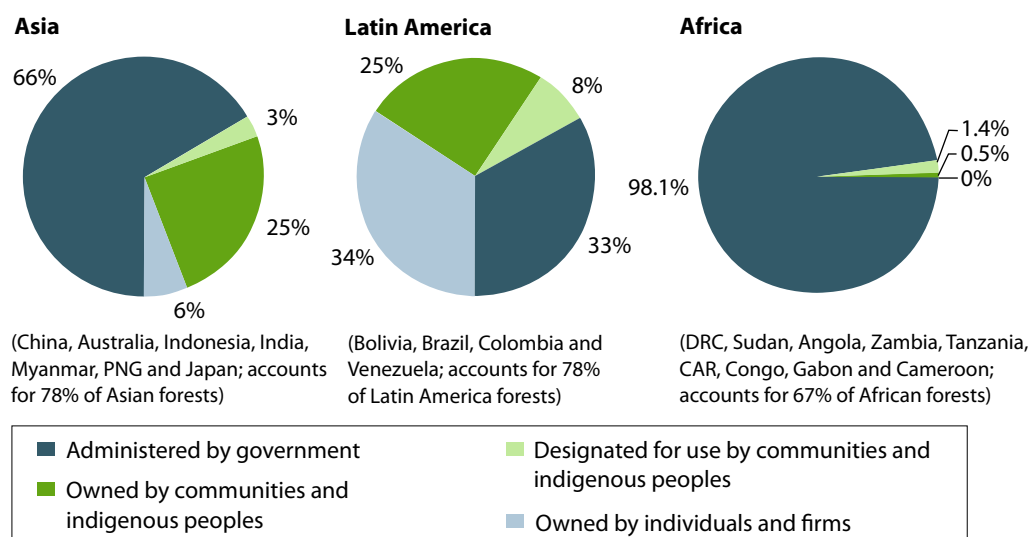


Figure 3.3 Statutory forest tenure by world region, 2008

What happens if rights and tenure are not addressed?

- Contracts and benefits will go to relatively few large forest owners causing:
 - More inequality, resentment and conflict in forest populations (inequity), especially if large amounts of REDD funds attract powerful elites;
 - Less effective and efficient REDD because the area of coverage is sub-optimal;
 - Possibility of retaliatory sabotage by those left out, further reducing effectiveness and efficiency.
- Government will resort to renewed and increased state control to compensate for the low area of coverage, which will cause or aggravate:
 - Anti-people, ‘guns and fences’, exclusionary models of forest conservation;

- Possibility of evictions of people from forests they depend on for livelihoods;
 - More violation of tenure and other rights;
 - Possibility of retaliation by those whose rights and livelihoods are trodden upon, reducing effectiveness and efficiency further still.
3. The effects of perverse incentives (rewards to deforesters and none to forest conservers) are aggravated by restricting rewards to the worst deforesters.
- For example, with no prior forest tenure reform, REDD benefits would go mainly to cattle ranchers in Central America, who are more likely to have land rights and to be the worst deforesters;
 - This leads to cynicism, lack of identification with national forest conservation strategies, sabotage of REDD efforts and further undermining of effectiveness and efficiency.

What needs to happen for REDD to succeed?

- Give forest dwellers a meaningful voice in the permission for, and conceptualisation, design, testing and monitoring of REDD;
- Promote the use of instruments that improve the local voice in REDD: free, prior and informed consent (FPIC), UNDRIP; Civil Society Advisory Group (CSAG);
- Clarify and strengthen local tenure at project and higher scales prior to implementing REDD.

Other action items

- Clarify rights not just to land, but also to non-timber forest products (NTFPs), carbon, ecosystem services, etc;
- Promote social equity (for women and minorities);
- Create effective and equitable mechanisms for regulation;
- Establish independent judicial arbitration systems;
- Resolve gridlock and overlapping authority;
- Strengthen capacity of government staff;
- Improve world documentation of statutory forest tenure, as well as of customary claims and conflict;
- Inform local people about policies and rights;
- Support public debate on concession policies;
- Establish a clear legal framework for resolving uncertainties and disputes;
- Close the gap between rights on paper and rights in practice.

Lessons for REDD from payments for environmental services research

Adrian Martin

With the expected progression of REDD (and perhaps REDD+) towards a global policy, it is timely to review what lessons we have learned about the various mechanisms by which REDD might be implemented. One mechanism that is likely to play a part in creating incentives for forest conservation and in distributing national REDD payments to those who contribute to conservation is payment for environmental services (PES). The aim of this presentation was, therefore, to ask what lessons have been learned from PES schemes outside of REDD, and to explore how these lessons might be applicable to PES as a part of REDD.

What do we think REDD and PES will have in common?

REDD initiatives that include a means of rewarding service providers are likely to share key characteristics with pre-existing PES schemes:

- Ecosystem services framework;
- Identifying or addressing problems of externalities;
- Subsidies (Coaseian – to reduce transaction costs);
- Contingent cash transfers (results-based);
- Possibility of co-benefits;
- Practice messier than theory; context is king.

These similarities suggest that lessons from PES can be relevant to REDD.

Why might lessons from PES not be relevant?

Key decisions about how REDD is to be operated are yet to be finalised and there is no guarantee that a system of subnational distribution of benefits will fit with a 'payments for services' framework.

- Will the nation state be the first order provider of the service and, as is likely, the unit at which performance is measured? (Brazilian model).
- Assuming performance monitoring at national level, will states then seek to engage sub-units, such as communities, as sub-contract service providers? Will internal accounting systems allow re-allocation of national level rewards?
- Will the state employ sticks or carrots as incentives to local level contributors to contribute to national performance?

Clearly, the lessons from PES will be most relevant where there is a subnational monitoring and accounting system to identify contributions to national performance and to distribute benefits accordingly.

A further potential limit on the relevance of lessons from previous PES schemes is forest tenure. PES schemes have mostly been on private and communal lands (e.g. *ejidos* in Mexico), rather than on state land (Figure 3.4). REDD on the other hand is likely to focus more on state forests.

State land	WFW S. Africa	REDD?
Community land	PSA-CADSA Mexico	REDD?
	PROFAFOR Ecuador	PSAH Mexico
Private land	PSA Costa Rica	
	Grains to Green, China	Los Negros valley, Bolivia
	Payments to do	Payments not to do

Figure 3.4 PES schemes, forest tenure and the potential of PES schemes in REDD

Keeping in mind these limitations to the relevance of PES experience for REDD, the following sections summarise some of the key findings from the PES literature.

What are likely to be the characteristics of effective and efficient governance structures?

- Subsidy approaches are vulnerable to problems of, for example, additionality, leakage and perverse incentives, all of which imply the need for strong governance;
- Sven Wunder: question is ‘what is the right mix’ of governance levels;
- Scale of governance is critical for some services;
- User-funded (market-based) arrangements tend to be preferable to government funded arrangements;

- Recognition of heterogeneity of user costs (market-based);
- Direct payments for providing environmental services are in theory efficient (e.g. Ferraro) but, in practice, interventions are often characterised by multiple stakeholders with objectives that trade against such efficiency;
- The literature describes different responses with regard to multiple objectives (co-benefits). Some see equity and poverty alleviation as fundamental requirements whilst others see prioritising such co-benefits at the expense of successful carbon storage as a fallacy.

Examples of institutional issues for PES

- Local institutions for collective action are often important, but those best suited to mobilising participation may not be best suited to implementation (e.g. Hall 2008);
- Importance and difficulty of observing and accounting for local institutions – it is often more difficult than we imagine to understand the ‘invisible’ vernacular institutions that are critical to regulating society-nature interactions;
- Lack of recognition of environmental services under state or federal law (or lack of recognition within an epistemic community) can make it difficult to implement PES;
- Institutional capacities can be limiting (e.g. ability to introduce and manage a national scheme) and objectives incompatibilities (e.g. where there are ‘perverse’ subsidies for agriculture that run counter to the PES);
- Dynamic context of institutional interplay (e.g. Corbera 2009).

How can PES (and REDD) be pro-poor?

- Participation depends on eligibility, ability, willingness (e.g. Pagiola, Wunder);
- The poor are most likely to participate where their opportunity costs are low (pro-poor might be defined as a situation where opportunity costs for the poor are lower than for non-poor);
- Participation is observed despite small payments (e.g. in carbon forestry PES schemes in Mexico and Uganda). Initial empirical observations suggest the reasons include a range of non-income benefits and perhaps incidental environmental service benefits;
- Can we shift from a buyers’ market to a sellers’ market? PES will tend to be pro-poor where demand for the service is high relative to the level of provision, leading to higher prices and better conditions of service;
- Low transaction costs enable buyers to engage many small providers as an alternative to a few large providers.

What do we need to understand about local contexts?

Perhaps the most common finding from empirical cases is that PES schemes do not operate in clinical and uniform ways. They are messy, and often do not fit well with the models of efficiency proposed by advocates. Local context is critical to understanding individual cases and most now recognise that PES is not suitable in all situations.

- Important contexts include:
 - Environmental, e.g. site-specific productive functions;
 - Socio-economic, e.g. disaggregated opportunity costs, characteristics of local resource users and managers; informal institutions (property rights, access to forest, conflicts, cultural basis);
 - Political, e.g. multiple agendas.
- What governance mix works in which contexts?

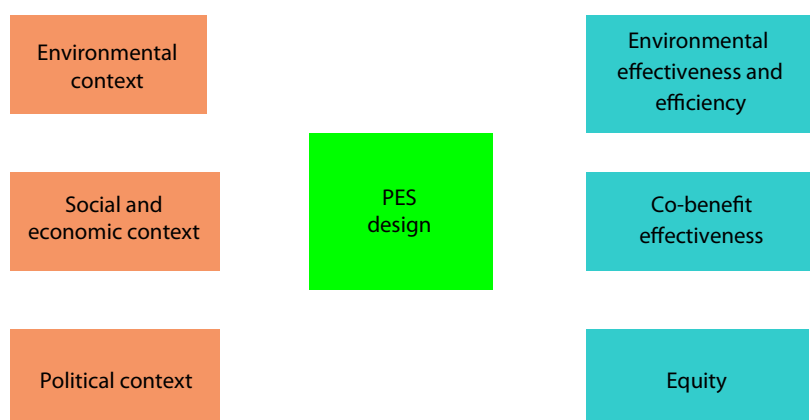


Figure 3.5 Local context needs to be considered in the design of PES for co-benefits

Source: adapted from Jack 2008

Can PES support REDD(+) to help save forests?

- Can play a role, though REDD faces profound governance challenges;
- Research will be critical – building robust research protocols into REDD pilots, to enable adaptive management;
- As Pagiola (2008) notes about forestry PES in Costa Rica, learning – and responding – has been critical i.e. there needs to be flexibility to adapt on a case-by-case basis, rather than treating PES as a blueprint approach.

Insights from Clean Development Mechanism (CDM) and voluntary carbon projects

Katrina Brown

This presentation summarises recent research at the Tyndall Centre, University of East Anglia (UEA), and draws out implications for REDD and further research.

Current and past research at Tyndall and UEA

- Work on deforestation and land use and climate change, initiated under The Centre for Social and Economic Research on the Global Environment (CSERGE) research programme, resulted in publication of two books in 1994 that highlighted the links between climate change and deforestation, and potential mitigation policy approaches;
- Tyndall Centre Phase 2 research programmes on decarbonisation, adaptation and international development also cover related research;
- A research project on sustainable development (SD) and the Clean Development Mechanism (CDM), with a focus on carbon forestry, including empirical research in Brazil, Bolivia, Mexico and Belize, began in 2000;
- Much of this took an analytical approach which stresses equity and legitimacy in the carbon economy;
- More recently, this has shifted to analysis of payments for environmental services (PES) – exploring institutional and development dimensions;
- A current approach is concerned with challenging REDD assumptions, based on empirical findings on carbon forestry research, especially in Mexico.

Sustainable development in CDM and voluntary markets has been explored in some detail, highlighting:

- Tradeoffs/tensions/conflicts between sustainable development (SD) and efficiency;
- Limited scope for sustainable development in current CDM;
- CDM as a key finance source for developing countries. BUT the Rio ‘Grand Bargain’ for SD and climate change (CC) has, largely, not materialised;
- Uneven distribution of projects and volumes of certified emissions reduction (CER);
- Possible CDM reform: levy on certain types of CDM projects, geographical quotas, minimal global standards, voluntary standards for SD-CDM projects;
- Comparing regulated and voluntary carbon markets (Mexico).

This research has been published in Brown *et al.* 2004; Boyd *et al.* 2007; Hultman *et al.* 2009.

Institutional analysis of PES using the case study of Mexico's carbon, biodiversity and agroforestry programme reveals:

- Carbon applications were the least successful proposals;
- PES carbon funding is concentrated in the hands of intermediaries;
- Lack of knowledge and capacities, and ineffective communication are critical problems;
- Enhancement of social forestry activities – planting in the commons is one benefit;
- Conflict over distribution of incentives; marginalisation of informal rights holders;
- Interplay between PES schemes and local property rights are critical.

See for example: Corbera and Brown 2008; Corbera *et al.* 2009.

Table 3.1 Factors that determine participation in payments for environmental services (PES) schemes

Procedural and management issues	Community	Farmer
Simple rules	Forest management rules	Contribution to household income
Procedural flexibility	Collective conservation values	Consolidate and diversify
Information outreach levels	Consensus around the use of PES income and the allocation of responsibilities	Grant access to research and development projects
Social participation in framing rules	Small community size	
Effective communication between resource managers, intermediaries and government		

Source: Kosoy *et al.* 2009

Analysing the equity and legitimacy of carbon forestry projects demonstrates that:

- International actors and NGO entrepreneurs drive projects;
- Women, the poor and those with *de facto* property rights are less likely to benefit;
- Weak collective action – greater concentration of benefits to wealthiest;

- Markets for environmental services becoming mechanisms by which property rights are formalised;
- Commodification vs. non-utilitarian views and behaviour;
- PES reinforces power structures, inequities and vulnerabilities;
- Overall, we conclude that 'Markets are blunt instruments with respect to procedural fairness and equitable outcomes'.

See: Corbera *et al.* 2007.

REDD: revisiting the assumptions

- We have undertaken a review of global land-use change emissions, deforestation drivers and likely offset costs at different scales.

Likely sources of REDD funding:

- Voluntary contributions, carbon market, levy on emission reduction units (ERUs) and assigned amount units (AAUs);
- None of these likely to provide US \$5 billion/year (Grieg-Gran 2006);
- Analysis of key technical challenges for national and subnational REDD approaches (baseline estimation, monitoring, leakage and permanence);
- Governance issues lie at the heart of REDD;
- Political economy of deforestation – complex realities;
- Protected areas or communities – what is prioritised?
- How are land-use incentives harmonised and corruption tackled?

See: Estrada *et al.* 2007.

What do these insights mean for the future of REDD?

- Carbon forestry projects are complex and costly – this is important if REDD considers subnational/project approaches;
- Lack of empirical work on additionality, offsets quality and side benefits/impacts;
- Africa likely to benefit from forests more than other types of projects;
- Stringency of climate targets will influence the role of CDM forestry and REDD in carbon markets;
- Preliminary analysis of World Bank Forest Partnership Project Idea Notes (PINs) suggests that governance aspects are not central to REDD design.

Clean development mechanism and forests

Afforestation and reforestation projects on lands deforested before 1990 and only in developing countries:

- Three projects registered to date; 36 at validation or pre-registration stages;
- Certified emissions reductions (CERs) to Annex I parties: 0.4% of expected CERs to 2012; 0.8% of projects;
- Main buyer: WB Bio-Carbon Fund; private companies (e.g. Novartis).

Challenges for CDM forestry projects:

- Technical problems;
- Economic challenges;
- Governance issues.

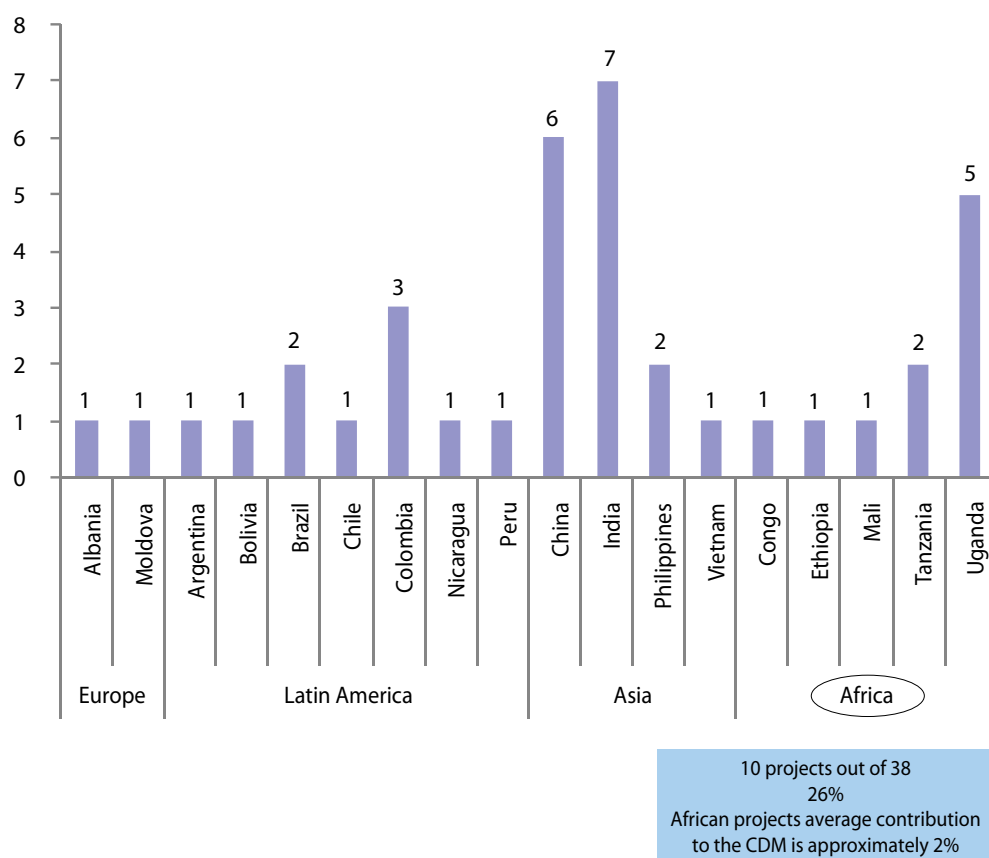


Figure 3.6 Distribution of community forest partnership–Clean Development Mechanism projects (CFPs-CDM)

Source: UNEP-Risoe CDM pipeline, March 2009 <http://cdmpipeline.org>

Community forest partnership (CFPs) in voluntary carbon markets and funds

- Forestry projects (i.e. conservation, reforestation, sustainable forest management) enhancing/preserving carbon stocks above a pre-defined baseline.
 - Several existing markets/funds (retail, Chicago Climate Exchange (CCX), OCT, Australian Government Future Fund, New South Wales, Regional Greenhouse Gas Initiative);
 - Credits sold to companies and individuals which seek to offset emissions;
 - Increased number of Standards and Offset registries: CDM (2), Photovoltaic (3), California Action Reserve (2), CCBA (5), ISO 14064 (2), Carbon Fix (1)¹, others (6).

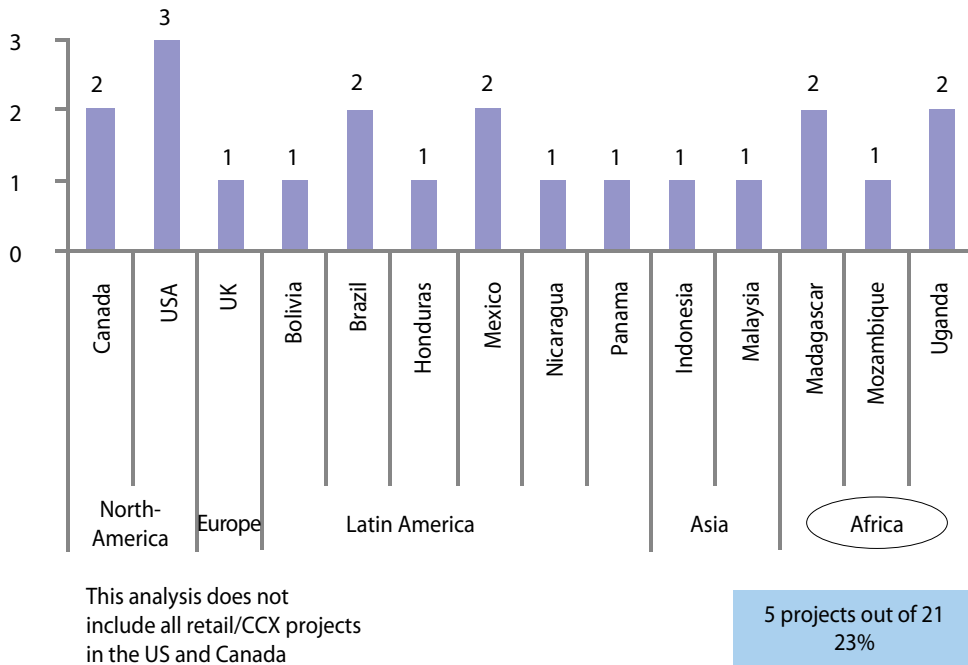


Figure 3.7 Geographical distribution of community forest partnership (CFPs)-voluntary markets

Source: Forest Carbon Portal; www.forestcarbonportal.com, as of March 2009

Some have converted tree-planting programmes in carbon offset projects

- Key considerations of voluntary community forest partnership (CFPs):
 - New forms of public-private market-based governance: accountability?
 - *Ex ante* public/private funding or carbon sales often support their development;
 - Most projects do not have buyers – more supply than demand?

¹ This project's offsets are commercialised under the Chicago Climate Exchange.

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Section II

Snapshots of REDD experiences in six countries

To identify and explore the key governance and livelihood issues related to REDD, assessments of the status of REDD and scenarios for the design of REDD for five countries were presented at the workshop. Participants discussed the likely effects of the different REDD scenarios on local governance and livelihoods in each country, and the potential worldwide impact. Reports covered Brazil, Tanzania, Indonesia, Mexico and Nepal. The report on Madagascar was prepared for these proceedings after the workshop.

To guide the assessments, authors were asked to report on the key drivers of deforestation and the major forest policy issues in each country. They were also asked to think about alternative REDD designs in broad terms, such as a community-based approach, private management of natural forests and plantations, or state-run protected areas.

The workshop considered the following questions for each country:

- Who are the major stakeholders in forests? Which of these would be able to participate in a REDD programme?
- Who claims rights to forest, timber, forestland, forest resources and carbon? Whose rights are recognised in national legislation?
- Would a REDD programme take an administrative or a market-based approach?
- Who would participate in making decisions about forest management (the carbon volume to be conserved, associated management practices, enforcement of practices, access to information, resolution of disputes, etc.)?
- Who would participate in making decisions about sharing carbon finance (the total amount sought, its distribution amongst stakeholders, enforcement of rules for distribution, access to information, resolution of disputes, etc.)?
- Who would be accountable to carbon financiers? How (aspects of liability, monitoring, verification, etc.)?
- What customary institutions exist with regards to forestry? What would be the relationship between customary and state institutions?
- How would a REDD programme change the access of different local stakeholders to forests and affect their livelihood options?
- What costs would a REDD programme impose on different stakeholders, in terms of direct costs and forest use foregone?
- What benefits would the disbursement of carbon finance generate for different stakeholders?
- What 'off-site' effects (on other forests, places, people, institutions, etc.) could be expected?

The following chapters present the discussions on these questions.

Table 1 summarises key forest data for the six countries. Brazil and Indonesia are the two largest countries in terms of the extent of forest (477.7 million ha forest in Brazil) and emissions from land use and forest (Indonesia at 2 563.1 MtCO₂, or 33.64% of global emissions). Both Mexico and Brazil have strong provision for community forest

management. Indonesia (2%), Tanzania (1.1%) and Nepal (1.4%) have the highest measured rates of deforestation. Madagascar (US \$322), Tanzania (US \$239) and Nepal (US \$245) come close to the bottom of GDP per capita rankings. The forest emissions and carbon stock data should, however, be treated as approximate. FAO emphasises that the methodologies used to estimate them are not completely standardised. Hence, there are gaps in the data sets for some countries and surprising variations in data for others.

Table 1. Comparison of case study countries

	Land area	Popul- ation (2004)	GDP per capita	Forest area (i.e. forest cover)	Forest area as % of land area	Deforestation rate (2000–2005)	GHG emissions from land use change and forestry (2000)*	Forest carbon stock (million tonnes)				Forest area data based on survey in:
	(km ²)	(million)	(US \$)	(million ha)	%	000 ha/ yr	MtCO ₂ /yr (% of total)	Above ground	Below ground	Dead wood	Litter	In soil
Brazil	845 942	178.718	3675	477.7	56.5	-3103	-0.6 (18.01%)	38 480	10 855	3056	1958	50 289
Indonesia	181 157	217.588	906	88.5	48.8	-1871	-2.0 (33.64%)	4434	1463	649	179	-
Mexico	190 869	103.795	5968	64.2	33.6	-260	-0.4 (1.27%)	-	-	-	-	-
Tanzania	88 359	36.571	322	35.2	39.8	-412	-1.1 (0.19%)	1818	436	312	-	-
Madagascar	58 154	17.332	239	12.8	22.0	-37	-0.3 (0.79%)	2389	741	191	-	-
Nepal	14 300	25.190	245	3.6	25.2	-53	-1.4 (1.62%)	359	126	73	13	326

Sources: FAO 2006 Global forest resources assessment 2005; progress towards sustainable forest management. FAO Forestry Paper. Food and Agriculture Organization of the United Nations, Rome, Italy. Except * Climate Analysis Indicators Tool/World Resources Institute, based on FAO 2005

Note: Forest data is acknowledged to be of variable reliability.

Chapter 4

Brazil

Oswaldo Stella Martins, Paulo Moutinho, Ricardo Rettmann and Erika de Paula P. Pinto

Introduction

Brazil is one of the five biggest emitters of greenhouse gases in the world. Seventy-five percent of Brazilian emissions are related to changes in land use, mainly deforestation of tropical forest (UNFCCC 2004). At the beginning of the 1970s, the Brazilian Amazon forest covered an area of 4.18 million km². Of this, 650 000 km² or 15% – an area larger than France – has been deforested (Soares-Filho *et al.* 2008).

During the 1990s deforestation rates were around 17 000 km² per year. Currently, the average deforestation rate is 11 000 km² per year, but Brazil continues to be the biggest emitter of carbon from deforestation in the world: 200 million tonne of carbon (MtC) per year to the atmosphere, about one-tenth of global emissions from deforestation.

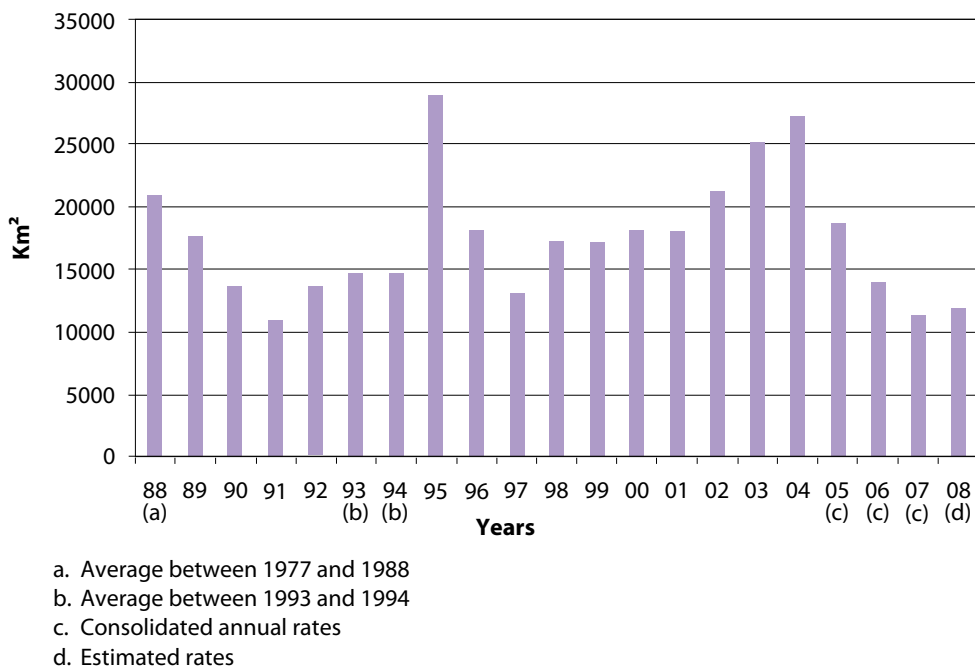


Figure 4.1 Rate of deforestation in the Brazilian Amazon (km²/year) 1988–2008.

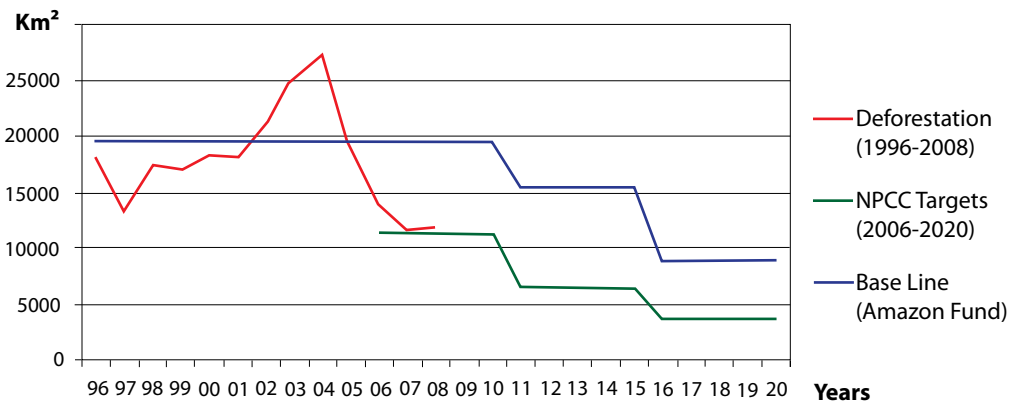
Source: INPE, 2008

Despite high rates of deforestation, Brazil has strict and ambitious legislation to preserve forest. Besides reserving 43% of the Amazon forest in protected areas (Soares-Filho *et al.* 2008), Brazil is one of only two Latin American countries that require landowners to retain a proportion of their property as forest, over and above riparian areas (Chomitz 2007).

Brazil has made significant progress recently in developing a national policy to curb deforestation in the Amazon. For example, in 2004 Brazil launched a National Action Plan to Prevent and Control Deforestation in the Amazon, which proposes territorial ordinance, environmental monitoring and control, and promotion of sustainable production. Brazil has also launched a National Plan on Climate Change (NPCC) that establishes, for the first time, a national target for reducing emissions from deforestation (80% reduction below the baseline of 19 500 km² by 2020) (INEGEF 2004). This Plan was announced at COP-14 in Poznań in December 2008 (Figure 2).

Finally, Brazil has set up the Amazon Fund to accept donations for compensating for reducing deforestation, and for investing in prevention and control. The Fund received its first donation from the Norwegian Government in 2008 and can be considered the most important large-scale REDD pilot programme in the world.

Considering this progress, there is now enormous potential for developing and implementing a more advanced REDD strategy. For this to be effective, however, it will be crucial to build political consensus amongst Amazon states for a REDD system that is environmentally effective, economically viable and socially equitable (Angelsen *et al.* 2009).



The red line shows the yearly rate of deforestation in the Brazilian Amazon. The green line shows the targets for reducing deforestation proposed by the Brazilian National Plan on Climate Change (NPCC). Targets will be revised every five years. The blue line shows the baseline for the Amazon Fund from 1996 to 2010 (average deforestation rate 19,500 km²). From 2010 to 2020, the blue line shows how, as proposed by the NPCC, this baseline is revised every five years.

Figure 4.2 Targets for reducing deforestation in Brazil

Drivers of deforestation (proximate and underlying)

The drivers of deforestation in the Brazilian Amazon have been studied extensively. Most researchers have sought to understand the drivers of deforestation, such as economic development and government policies to integrate far flung regions with the rest of the country.

Half a century ago, the occupation and ensuing deforestation of the Brazilian Amazon region was the result of an integrationist development model (Alencar *et al.* 2004) that sought to rapidly integrate the Amazon region with the rest of Brazil by investing in public infrastructure, such as hydroelectric power plants and mines. This model focused on the rapid opening and expansion of agricultural frontier areas and construction of highways, such as the Transamazonia (BR-230) and the Belém-Brasília. These crossed pristine Amazon forests connecting the southern part of Brazil with the northern state of Pará.

The investments in infrastructure triggered the growth of agribusiness, cattle ranching, timber extraction and mining (e.g. iron ore, bauxite, gold and other minerals). As a consequence, occupation of the Amazon region (and integration with the rest of the country) accelerated and had significant social and environmental effects. Multifaceted infrastructure projects and highly mechanised agriculture (i.e. soya and other commodities) are aggravating the current high rates of deforestation and forest degradation.

Deforestation in the Brazilian Amazon is inherent in the expansion of the agricultural frontier (Schmink and Wood 1992). According to Margulis (2003) there are three main forms of deforestation in the Amazon: conversion of forest into pasture for cattle farming, cutting and burning of forests for annual crops for small-scale household agriculture, and clearing of forests for grain production by agribusiness. Of these, conversion of forest to pasture accounts for over 70% of deforestation, although most pastures are not very productive (Margulis 2003; Alencar *et al.* 2004). Besides large-scale cattle ranching, grain production is also putting pressure on forest areas, encouraging further deforestation. Production of soya, driven by advantageous export markets for Brazilian agribusiness, is the main crop (Nepstad *et al.* 2001, 2002).

Investments in infrastructure, in particular in 'all weather' roads (Nepstad *et al.* 2001, 2002; Carvalho *et al.* 2001; Laurance *et al.* 2001), have supported the expansion of commodity production. Paved roads make agribusiness and exploiting timber economically viable (Soares-Filho *et al.* 2005) because they lower transport costs, making the region more attractive to new producers. This expands the agricultural frontier and stimulates timber extraction in the region, accelerating conversion of forests for agriculture and cattle grazing (Soares-Filho *et al.* 2005), and leading to large areas of fragmented forest. Deforestation in the Amazon has had drastic ecological and economic consequences, affecting ecological services, the regulation of climate, the risk of fire, and the livelihoods of local and traditional peoples amongst other things.

If future development follows the same path as in the past, cultivated areas will increase, boosting deforestation rates and the degradation of forest lands.

Scenarios

Amazon forests are a key, but poorly understood, component of the global carbon cycle. If, as anticipated, deforestation continues the drought that will result will accelerate climate change through carbon losses (Phillips *et al.* 2009).

According to Malhi *et al.* (2008), old-growth forests in Amazonia store 120 Pg (1.2×10^{17} g)¹ of carbon in their biomass. Through photosynthesis and respiration, they process 18 Pg of carbon annually (Malhi *et al.* 2000). This is more than twice the rate of anthropogenic fossil fuel emissions per year. Therefore, relatively small changes in Amazon forest dynamics could substantially affect the concentration of atmospheric CO₂ and thus the rate of climate change.

The Amazon Scenarios Project² used an empirically based, policy sensitive model of Amazon deforestation to compare the potential influence of protected areas (PAs) and other conservation approaches on future trends in Amazon watersheds, vegetation types (ecoregions), mammals and carbon emissions. The model was run for eight deforestation scenarios. The model produced annual map simulations of the effects of highway paving, PA networks, PA effectiveness, deforestation rates and maximum area of deforested land. The model stratified the Amazon Basin into 47 socioeconomic subregions and forecast deforestation rates for each.

The model showed that proximity to paved highways is the major factor in deforestation rates. The relationship between paved highways and deforestation was derived empirically from data on deforestation and paved roads for 432 counties in the Brazilian Amazon (Soares-Filho *et al.* 2006).

The project results are important because they show how economic and political forces are rapidly transforming the forests of the Amazon Basin. Expansion of the cattle and soy industries in the Amazon basin has increased deforestation rates and highways will soon push into the region (Kaimowitz *et al.* 2004). The model is being used to develop scenarios of the effects of frontier expansion on the populations and ranges of mammal and bird species, and on the aquatic ecosystems that are most sensitive to changes in land use. The scenarios will enable us to show the ecological and economic costs and benefits of current and alternative trajectories of frontier expansion. They will help raise public awareness of the tradeoffs and provide important information for planning.

1 Pg: petagram, an SI unit of mass based on the kilogram (10^{15} grams).

2 This project is supported by the Gordon and Betty Moore Foundation, by the Tinker Foundation, the National Science Foundation and USAID. Institutions participating in this research include the Amazon Environmental Research Institute (IPAM), Universidade Federal de Minas Gerais (UFMG), Brazilian Center for Weather Forecasting and Climate Studies (CPTEC/INPE), Boston University, Duke University, Virginia Polytechnic Institute and Yale University.

At one extreme of the eight scenarios is the ‘business-as-usual’ scenario (BAU), which assumes that recent deforestation trends will continue, highways currently scheduled for paving will be paved, compliance with legislation requiring forest reserves on private land will remain low and that new PAs will not be created (Soares-Filho *et al.* 2006).

At the other extreme is the ‘governance’ scenario which assumes that Brazilian environmental legislation is enforced across the Amazon Basin. Under this scenario the deforestation rate will fall over time, because of good land management, and because markets will emerge for carbon retained in native forests and on private land (owners who conserve forest on their properties).

The BAU scenario predicts that the Amazon forest (in all Amazon Basin countries) will contract from its current area of 5.3 million km² (85% of the area in 2003) to 3.2 million km² (53% of the area in 2003) by 2050. The governance scenario predicts that 4.5 million km² of forest will remain in 2050. Scenarios in between these two extremes indicate that simply expanding the Protected Areas network, even without firm enforcement, will reduce deforestation by 7% compared to the 2003 baseline. All conservation measures combined (but without PA expansion) account for 86% of the deforestation that would be avoided in the ‘governance’ scenario. An expanded network of PAs, effectively implemented, would account for half the reduction in deforestation.

By 2050, under the BAU scenario, 32 ± 8 Pg of carbon would be emitted, equivalent to four years of current annual emissions worldwide, in contrast to 15 ± 4 Pg under the governance scenario (Soares-Filho *et al.* 2006). The challenge facing conservation in the Amazon forest is to find ways to redirect political and economic forces towards this second, sustainable scenario, so as to conserve most of the forest for centuries to come.

Achieving the governance scenario in the Amazon forest will require new advances in our understanding of the complex links between human activities, such as deforestation, logging and agriculture, climate and rainfall patterns, fire dynamics and their effect on ecological variables.

REDD initiatives

The summary of the most important REDD initiatives in Brazil are:

a. The Amazon Fund

The Amazon Fund is a Brazilian Government initiative to reduce emissions from deforestation and forest degradation. The main objective is to raise money for projects that combat deforestation and promote conservation and sustainable use of the Amazon biome. Additionally, up to 20% of the Amazon Fund may support the development of forest monitoring and control systems in other Brazilian biomes or other tropical countries.

The Amazon Fund is a private fund (i.e. not a government fund) managed by the Brazilian Development Bank (BNDES) according to guidelines and criteria set by a steering committee that includes representatives from federal and state governments, NGOs, social movements, indigenous people, scientists and industries. A scientific board will examine the data on reductions in deforestation rates and on avoided emissions and attest to results.

New donations are related to the reducing of deforestation in the Brazilian Amazon.

The Fund is seen as a fundamental tool for achieving the goals of the National Plan on Climate Change (NPCC), especially the goal of sustainably reducing deforestation rates and stopping the loss of forest cover by 2015. The Fund will contribute to the achievement of NPCC Goal 4: reduction of the deforestation rate by 40% in the period 2006–2009, as compared with the average deforestation rate in the period 1996–2005, and a further 30% reduction in the two following quadrennial periods.

The carbon emission reduction estimates used by the Fund are a function of:

1. The annual deforestation rate as measured by the National Institute for Space Research (INPE);
2. The average historical deforestation rate; and
3. Estimates of the forest carbon stock (as determined by the Brazilian Forest Service).

Data and calculations will be validated annually by the Amazon Fund Technical Committee, composed of qualified experts from the scientific and technical community appointed by the Minister of Environment upon recommendations from the Brazilian Climate Change Forum.

Amazon Fund calculations take 100 tC/ha (tonne of carbon per hectare) of biomass as corresponding to 367 tCO₂e/ha (tonne carbon dioxide equivalent per hectare). This is an extremely conservative reference value compared to values in the literature (130 to 320 tC/ha), but adequate for the Fund's simplified computation method.

Because the agricultural frontier is moving towards forests containing larger amounts of biomass, a review of the Fund's reference value may be required. This could be done by comparing maps of deforestation, compiled from National Forest Inventory data, with maps of biomass density, also compiled from National Forest Inventory data. Each forest polygon could thus be assigned a carbon density parameter measured in tonne of carbon per hectare. This should make the annual estimation of avoided carbon emissions more accurate.

For more information:

www.mma.gov.br/estruturas/sfb/_arquivos/amazon_fund_brazil_2008_95.pdf
www.bndes.gov.br/fundoamazonia/default.asp

b. The Bolsa Floresta Programme

Location: Amazonas State

The Amazonas Sustainable Foundation (*Fundação Amazonas Sustentável* - FAS) is responsible for implementing the *Bolsa Floresta Programme*, which values and compensates traditional populations and indigenous people for their roles as forest guardians in conservation. *Bolsa Floresta* is the first Brazilian programme to pay for environmental efforts by local Amazon communities to reduce greenhouse gas emissions caused by deforestation and to improve livelihoods under the Amazonas State Law of Climate Change, Environmental Conservation and Sustainable Development (June 2007). The programme was developed with strong participation by communities as well as government and nongovernment institutions. The goal of *Bolsa Floresta* is to make forests more valuable standing than cut.

In June 2009, *Bolsa Floresta* extended to 14 protected areas and 6050 families. There are four types of *Bolsa Floresta* sub-programmes. Each has a beneficiary, a value, a form of payment and is intended for a specific use:

1. **Family:** Each family receives a monthly payment of R \$50 (2 Brazil Reais = US \$1) by Bradesco Visa card. This is a payment for environmental services.
2. **Association:** All communities in conservation areas are represented by families' associations that are eligible for grants of 10% of the total payments made to individual families belonging to the association. The payments are made directly to the association or through a local commercial credit facility. The use of the grants is based on a budget discussed and approved with the participation of the families.
3. **Social grants:** FAS provides a small grant for local social activities or works for the communities. These small investments complement state and local government programmes. Families are eligible for small projects of up to R \$4000 per community (average 11.4 families per community). Grants are paid directly to associations or through local commercial credit facilities. Projects must harmonise with sustainable practices in the other types of *Bolsa Floresta* programmes.
4. **Income:** All communities are eligible for a local investment plan of about R \$4000 per community to encourage activities that generate income but do not cause deforestation. Activities must fulfil certain legal requirements. Income can be in the form of direct grants to associations or credit through a local commercial facility.

For more information:

www.sds.am.gov.br/programas_02.php?cod=5856299

c. REDD Among Smallholders in the Brazilian Amazon

Location: State of Pará, Brazil



Transamazon Highway, City of Pacajá, Pará State, Brazil (© IPAM)

This project is being developed by the Amazon Environmental Research Institute (IPAM)³, the Living, Produce and Preserve Foundation (FVPP)⁴ and the Brazilian Fund for Biodiversity (FUNBIO)⁵, to a group of 350 small producer families in the zone of influence of the Transamazon Highway, from the municipalities of Senador José Porfírio, Anapu and Pacajá (Pará State).

In the Brazilian Amazon, REDD can create incentives for smallholders to keep forest standing. REDD projects can stimulate investments in building technical capacity and infrastructure, and help change extensive slash-and-burn cultivation to more efficient intensive production in smaller areas, lessening deforestation.

³ www.ipam.org.br

⁴ www.fvpp.org.br

⁵ www.funbio.org.br

The project will be implemented at the ProAmbiente Transamazon Pole and funded by the Amazon Fund. The goal is to provide incentives to communities of smallholders to retain forest by:

- **Payment for opportunity costs.** Each family will receive payments in proportion to the value of the area that will not be deforested. The Project considers a mix of 85% cattle and 15% agriculture in this area. Payments average R \$182.50/ha/year and are based on a deforestation rate of 4.8% year (calculated by averaging the deforestation rate between 1998 and 2008) and an interest rate of 10%.
- **Transition Investments.** These investments will be more important than the opportunity costs, because they will drive changes in regional development. The investments will encourage good agricultural practices, monitoring and the expansion of infrastructure.

The amount of CO₂e per hectare in the forest, 462.42 tCO₂e, is calculated as 126 tonne multiplied by 3.67 (IPCC, 2003). Based on this value, each property will avoid emitting 8 962.72 tCO₂e over 10 years. In total, the 350 families will avoid emitting 3 136 953.73 tCO₂e. This makes the cost of avoiding a tonne of CO₂e, R \$10.82 or US \$5.41 (US \$1 = R \$2,00).

For more information:

<http://www.ipam.org.br/biblioteca/livro/id/110>



Antonio José, smallholder (© IPAM)

d. Registry of Social-Environmental Responsibility in the Xingu River Headwaters Region (RSRX): the potential for REDD⁶

Location: Mato Grosso State, Brazil



Xingu River, Brazil (© IPAM)

In the Xingu River headwaters region, Mato Grosso State,⁷ in the southwest of the Amazon ecosystem (Figure 4.3), the expansion of profitable soy and cattle production scattered around the Xingu Indigenous Park (a national park where 14 indigenous groups live) is representative of the reality along the Amazon agricultural frontier. Private properties cover one-quarter of the Amazon forest and up to 50% of the state of Mato Grosso, the Amazon state with the highest deforestation rates and which is the biggest agricultural producer in the country.

⁶ This section has been prepared by IPAM in collaboration with Aliança da Terra.

⁷ In the state of Mato Grosso, as in the rest of Brazil, most greenhouse gas emissions come from changes in land use, deforestation and agricultural activities. Currently, approximately 97% of the emissions from this State result from these activities. In this scenario, climate change policies must focus on combating deforestation.

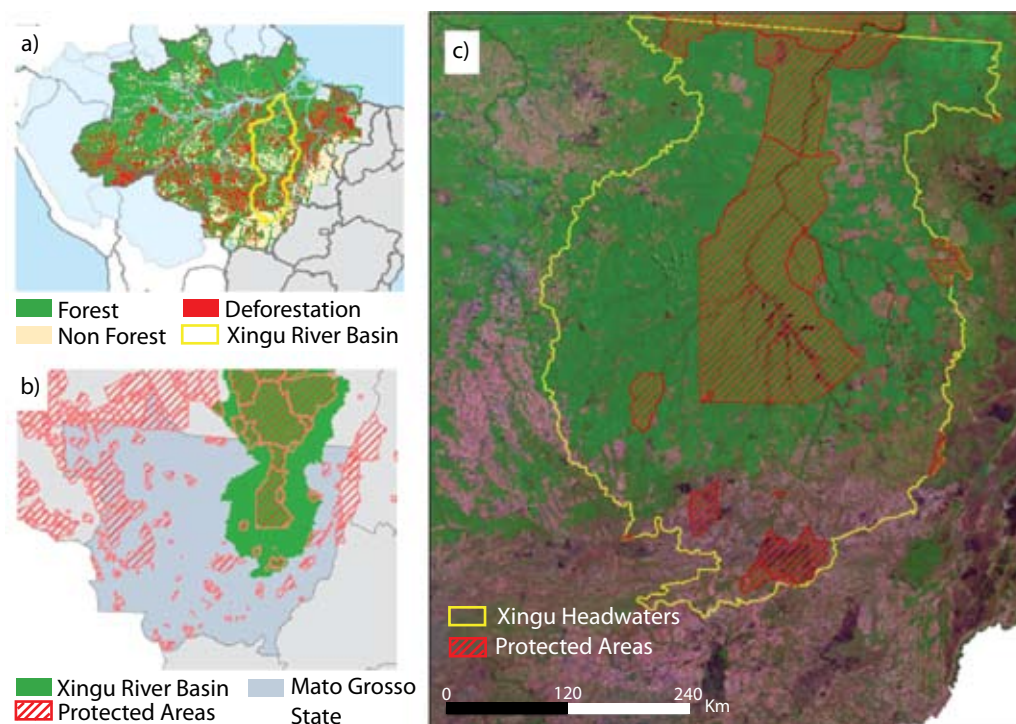


Figure 4.3 Xingu Region location. a) The Xingu River basin is delimited by the yellow line. b) Xingu headwaters in dark green. Forested areas of Xingu headwaters in green, deforested areas in pink. c) The Xingu Indigenous Park delimited in yellow.

Source: Stickler *et al.* 2008

The Registry of Social-Environmental Responsibility, coordinated by IPAM and Aliança da Terra⁸ provides in-depth, field diagnoses of individual properties, establishes a timetable for improving land management and monitors progress. During its first two years, the RSRX diagnosed almost 70 properties with a total area of more than 1.7 million hectares, approximately half of which is forest. The goal of RSRX is ‘to stimulate agricultural production under an environmental and social basis’. This includes identifying and prioritising good land stewardship practices and, at the same time, assisting responsible farmers and ranchers to resolve conflicts between production and environmental and social protection.

The avoided emissions resulting from RSRX in the Xingu River Headwaters were calculated using the historical trend of deforestation from 1997 to 2007, with 2007 as the baseline for the carbon stock of the vegetation in all properties registered (1.4 GtCO₂e – gigatonne carbon dioxide equivalent). From 2000 to 2007, the deforestation rate in the headwaters of the Xingu River ranged from 650 to 3170 km² per year (average 1950 km²) reaching a peak in 2003 (Stickler *et al.* 2008). Carbon emissions associated with deforestation in this seven-year period ranged from 2.5 million tonne carbon to

8 <http://www.aliancadaterra.org.br/>

18.5 million tonne, with a peak in 2004 and the lowest in 2007. The average annual carbon emission was 10 million tonne.

A SimAmazonia⁹ deforestation simulation (Soares-Filho *et al.* 2006) estimated deforestation in the Xingu region in 2017 with and without (business-as-usual scenario) the RSRX. In the business-as-usual scenario, expansion of agricultural activities would be expected to take place in the same way and at the same rate as it has historically (1997–2007). The scenario under RSRX contrasts with this historical picture.

The difference between the emissions under the two scenarios represents the avoided emissions resulting from RSRX (245 MtCO₂e). The emissions avoided in the RSRX in the Xingu River headwaters by 2017 amount to more than the total emissions by Mato Grosso State in 2006 (approximately 216 MtCO₂e, estimated by the authors using the same methodology as the nationally reported emissions of greenhouse gases). Given the average of 80 tonne of carbon per hectare in the Xingu River headwater regions (293 tCO₂eq per hectare) this means that the RSRX will avoid the deforestation of 683 000 hectares of forest.

The RSRX could contribute to climate change mitigation and could be an important strategy in the State Plan of Deforestation Control that Mato Grosso is now developing. The potential of RSRX is enormous considering that the properties currently registered cover only 1% of the total area of the State.

For more information:

<http://www.ipam.org.br/biblioteca/livro/id/110>

e. The Juma Sustainable Development Reserve Project: reducing greenhouse gas emissions from deforestation in Amazonas, Brazil

Location: Juma Reserva, Amazonas State, Brazil.

The ‘Juma Reserve RED Project’ is being developed by the Amazonas Sustainable Foundation (*Fundação Amazonas Sustentável* – FAS) in partnership with the State Secretariat for the Environment and Sustainable Development of Amazonas (*Secretaria do Meio Ambiente e Desenvolvimento Sustentável do Amazonas* – SDS) and Marriott International, with technical assistance from IDESAM (*Instituto de Conservação e Desenvolvimento Sustentável do Amazonas*). The project was validated with Gold Status under the CCBA Standards (Climate, Community and Biodiversity Alliance) audited by TÜV-SÜD, which will also validate the project for the VCS (Voluntary Carbon Standard).

The deforestation simulation model used by this project was SimAmazonia I, one of the most refined models for the Amazon region. SimAmazonia I was designed by

⁹ <http://www.csr.ufmg.br/simamazonia/>

the programme 'Amazon Scenarios', headed by the Amazon Environmental Research Institute (IPAM), the Federal University of Minas Gerais and the Woods Hole Research Center (WHRC). This model indicates that there will be major deforestation in the near future, which could result in a loss of up to 30% of Amazonas State forest cover by 2050. If concrete measures to prevent deforestation are not taken, deforestation in the protected areas of the State of Amazonas could emit close to 3.6 billion tonne CO₂ into the atmosphere.

The Juma Reserve contains 589 612 ha of Amazonian forest near the BR-319 highway, and is also crossed by the AM-174 highway. The State Government of Amazonas created the reserve as an economic mechanism to generate financial compensation from activities that reduce emissions from deforestation (RED). With the funds raised from the sale of credits for reducing emissions the State Government will put in place measures to control and monitor deforestation in the project area, enforce the law and improve the welfare of local communities.

In addition to the climate change mitigation benefits associated with reduced greenhouse gas (GHG) emissions, the project expects to generate social and environmental benefits in the project area from:

1. Strengthening environmental monitoring and control;
2. Generating income by promoting sustainable businesses;
3. Community development, scientific research and education; and
4. Direct payment for environmental services (e.g. the *Bolsa Floresta* programme).

A share of project funds will be paid directly to traditional communities that live in the Juma Reserve for environmental services through *Bolsa Floresta*.

For more information:

www.katoombagroup.org/documents/events/event22/PDD_Juma_Reserve_REDD_project.pdf

f. Guaraqueçaba Climate Action Project

Location: Atlantic Forest, Southern Brazil, Guaraqueçaba Environmental Protection Area

This REDD project seeks to restore and protect approximately 50 000 acres (about 20 200 ha) of tropical forest in the Guaraqueçaba Environmental Protection Area in southern Brazil, over 40 years. The project combines afforestation, reforestation and avoided deforestation, and is a collaborative effort by the Nature Conservancy, American Electric Power, General Motors, Texaco and *Sociedade de Pesquisa em Vida Selvagem e Educação Ambiental* (SPVS), the Conservancy's partner organisation in Brazil.

The United Nations Economic and Social Organization (UNESCO) recognises Brazil's Atlantic Forest as a high priority for conservation and has designated it a World Biosphere Reserve. Today, the Guaraquecaba Environmental Protection Area is the largest contiguous remnant of Atlantic Forest and home to at least 15 species of globally endangered birds. But, today, the Atlantic Forest extends to only seven per cent of its original size and the remaining areas, including the project area, are under imminent threat of deforestation.

Preliminary estimates indicate that the total carbon benefit of the project, generated through a series of activities, will be significant:

1. **Reforestation and forest regeneration.** The project includes the purchase of approximately 50 000 acres of land in the Guaraquecaba region. Deforested and degraded areas in the acquired lands will be reforested with native species.
2. **Protection and sustainable management of existing forests.** Activities to protect forest and improve management will be carried out throughout the project area.
3. **Other benefits** include sustainable development, helping local residents balance economic activities with better forest management.

For more information:

<http://www.nature.org/initiatives/climatechange/work/art4254.html>

g. Suruí Carbon Project¹⁰

Location: Southwest of the Brazilian Amazon, states of Rondonia and Mato Grosso, 'Sete de Setembro', indigenous land of the Surui people

The overall objectives of the Suruí Carbon Project are to reforest indigenous land and sequester carbon. The goals are to restore 1500 ha of deforested land in indigenous territory by reforesting with native species, and to protect the 240 000 ha of ancestral land still covered by intact tropical forest from illegal logging and expansion of the agricultural and ranching frontier.

In addition to sequestering carbon, the project will also help to protect local biodiversity, contribute to the sustainable development of indigenous land, and strengthen local capacity and authority to manage natural resources and ecosystem services. It will also set up a technology centre on indigenous land.

In addition to reforestation, there is a lot of potential for generating carbon credits from avoided deforestation. The project design document (PDD) was developed according to Voluntary Carbon Standard (VCS) and Climate, Community and Biodiversity (CCB) project design standards.

¹⁰ This information is to be completed through interviews with the indigenous people responsible for the project and the incubator of the project. For overview information please see http://www.overbrook.org/newsletter/03_09/pdfs/env/Katoomba_Group.pdf

h. Temb 

Location: Indigenous land of Alto Rio Guam , northwest of Par  State

This project is being proposed by the Temb -t n   har indigenous people of Alto Rio Guam  in partnership with C-Trade. The indigenous land is considered by the National Foundation for Indigenous People (FUNAI) to be some of the most threatened in Par  State. Without a permanent source of income, the indigenous people have few economic options but to sell timber.

For each hectare of preserved native forest, it is estimated that the release of 4 tonne of CO₂ will be avoided. Because of this, conservative projections predict a financial return of R \$1 million annually, which will be split 85% to the associations and 15% to C-Trade.

It is estimated that the indigenous land contains an average of 145.4 tonne of carbon per hectare. This is a huge volume, which makes the indigenous people important guardians of the standing forest and of the climate. According to IPAM, the 279 ha of indigenous land contains approximately 40.8 million tonne of carbon in this indigenous land of 279 hundred ha.

i. Genesis Forest Project – reducing greenhouse gas emissions from deforestation and degradation in the State of Tocantins, Brazil

Location: District of Taquarussu, State of Tocantins

The Genesis Forest Project is situated in the Brazilian Savannah region (*Cerrado* in Portuguese), Brazil's second largest biome after the Amazon Rainforest, which is considered one of 25 global biodiversity 'hotspots'.

The project area lies in the Serra do Lajeado Protected Area and to the south of the Serra do Lajeado State Park, both important protected areas. Given this conservation context, part of the REDD project area (57.4%) will be transformed into a Natural Heritage Private Reserve, which will serve as a refuge for local fauna, increasing the size of the protected area mosaic and connecting forest fragments.

Project activities will align with and be backed by initiatives of the Centre for Biodiversity Learning and Climate Change – *Centro Ecotropical*, conceived by the *Ecol gica* Institute. Without project intervention, conserving forests and reducing deforestation would be compromised as the land is used for subsistence agriculture and pasture for ranching.

In the absence of the project, over 20 years of deforestation in the project area would reach 143 ha (million hectares), releasing 57 389 tonne CO₂ into the atmosphere.

The goal of the project, in a broader sense, goes beyond the conservation of savannah forest fragments alone. It seeks to spread new practices that promote a new paradigm of

production and conservation for the region. It is hoped that conservation activities will help people avoid deforestation in the project area, reducing emissions to somewhere around 2148 tCO₂e.

Issues for the design and implementation of REDD projects in Brazil

Brazil's national policy on climate change has set targets for reducing deforestation. To implement this policy, Amazon states are developing plans to combat deforestation through specific strategies, including amongst many alternatives, project based initiatives. To contribute effectively to the fight against deforestation, these projects must meet the following objectives:

- Shared responsibility;
- Compensation payments;
- Right to receive resources from compensation;
- Equitable distribution of benefits;
- Additionality in effort;
- Transparency;
- Right to access information and effective participation; and
- Respect for the local population, indigenous people and the rights of traditional communities.

Major technical parameters for putting REDD into practice (such as methods for defining baselines and carbon stocks) must be set at the national and/or state level, not at the project level. Another fundamental issue is a model for distribution of benefits that allows states with different deforestation levels to benefit from resources generated by REDD. To deal with this, a model for distributing benefits based on the premises of the 'Stock Flow with Targets' proposal (Cattaneo 2008) was generated. This model considers a combination of three criteria for sharing financial benefits equitably amongst Amazon states:

1. The opportunity cost related to reducing deforestation as already calculated by IPAM and the Woods Hole Research Center (WHRC) in their REDD report launched at COP-13, in Bali (Nepstad *et al.* 2007);
2. Compensation for forest conservation that takes into account the estimated cost of managing protected areas in the Amazon (Amend *et al.* 2008); and
3. Compensation to those states that demonstrate achievement of their deforestation reduction targets.

The rationale for choosing these three criteria is to guarantee a fair and equitable compensation for both states with high historic deforestation rates (Mato Grosso, for example), and states with low deforestation rates but which are making significant efforts to conserve forests (such as Amazonas).

Research priorities to support REDD

To demonstrate transparent, verifiable and measurable REDD results projects will need to adopt the right strategies. The main issues and methodologies that should be considered in implementing a REDD project are described below:

Historical deforestation rates

Analysing deforestation dynamics in proposed project areas and calculating average deforestation rates are crucial in determining 'business-as-usual' scenarios and, hence, the effect projects are likely to have. It is very important to be able to monitor whether or not deforestation rates decline as the result of a policy, projects to avoid deforestation or growth of vegetation. In Brazil, the loss of forest can be estimated from data obtained from satellite images, available at the National Institute of Spatial Research (INPE) website (<http://www.obt.inpe.br/prodes/index.html>).

Baselines

Normally, Brazil uses the national/regional historical rate of deforestation as a baseline because the historical data is good. Any reduction in the rate of conversion of forest can be measured. In other countries where historical data is not so accurate or not available, models can be used to predict how an area might look in the future (a good example is the SimAmazon project www.csr.ufmg.br/simamazonia/). Regardless of the model chosen, the baseline must be reviewed from time to time, and more and more ambitious targets to reduce emissions must be adopted.

Carbon stocks

Models and research that were developed to estimate the carbon stock in the Amazon (Fearnside 1997; Soares-Filho *et al.* 2006; Saatchi *et al.* 2007) find values that go from 60 to more than 200 tonne of carbon per hectare for the many kinds of forest in the region. For regional projects, however, it is necessary to take local characteristics into account and make more precise analyses.

Opportunity costs

One of the crucial issues for REDD projects is to determine the methodology for calculating the opportunity costs of the land. The REDD Among Smallholders in the Brazilian Amazon Project defined the opportunity cost of the land as the income that can be generated by productive activities (extensive cattle ranching and slash-and-burn agriculture) that communities would renounce in order to keep their forest standing (IPAM 2009).

- For indigenous land, however, this logic cannot be applied, making it necessary to find another method to value the carbon stock;
- In big rural properties the minimum compensation for renouncing deforestation can be easily determined in the same way as for smallholder properties;

- Leaving the forest standing should be as economically attractive as the activities that would take place in cleared areas.

Using data on the average profitability of each hectare and the concentration of CO₂, it is possible to calculate a minimum opportunity cost for a tonne of CO₂ and hence the amount of compensation to be paid to producers.

Monitoring

Brazil counts on satellite data produced by INPE, which is free and available to anyone, to monitor the loss of carbon stocks (www.obt.inpe.br/prodes/index.html). In addition to satellite monitoring, projects can monitor carbon *in situ* with the participation of local stakeholders. Participatory monitoring can be a crucial tool because it allows stakeholders to directly participate in maintaining the forest, boosting the sense of responsibility of the people involved and reducing the risk of failing to meet targets.

Verification

Independent parties should verify REDD projects periodically to confirm that deforestation rates have fallen. These independent audits are important because they guarantee certification.

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Chapter 5

Indonesia

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Introduction

With nearly 100 million hectares of state forest, Indonesia has the world's third largest area of tropical forest after Brazil and the Democratic Republic of Congo, and the fourth largest carbon stock globally (8% or 8800 MtC (million tonne carbon)).¹ Indonesia's current emissions from deforestation and peatlands make it the third largest emitter of carbon after the United States and China, and the second largest emitter of forest-related carbon (597 MtCO₂/year) amongst high carbon-stock countries.²

Projections of continuing losses of forest cover in production forest areas suggest that an additional 14 million ha, or 39% of presently forested production forests, will be lost (under business-as-usual projections) by the year 2030 (IFCA 2008). Based on a conservative estimate for the market price of carbon dioxide emissions avoided of US \$4 per tonne, the 14 million ha would potentially sequester carbon to the value of about US \$11.5 billion (IFCA 2008).

In addition, Indonesia is very biodiverse and has set aside over 22.6 million ha to protect biodiversity and ecosystems (IFCA 2008). The total change in forest cover in protected areas was 127 481 ha between 2000 and 2005. Losses in conservation forests were fairly stable, but losses in protected forests increased steadily from 4751 ha in 2000–2001 to 39 995 ha in 2004–2005.

The potential for reducing carbon emissions from Indonesian forests is, therefore, significant. Measures to reduce emissions from deforestation and forest degradation (REDD) are likely to be implemented and will have a significant impact. The purpose of this paper is to identify scenarios for the design of REDD in Indonesia. These help us to understand the potential effects of REDD governance on the livelihoods of local people. To the extent possible given their rapidly changing nature, the paper also summarises current REDD developments.

Since at least 2007, Indonesia together with a multitude of partners has invested tremendous efforts in preparing for REDD. Authoritative reports on the feasibility and design of REDD have been produced (MoF 2008; IFCA 2008) and experience in REDD

1 Percentage of global carbon stocks in Brazil 55%, DRC 21% and China 11% (Strassburg *et al.* 2008, cited in Cattaneo 2008, 5).

2 Brazil 1183, DRC 246 and China 767 (Strassburg *et al.* 2008, cited in Cattaneo 2008, 5).

pilot projects is accumulating on the ground. This paper acknowledges the important foundations laid by this work. The scenarios we present, drawing on aspects of current initiatives, illustrate possible governance and livelihood results of REDD.

Current REDD and REDD-related initiatives in Indonesia

REDD demonstration sites are currently being developed in at least a dozen locations in Indonesia and will inform and set precedents for the REDD projects that will follow. This section provides an overview of national policies, demonstration projects and donor assistance in support of REDD. As developments are evolving rapidly, it should be noted that this overview was prepared in June 2009. Readers are encouraged to contact the projects concerned directly for more up-to-date information.

Indonesia has been one of the global leaders in establishing REDD pilot projects, working groups and policies. It has hosted two large-scale demonstration sites in Central Kalimantan and Aceh, in addition to dozens of smaller initiatives. The Indonesia Forest Climate Alliance (IFCA)³ was formed in July 2007 in preparation for the *United Nations Framework Convention on Climate Change* (UNFCCC) Conference of the Parties (COP-13) in December 2007 in Bali. The Alliance has produced two important, major reports (IFCA 2008; MoF 2008) and serves as a forum for stakeholder communication. At the December 2007 UNFCCC meeting, the Ministry of Forestry (MoF) presented Indonesia's REDD roadmap. In 2008, the government established an 18-member, cross-ministerial National Climate Change Council (Dewan Nasional Perubahan Iklim or DNPI) to coordinate mitigation efforts (Annex 5A).

A core group of donors provides financial and technical support to national level processes. This group includes the World Bank, the UK Department for International Development (DFID), the Australian Government Overseas Aid Program (AusAID) and Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ).

Policy

On 1 May 2009, the MoF passed a regulation on Procedures for Reduced Emissions from Deforestation and Forest Degradation (REDD) (Permenhut 30, Menhut II/2009), as part of the REDD national framework. This decree is the first of its kind in the world. The policy sets out an extensive list of potential participants, from managers of community forests to those who hold timber or ecological restoration concessions. It stipulates the categories of forest land where REDD projects are authorised, sets out various procedures to establish a REDD project, and defines the roles and responsibilities of national and international project proponents. The decree says little about the responsibilities of the Ministry, or cross-sector coordination. It does, however, allow for local government to participate in approving REDD projects, except in decisions concerning officially designated Forest Management Units (KPHs).

3 See <http://www.dephut.go.id/INFORMASI/LITBANG/IFCA/IFCA.htm>; http://www.forda-mof.org/uploads/File/climate%20change/REDD%20PPT/Indonesia_REDD_RPlan_FCPF_Panama_11Mar09-1.pdf; or <http://redd.pbwiki.com/>

The Indonesian Government is in the process of establishing a new national Forest Resources Information System (FRIS) and National Carbon Assessment System. Key forest land uses have been classified as follows (IFCA 2008):

- Conversion of forest oil palm plantations;
- Change of forest use to pulp and paper production;
- Production natural forest;
- Protected area management (*hutan lindung* and *kawasan konservasi*, ecological restoration concessions); and
- Peatlands.

However, ongoing tensions between the centre and the districts over responsibilities for forest management, jurisdiction and governance will affect how REDD is implemented.

REDD activities

Specific activities supporting the development of REDD are outlined below, drawing directly from Kieft and Heikens (2009) and related project documents.

a. Indonesia-Australia Forest Carbon Partnership

The Indonesia-Australia Forest Carbon Partnership supports strategic policy dialogue on climate change, strengthens Indonesia's carbon accounting capacity (including support for FRIS), and identifies and implements incentive-based REDD demonstration activities. AusAID provides AUD \$30 million for the Kalimantan Forests and Climate Partnership (KFCP) and a AUD \$10 million bilateral package of support for Indonesia on forests and climate.

KFCP established the country's first large demonstration site on 100 000 ha of a single peat dome in Central Kalimantan. Initial work will avoid deforestation of 50 000 ha of peat swamp forest and rehabilitate an additional 50 000 ha of degraded peatland to create a buffer around the existing forest and reduce further degradation. With a funding target of US \$100 million, the KFCP ultimately seeks to preserve up to 70 000 ha of Kalimantan's peat swamp forests and to re-flood, rehabilitate and reforest 200 000 ha of degraded peatland. The large mining corporation BHP Billiton is a partner in the project.

KFCP will:

- Prevent fires, and restore and protect existing peatland forests;
- Develop alternative livelihoods for forest-dependent communities;
- Develop and implement appropriate systems for monitoring, measuring and accounting for greenhouse gas (GHG) emissions, including developing and providing (through satellite monitoring and ground checking) data for baselines and for ongoing measurement of emissions and removals;

- Implement equitable and accountable payment mechanisms that link payments to key stakeholders (at national, provincial, district and community level) with performance-based outcomes; and
- Support research and capacity building.

In November 2008, Indonesia and Australia agreed to develop a second REDD demonstration activity to test different aspects of REDD. A site in Papua was being considered in mid-2009.

b. Ulu Masen Ecosystem

The Ulu Masen Ecosystem Project, Aceh, developed by the Government of Aceh, Fauna and Flora International and Carbon Conservation, an Australian-based carbon broker, was one of the first REDD pilot projects in Indonesia to take a voluntary market approach. In 2008, the US states of California, Illinois and Wisconsin signed an agreement with Aceh to purchase carbon credits, and Merrill Lynch committed to investing US \$9 million over the first four years.

The 750 000 ha project is expected to offset 3.369 million tonne/year or about 100 million tonne of CO₂ emissions over the next 30 years, the equivalent of 50 million flights from London to Sydney. The Ulu Masen Ecosystem was the first REDD project in a developing country to meet Climate, Community and Biodiversity (CCB) standards, and acquired certification in February 2008. The project's activities are predicted to reduce deforestation of the Ulu Masen forest by 85%.

The key components of the carbon financing deal include a prepayment for exclusivity, a guaranteed offtake agreement for carbon credits over the first four years, a call option for further carbon credits over six years, incentives for all parties to ensure alignment of objectives and an upside sharing agreement. The financing resulting from this deal included a guaranteed US \$9 million, with a ceiling contingent upon the volumes and value of carbon credits and ecosystem benefits transacted over the 30-year project lifetime (Merrill Lynch 2008).

Proposed activities are to:

- Strengthen land tenure and resource access of forest-dependent communities and those with customary rights;
- Strengthen forest management, forest governance and forest law enforcement processes at provincial, district and *Mukim* (subdistrict) levels;
- Establish legal and regulatory frameworks for trade in carbon rights and carbon credits;
- Develop land use plans at the provincial, district and *Mukim* levels, including rezoning conversion forest to protection forest or limited production forest as appropriate, and identifying land for community forest management, reforestation and community agroforestry;

- Develop and test mechanisms to ensure equitable and transparent distribution of benefits from carbon trading through consultation with stakeholders;
- Support the development of community forestry, agroforestry and other livelihood initiatives;
- Develop capacity for carbon accounting and monitoring;
- Determine, based on historical trends in comparable areas, baseline rates of deforestation and forest degradation.

Some concerns have been raised about the extent to which the carbon in the Ulu Masen forest has been accurately assessed.

c. BMZ FORCLAIM project

The BMZ German Government FORCLAIM project, implemented by KfW/GTZ, seeks to reduce GHG emissions in the forest sector whilst improving living conditions for the rural poor, through forest conservation and sustainable forest management. Project sites at the district level were being reviewed in early 2009, including two to four districts in the ‘heart of Borneo’ in East and West Kalimantan, including the district of Malinau.

d. JICA pilot projects in Sumatra

The Japan International Cooperation Agency (JICA) is working on pilot projects in Sumatra. These small-scale projects in South Sumatra and Jambi are mostly in peat swamp areas in Berbak National Park, in the Jambi coastal zone. JICA also provides support for developing a national carbon accounting system. This will be based on satellite imagery and linked to the pilot projects for ground truthing.

Other voluntary initiatives include:

e. New Forests Initiative, Papua

The Government of Papua Province and New Forests, an Australian voluntary market company, are collaborating in the New Forests Initiative, Papua, facilitated through Emerald, a Bali environmental consultants/project development agency. The parties are assessing three project areas ranging in size from 300 000 ha to one million ha.

f. PT Rimba Makmur Utama (RMU), Central Kalimantan

RMU is working on a concession for which it is proposing an environmental service permit. The area is located in Katingan District.

g. PT Global Eco Rescue (GER)

PT Global Eco Rescue (GER) is working on a voluntary market initiative in the Malinau District (overlaps with GTZ project area). The GER project consists of 325 000 ha of

forest with a possible extension to over 2 million ha. A memorandum of understanding has been signed between the district government and GER. GER has submitted a request for a permit to the MoF.

h. The Nature Conservancy (TNC)

The Nature Conservancy (TNC) is designing a district REDD programme in Berau, East Kalimantan, building on an existing integrated development and conservation programme.

i. Flora-Fauna International—Macquarie Group Carbon Initiative

Indonesia is the major focus for the Flora-Fauna International—Macquarie Group Carbon Initiative. Three projects are currently being developed to get local and national support for the preservation and sustainable management of forest landscapes ranging from 57 000 ha to 500 000 ha.

j. Greenpeace REDD activities in Papua

Greenpeace is working with partners on two REDD activities in Papua. The Papua Forest Fund, a non-offsets fund to provide REDD funds to forest conservation in Papua, and a pilot REDD project in Sorong Selatan as part of a community forestry effort.

k. Other initiatives

Other initiatives are mostly in the initial stages of development: World Wide Fund for Nature (WWF) Kampar peninsular (scoping); WWF Sebangau; Leuser Foundation. JP Morgan is working with the Center for International Cooperation in Sustainable Management of Tropical Peatland (CIMTROP) on proposal to include a reduced peatland emission approach in the CDM (Clean Development Mechanism). The Indonesian Government is reportedly undertaking four forest projects in South Kalimantan, South Sulawesi, North Sumatra and Southeast Sulawesi.

l. Other assistance

Other assistance is being provided by a number of donors and agencies. The World Bank played a key role in coordinating the Indonesia Forest Climate Alliance (IFCA). In March 2009, Indonesia was admitted to the second tranche of countries to participate in the Forest and Carbon Partnership Facility, which would make it eligible for readiness support. Indonesia has reportedly skipped the Readiness Plan Information Notes (R-PIN) stage and has prepared a draft R-Plan (Readiness Plan). However, the Forest Carbon Partnership Facility (FCPC) has not yet disbursed the funds necessary to provide incentives. The World Bank foresees that, in the case of Indonesia, the Bank's Climate Investment Fund would be a key vehicle for supporting REDD. Eligible activities could include transferring agriculture to non-forest lands, restoring degraded forests, protecting forests against fires and building capacity for better forest management. The Fund could

also finance industry restructure, such as reallocating planned palm oil developments from peatland soils to mineral soils, closing sawmills/plywood mills and developing alternative employment for households depending on timber processing facilities.

In March 2009, Indonesia was amongst the five nations granted US \$18 million in UN pilot funding for REDD capacity building. The funds will be used to help build national capacity to slow deforestation rates, including monitoring forest, developing consultative processes for engaging indigenous people and forest communities, and building capacity in national institutions.

The Japanese and French governments have provided a programme loan of US \$500 million (US \$300 million from Japan and US \$200 million from France). The loan is managed by the Japan Bank for International Cooperation (JBIC). The programme loan is a budget support mechanism in which disbursements are made dependent upon progress in developing and implementing climate change policy. Regulations to implement REDD are a performance indicator.

The Dutch Government is providing assistance for peat and lowland management through the Central Kalimantan Peatland Project (CKPP). The Government of Central Kalimantan and five project partners (Borneo Orangutan Survival Foundation, CARE-Indonesia, University of Palangka Raya, Wetlands International and WWF-Indonesia) are collaborating to protect and restore peat swamps in Central Kalimantan and to support local communities. The CKPP could be aligned with the AusAID-funded KFCP programme. The Dutch Government might also fund a lowland development initiative with a significant spatial planning component.⁴

The CKPP builds on an earlier (2002–2006) CAD \$5 million carbon sequestration project known as Climate Change, Forests and Peatlands in Indonesia (CCFPI). The project was implemented by Wildlife Habitat Canada (WHC), the Wetlands International Indonesia Programme (WIIP) and the Global Environment Centre (GEC), with funding from the Canadian International Development Agency (CIDA). Its purpose was to assist with the sustainable management and restoration of degraded peatland ecosystems in order to support local livelihoods, reduce the incidence of forest fires, restore ecosystem services and mitigate sources of climate change. It operated at local (Jambi, South Sumatra, Central Kalimantan provinces), regional, national and international levels. (See www.peat-portal.net for further details.)

CIFOR is assessing REDD activities in Indonesia for a global comparative study. Erin Myers and Stibniati Atmadja are leading this effort. Myers has been seeking to understand REDD benefit distribution mechanisms, but reportedly has found that, to date, no REDD scheme has paid any benefits.

See also <http://redd.pbwiki.com/> for a summary of policies and regulations related to REDD.

⁴ See <http://www.ckpp.org/AboutCKPP/PartnersandIAG/tabid/848/language/en-US/Default.aspx>

Three scenarios for the design of REDD

Three scenarios for the design of REDD help in understanding the potential livelihood and governance effects:

1. District-driven administration nested in the national system;
2. Industry restructuring; MoF-investor partnerships; and
3. Community concessions and carbon rights.

These scenarios build on elements of current REDD projects and illustrate the strengths and weaknesses of different approaches.

Drivers of deforestation

Any design of REDD must start from the key causes of deforestation. The causes of deforestation in Indonesia are well documented (Sunderlin and Resosudarmo 1996; Angelsen and Kaimowitz 1999; MoF 2007). Major proximate causes are the conversion of forests into industrial plantations (e.g. oil palm, timber for pulp and paper), small-scale commodity-based agriculture (e.g. rubber, cacao and coffee) and mining. These land use changes are supported by government policies to expand palm oil, pulp and other estate crops, and mining. Conversion of at least 16 million ha has already been approved and district governments have a large stake in the income from these concessions. The relative prices of palm oil, pulp and paper, biofuels and minerals, compared with prices for timber and carbon and associated foreign investment, also affect incentives for clearing and converting forest for other land uses.

In the past, permits for timber plantations have often been used as a pretext for harvesting natural forest. Only 25% of the land allocated for timber plantations was planted by 2002 (Barber *et al.* 2002). The Government of Indonesia (GOI) intends, however, to prevent conversion of natural forest areas to estate crops, and to relocate future HTI (Hutan Tanaman Industri) industrial plantations and other forest plantations on nonforested areas starting in 2009.

The decentralisation of fiscal authority and land use regulation to district governments (*kabupaten*) is an underlying cause of land conversion. Harvesting forest resources can provide substantial incomes to districts, which rely on such revenues to support local development and infrastructure. Yet district governments have a poor capacity for forest management and mixed success in getting local civic participation. Local government partnerships with investors are also often stronger than their accountability to local constituencies.

Illegal logging and weak governance are further underlying causes of deforestation. Illegal logging to supply national and international markets is estimated to have accounted for up to 70% of timber production in 2000 (IFCA 2008). Demand for wood in Indonesia has exceeded the legal supply by 35-40 million cubic meters per year due to a massive expansion of plywood, pulp and paper production infrastructure in the 1990s without comparable development of plantations (Barber *et al.* 2002).

Fire-drought cycles are an important direct cause of deforestation and degradation. The cycles coincide with lower rainfall related to El Niño that leads to fires or active burning. Land clearing interactions between companies and smallholders exacerbate the extent of the burning. Peatlands are especially susceptible as they can continue to burn underground for years. Indonesia has extensive peatlands, approximately 20 million ha, or nearly 11% of the land area. Fires were widespread on peatlands during the 1997 El Niño and recurred in 2002 and 2004.⁵ Areas of significant peat include the ex-Mega-Rice Project zone of Central Kalimantan, the Berbak National Park Buffer Zone, and the Sembilang and Merang Kepahayang Peat Swamp Forest.

Another underlying cause of deforestation is the intensification of small-scale agriculture and the settlement of shifting cultivators who would otherwise cycle carbon through swidden agriculture. Government policies have encouraged resettlement near infrastructure, however, extensive agriculture is often not possible in more densely settled areas and nearby forests become converted to permanent agriculture. Encroachment on protected areas is common as households either are unaware of the protected status or ignore it. Many of these households are from traditional communities that retain customary rights to forest areas and rely on the forests as a major source of livelihood needs.

Uncertainty in property rights and forest policies exacerbates all the drivers of deforestation. Without clear entitlements and secure access to the forest, the incentives to clear forest rather than conserve it remain high. Decentralisation 1999–2002 showed how quickly entrepreneurs took advantage of policy uncertainties to harvest timber through small-scale arrangements approved at the district level (Moeliono *et al.* 2008).

Scenarios

Scenario 1: District-driven administration nested in a national system

In this scenario, district governments could use development assistance, private investment in carbon markets or other funds to address a comprehensive range of drivers of deforestation and forest land uses to meet carbon sequestration targets. The national government would work with the districts to set targets and provide related incentives. The districts would use the funds to provide:

1. Incentives for concession holders to practice reduced impact logging;
2. Incentives to redirect planned oil palm or other estate crops to degraded lands;
3. Livelihood enhancement programmes (e.g. building on integrated conservation and development project experiences) to reduce encroachment and illegal logging; and
4. Other environmental service-type payments for entrepreneurial measures that increase carbon sequestration.

⁵ Between 0.81–2.57 Gt of carbon are estimated to have been released to the atmosphere from Indonesian peatlands in 1997 as a result of burning peat and vegetation. This is equivalent to 13–40% of the mean annual global carbon emissions from fossil fuels (Page *et al.* 2002).

The districts would permit planned deforestation as long as net carbon savings reach target levels. The districts would receive and allocate revenues. National and third party authorities would handle the registries for tracking emissions reductions, credits, monitoring and enforcing rules, as well as legal institutions for adjusting existing laws, enforcing REDD laws and resolving disputes to maintain checks and balances. A third party would coordinate a multistakeholder working group to support learning and make adjustments.

Currently the authority to issue licenses to provide environmental services, such as carbon sequestration, rests with the MoF. The new MoF general service body (Badan Layanan Umum, BLU) will have regional offices and would be able to facilitate financial arrangements locally. Revenues could be held locally and used to fund management interventions directly.

Rationale: The nested approach gives districts direct authority over land use and development, whilst administration at the national level protects the larger public interest and provides legal enforcement. Districts are well placed to address multiple drivers of deforestation and a range of land uses in an integrated way.

Benefits: The nested approach avoids leakage at the national level, but does not need to be implemented nation-wide immediately. It allows funders and investors to work with districts where there is most potential for results. It also allows districts to develop funding mechanisms that best meet their needs and capacities. Districts have the flexibility to combine land-based and non-land based approaches to carbon management. Diverse, locally appropriate approaches can be tested across the country to generate lessons for other districts.

Working through districts, not just the forestry sector or central government, enables horizontal coordination of REDD activities with other local policies and actions. Using the nested approach of districts within a national framework also provides vertical coordination of policies. The nested model integrate REDD both vertically and horizontally. For example, district and national governments can integrate REDD into mainstream economic development strategies to ensure that REDD financing will benefit the poor and that REDD fits with national poverty reduction strategies and associated support from international donors.

A nested approach also enables districts to develop infrastructure that balances local development needs with risks to forest carbon. An additional co-benefit is that the nested approach leads to local government reform (Brown *et al.* 2008).

Administration of funds at the district level enables financial flows to be channelled directly to a range of forest managers. Moreover, development options and profit sharing are more likely to involve communities when funds are administered at the district level.

Transaction costs: Moderate.

Types of forests targeted: All.

Land-based? Mix.

Enabling conditions: Strong district capacities, legal enforcement.

Disadvantages: The bureaucratic requirements and timeframes involved in a nested approach may delay implementation. The capacity of districts for governance and managing finances is uneven. REDD administration may overburden local institutions. Conflicts between local and national forest policies and the MoF are likely. Any benefits generated are likely to be captured by the local elite. Districts are diverse in terms of forest resources, drivers of deforestation and capacity for generating funding, so inequities are likely to increase as some benefit from REDD and others do not. Similarly, the appropriateness of planned deforestation in some districts and not others might create conflicts.

Scenario 2: Industry restructuring; MoF-investor partnerships

In this scenario, the Ministries of the Interior and Forestry would use a combination of national carbon funds, carbon finance markets and national subsidies or policy instruments (e.g. taxing land clearance) to provide performance-based incentives to companies. These incentives would support reduced impact logging, encourage the re-allocation and development of planned palm oil or estate crop plantations from peatland soils or intact forest to mineral soils and degraded areas, reduce excess demand for timber by closing sawmills or plywood mills, and support development of alternative employment for households which depend on timber processing. The largest companies would be targeted first to achieve the greatest effect.

Rationale: Land conversion and deforestation are primarily driven by business interests and investment opportunities, and encouraged by MoF policies to generate revenue.

Benefits: This approach reduces transaction costs by focusing on just a few actors to leverage big results. Market-based approaches, reportedly, also have a higher potential for attracting funds. This approach does not necessarily require upfront investment and should not require extensive government bureaucracy to administer. It should encourage the use of degraded areas. Companies may be more accustomed to international finance mechanisms and have more capacity to handle finances and accounting than communities.

Transaction costs: Low per partnership, however, the cost of implementing the shift in policy is potentially high.

Types of forests targeted: Areas categorised as conversion forest, production forest.

Land-based? No.

Enabling conditions: Robust carbon markets, law enforcement.

Disadvantages: The effects of this approach would be geographically dispersed and it would be hard to match the effects with the parties responsible. Incentives would be linked to people (business entities) rather than to land, and people may change. The potential for corruption would be high and limiting corruption would require checks and balances. This approach is complex to monitor, and allocating carbon benefits to companies is also complicated. Profits are unlikely to reach communities. Consumers could face higher costs because of higher costs of production leading to higher prices for commodities. The use of degraded areas that are not in ideal locations or that require high inputs to be productive could be inefficient. Interventions would be limited to addressing only drivers of deforestation in the forestry sector. This could result in the development of infrastructure such as roads and settlements that is driven by markets rather than by public planning. The potential for leakage could be high. Small and large companies may be affected differently, making smaller companies less viable.

Scenario 3: Community-based concessions and carbon rights

This scenario would provide communities with rights to carbon benefits based on formal land and forest rights. Carbon concessions would be granted for production forest and for restoration of natural forest ecosystems (Ijin Usaha Pemanfaatan Hasil Hutan Kayu (IUPHHK) Restorasi Ekosistem Hutan Alam). Formal rights would apply to village forests (*hutan desa*), and customary forest land (*hutan adat*). The MoF would provide oversight for monitoring, reporting and verification. Districts would allocate revenues. Extractive use and limited, planned agriculture would be permitted. Profits would be invested in a community development fund to support education and microenterprise. Disadvantaged community groups would be involved in the design of REDD to ensure programmes are relevant to their capacities and needs. Funds would be allocated on a contract basis to address permanence.

Rationale: This approach recognises customary rights, equity and economic development.

Benefits: Communities would receive significant revenues from carbon sales. This approach would have less likelihood of triggering conflict from communities, although conflicts amongst or within communities are likely (see ‘disadvantages’). Concessions and recognition of rights would formally acknowledge and support the role of local people in forest stewardship. This scenario supports locally appropriate and creative approaches. Contracts and benefits would be directly linked to communities and the permanence of carbon sequestration. This approach provides transparency, for instance on how funds are allocated to poor and disadvantaged groups.

Transaction costs: High because of the large numbers of participants and need to formalise rights.

Types of forests targeted: Production forests, national parks where encroachment is high, and forest mosaics where degradation is likely.

Enabling conditions: Clear land, forest and carbon rights.

Land-Based? Yes.

Disadvantages: This approach may restrict the land use options of the poor. Local communities may lack the authority to address major threats, capture of benefits by elites, and internal conflict and corruption. More education and higher local revenues may lead to outmigration and disrupt traditional communities and cultures or, alternatively, may lead to better roads and settlements. There are high transaction costs, including for monitoring, and community concessions may not attract much international funding. The potential for leakage is high. Communities have few operational legal rights to forest land or products, although the Basic Forestry Law provides for concessions and recognises customary rights. An estimated 40-80 million people depend on forests (Poffenberger 2006, 59) in Indonesia, but only about 591 000 ha (0.5% of total forest land) are under some form of recognised community management (compared to 37% of forest land in the Philippines) (FAO 2001,155, cited in Poffenberger 2006). Conflicts over rights, revenues or decisions about how to use the revenues are likely to be significant.

Conclusion

The three scenarios illustrate the tradeoffs between benefits, costs, implementation and results (Table 5.1). No one scenario is best. Each involves tradeoffs. Yet each scenario offers lessons about key points of leverage and weakness. The nested model may provide the most potential for governance and livelihood outcomes, but assumes that district governments have the capacity to implement, monitor and enforce REDD. The industrial restructuring scenario could have large-scale effects at relatively low cost, but the potential for corruption and leakage is high. The community concession model acknowledges local claims to land and carbon resources, but would be time consuming to administer.

As the scenarios are not mutually exclusive, a combination of two or all three may provide the capabilities, and governance checks and balances required for the desired outcomes. District-based models provide accountable governance structures; incentives for industry are essential and community involvement and recognition of rights assure long-term stewardship and human rights.

To further inform the livelihood and governance outcomes of REDD in Indonesia, workshop participants formulated the following questions:

Table 5.1 Summary of scenarios and expected outcomes

	Scenario 1 District-driven, nested	Scenario 2 Industrial restructuring	Scenario 3 Community concessions/offsets
Rationale	District has authority	Industry is deforestation driver	Recognise property rights, equity
Benefits	Policy integration, flexibility, Low leakage, responsiveness to local conditions, checks and balances	Targeted at major actors, marketability,	Livelihoods
Enabling conditions	District capacity, good governance	Law enforcement, robust carbon prices	Clear property rights
Transaction costs	Moderate	Low logistical cost/difficult to achieve political transition	High
Types of forests	All	Conversion, production	Community concessions
Land based?	Yes	No	Yes
Potential carbon effects	Moderate	Large	Small, fragmented
Disadvantages	Conflict between district and national policy Bureaucratic burden	Conflict of interest, leakage potential, corruption, least effective	Leakage potential, elite capture restricts land use options for the poor

- Will REDD include industrial plantations and, if so, which tree crops (e.g. rubber)?
- Will REDD include land outside state forest?
- How will REDD affect district incentives for forest conversion?
- How will Indonesia cope with the conflict between the increasing demand for bioenergy and REDD?
- How can REDD policies influence industry to relocate, use reduced impact logging or stop logging altogether, but still maintain the economic or development benefits that industry can generate?
- How can project-level actions be reconciled with drivers of deforestation that occur at other scales?
- After the current global economic crisis, will assumptions about REDD change?

Research priorities to support REDD

- What kinds of tenure conditions in Indonesia would support effectiveness and efficiency in REDD? What kinds of tenure conditions would cause REDD to fail?
- What is the role of tenure versus other instruments for addressing the interests of disadvantaged groups?
- What is the role of certification in encouraging tenure reform?
- Under what conditions would districts allocate land, forest or carbon rights to communities or create community concessions?
- How will REDD affect the livelihoods of the poor? How can REDD capture benefits for the poor?
- What are the effects of REDD on social conflict?

Outstanding issues for REDD

- What kinds of lands and land uses will be eligible for REDD;
- What incentives and motivations are needed to encourage forest conservation rather than conversion;
- How can reform of tenure support desirable REDD outcomes;
- What will be the effects of REDD on disadvantaged or low-income groups; and
- What are the risks of conflict.

The scenarios suggest that governance issues related to the role of districts in REDD and the opportunities for enhancing district capacities, are important. Informing REDD policies and processes will be a huge task. The implications for local people and forests are potentially significant. Anticipating and monitoring the effects on local livelihoods and governance will be essential.

Annex 5A. Summary Presidential Decree No. 46/2008 on National Climate Change Council

Introduction

Coordination has been acknowledged to be the main challenge to tackling climate change effectively in Indonesia. The President issued this decree to establish a Council to coordinate the various ministries and establish national strategies and policies. Unfortunately, the Decree does not give the Council any clear authority to actively align the policies and decisions of each ministry with national strategies.

Role of the National Climate Change Council

1. Coordinate climate change–related activities;
2. Strengthen Indonesia's position in international forums.

Tasks

- Design national climate change policy, strategy, programmes and activities;
- Coordinate activities related to mitigation, adaptation, technology transfer and financing;
- Design regulations on carbon trading;
- Monitor and evaluate the implementation of policies related to climate change; and
- Strengthen Indonesia's position in encouraging developed countries to exercise more responsibility for reducing the effects of climate change.

Council structure

The Council is chaired by the President. The Executive Director is the Minister of Environment. The Minister controls the structure and organisation of the Council. The Council is supported by a Secretariat, staffed either by civil servants from the member ministries, or non-civil servants. Council activities are financed from the Ministry of Environment budget.

Members include representatives from 14 ministries, the State Secretary, Cabinet Secretary, and Head of the Meteorology and Geophysics Institute.

Daily activities are divided between six working groups: 1) Adaptation, 2) Mitigation, 3) Technology transfer; 4) Financing; 5) Post Kyoto 2012; and 6) Land use change.

Annex 5B. Major REDD stakeholders

- **Government** – Ministry of Forestry including the Forest Research and Development Agency (FORDA), district governments, international compliance entities, Indonesia Forest Climate Alliance (IFCA).
- **Multilateral finance and assistance** – World Bank, Asian Development Bank, Forest Carbon Partnership Facility.
- **Overseas development aid** – AusAID, JICA and the Japanese Bank for International Cooperation, Norwegian Agency for Development Cooperation (Norad), Dutch aid, GTZ-BMZ-KfW, DFID, USAID, Winrock International, etc.
- **Private finance and investment** – oil palm, mining, timber, pulp and biofuel/biomass.
- **Forest managers** – Forest Management Units (*KPH*), timber concession holders, plantation managers, local people.
- **Local people** – Forest communities, local indigenous groups and their advocates (Aliansi Masyarakat Adat Nusantara, Sistem Hutan Kerakyatan, Forest Peoples Programme, Wahana Lingkungan Hidup Indonesia, ethnic-based parties and political alliances, etc.).
- **Biodiversity and protected area advocates** – WWF, TNC, Conservation International, Fauna & Flora International, **Wildlife Conservation Society**, Yayasan Leuser International, Yayasan Keanekaragaman Hayati Indonesia, etc.
- **Research** – FORDA, Indonesian universities, World Agroforestry Centre (ICRAF), CIFOR.

Annex 5C. Risks affecting REDD design scenarios

- Accuracy of monitoring;
- Volatility, decline of carbon prices (even with dual markets?);
- Lack of or unreliable financing;
- Leakage;
- Impermanence;
- More extreme weather events due to climate change, including droughts, El Niño cycles;
- Fire;
- Poor or uneven enforcement of rules;
- National or district regime change and policy instability;
- Unfair allocation of benefits;
- Elite capture and backroom deals;
- Social jealousies and unrest;
- Unrealistic expectations;
- Project fatigue and apathy of participants;
- Lack of government coordination;
- Early players gain maximum benefits;
- Not effective, equitable or efficient;
- Lack of transparency in negotiations.

Glossary of Indonesian forestry terms

Term	Definition based on draft regulation on REDD
Forest	Ecosystem unit consisting of a landscape containing natural resources dominated by trees within their natural environment, which cannot be separated from one another
Forestlands (kawasan hutan)	Certain areas that have been allocated or decreed by the Government to be maintained as permanent forest
State forests	Forests on lands that are not privately owned
Customary forests	State forests that are within indigenous people's territories
Village/community forest	State forest managed by the village/community for their welfare before being privately owned/allocated a use permit
Production forest	Forestlands whose main function is to produce forest products
Protected forests	Forestlands whose main function is a hydrological regulator
Conservation forests	Forestlands whose main function is to conserve biodiversity
Deforestation	Permanent change from forested to non-forested areas, caused by human activities
Forest degradation	Reduction of forest cover area and carbon stock during a certain time period, caused by human activities
Emissions reference level	Emissions from deforestation and forest degradation under a scenario without REDD, which can be determined by using either historical trends or projections based on (economic) development scenarios

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Chapter 6

Mexico

Esteve Corbera and Manuel Estrada

Changes in land use and drivers of deforestation

Historically, Mexico has been relatively unsuccessful in promoting sustainable forest management and conservation. According to Bray and colleagues (2005), deforestation rates during the period 1976–2000 average 86 718 hectares per year (ha/yr) for temperate forests and 263 570 ha/yr for tropical forests, whilst the total annual loss for all ecosystem types averages 545 000 ha/yr. These data place Mexico amongst the most deforested countries in the world. Mexico's Forest Carbon Partnership Facility Readiness Plan Idea Note (R-PIN) (Sosa Cedillo *et al.* 2008) acknowledges that deforestation is still occurring across most forest types but also stresses that 116 000 ha recovered from degradation during the period 1976–2000 and became mature forests. According to the Third National Communication on Climate Change, 64 484 Gt CO₂e (gigatonne carbon dioxide equivalent) were emitted by conversion of forest to other land uses in 1990–2002. This represents approximately 10% of the country's overall emissions for that period (Comisión Intersecretarial sobre Cambio Climático 2006).

Deforestation in Mexico is caused principally by human-induced change in land use and, to a lesser extent, by illegal logging, forest fires and authorised changes in land use. Researchers have shown that rural communities transform forests into pasture and agricultural land, particularly when the biophysical characteristics of the land are favourable for cattle and crops, and when collective conservation is weak (Alix-Garcia *et al.* 2005). But, it has also been noted that the State has failed to regulate the activities of private and state logging companies, or to address clandestine woodcutting by rural communities (Klooster 1999). Nor has the State tackled the underlying reasons why peasants become dispossessed and migrate into highly biodiverse areas (O'Brien 1998; de Vos 2002).

About 59% of Mexico's forests are legally titled to local communities that farm and manage forests on family plots or in forests held in common. This means that any effort to successfully halt deforestation must involve peasant communities. However, government policies supporting community forestry were not common until the early 1980s. Since then, 25% of communal forests have been placed under a management plan (Klooster 2003) and, specifically in highland areas, forests are recovering because of outmigration to urban centres and abroad (Rudel 2008). There is increasing evidence that community forestry, particularly Community Forestry Enterprise (CFE), results in more control and more effective management of forest resources, especially if communities are well organised. In contrast, communities with weak social structures and internal conflicts often degrade their forests (Bray *et al.* 2005).

Forest policy and forest property rights¹

Merino-Pérez *et al.* (2005) describe the key characteristics of Mexico's forest policy and the evolving nature of property rights in forests over the last century (Table 6.1).

Table 6.1 A history of forest policy and property rights in Mexico

1920s-1940s • Only 18% of forest land was in the hands of communities; • <i>Rentismo</i> predominated in community-owned forests; • Short-term logging contracts with private companies damaged forests and undermined livelihoods.
1940s-1970s • Logging concessions continued to predominate in State and community-owned forests; • Valuable timber was exhausted and production became subsidised and inefficient; • During the 1950s and 1960s, forestry bans were enacted in a number of regions, thus creating a de facto open access forest regime.
1970s • Discontent led to expropriation of forestland in the farmers' favour, particularly in tropical and arid regions; • Agricultural policies, however, encouraged farmers to deforest; • Colonisation policies in tropical areas led to clearing of rainforest; • Green Revolution coexisted with the creation of State-owned and Community Forestry Enterprises (CFEs); • Early CFEs were highly bureaucratic and not well funded initially; • CFEs became institutions through which the State controlled forest property rights.
1980s • Economic liberalisation; State-owned forestry enterprises were dismantled; • The General Directorate for Forestry Development was created under the Agriculture Ministry; • The Directorate decisively supported CFEs, which accounted for 40% of national wood production and 15% of processed timber by 1992; • Forest Law 1986 abolished forestry concessions and recognised the rights of local communities to manage forest resources; • National parks suffered from illegal logging and environmental degradation; biosphere reserves were established with international support; • 1986: National System of Natural Protected Areas created.

¹ This section is a summary of Merino-Pérez and Segura-Warnholtz 2005.

1990s

- General Agreement on Tariffs and Trade (GATT) (later the North American Free Trade Agreement – NAFTA) brought cheap wood products into the country; CFEs faced competition;
 - Financial and training support for CFEs was heavily reduced or suspended all together;
 - The new Agrarian Law 1992 allowed communities to enter into associations with the private sector to manage forests up to 20 000 ha;
 - The 1992 Forest Law liberalised the market for technical forestry services, leading to lower prices, but inefficient management;
 - 1994–2000 resources for agriculture and forestry fell, and the incomes of rural producers also fell by 70%;
 - The new Ministry for the Environment (Secretaria del Medio Ambiente, Recursos Naturales y Pesca – SEMARNAP) assumed control over the forestry sector;
 - Financial and human resources were insufficient to grant logging permits and halt illegal logging;
 - Timber companies operating on private lands were subsidised, but regulation was weak and timber exploitation surpassed authorised levels;
 - SEMARNAP created four forest management programmes with limited budgets – Programa para el Desarrollo de Plantaciones Forestales Comerciales (PRODEPLAN), Programa para el Desarrollo Forestal (PRODEFOR), Programa Nacional de Reforestación (PRONARE) and Programa de Desarrollo Forestal Comunitario (PROCYMAF);
 - 30 new biosphere reserves were created and the National System of Natural Protected Areas was expanded, but lacked financial resources for monitoring and enforcement;
 - A National Programme for the Certification of Property Rights (Programa de Certificación de Derechos Ejidales y Titulación de Solares – PROCEDE) started in 1994 and contributed to clarifying forest ownership and disputes over most of the country.
-

2003 onwards

- The National Forestry Commission (Comisión Nacional Forestal – CONAFOR) was created and received considerable funding;
 - PRODEPLAN diversified the range of activities (i.e. non-timber forest products (NTFPs), tropical trees, fuelwood) and participation of rural communities increased significantly;
 - PROCYMAF budget increased tenfold and PRODEFOR focused on increasing the quality of technical forest service providers;
 - Payment for environmental services (PES) programmes in watershed, biodiversity, carbon and agroforestry were created;
 - In 2009, 59% of forest land was in the hands of rural communities, 33.5% was in private hands and 7.5% was State owned.
-

Background to forest and conservation policy

The Secretariat for Environment and Natural Resources (Secretaría de medio ambiente y recursos naturales – SEMARNAT, previously SEMARNAP) is the government agency responsible for natural resources, including forests, at the federal level. The National Forestry Commission (CONAFOR), created in 2001, is a decentralised public institution with the overall objective of integrating natural resource management into the national sustainable development programme. Amongst others, CONAFOR is responsible for the implementation of the Strategic Forestry Plan 2025. The Federal Office for Environmental Protection (Procuraduría Federal de Protección al Ambiente – PROFEPA) is in charge of auditing and monitoring production areas and natural protected areas. In addition, there are technical and capacity building institutes, such as the National Forest and Agriculture Research Institute.

The legal foundation of present Mexican forestry policy is the General Law on Sustainable Forest Development, promulgated in 2003, together with the Law on Sustainable Rural Development and the General Law on Ecological Balance and Environment (1998). Six forest laws promulgated between 1926 and 1992 are precedents for the General Law. The General Law emphasises the importance of forest services and their inclusion in forest management. Nevertheless, there appears to be some inconsistency in the interpretation of the different laws that affect forest management, including the General Law on Sustainable Forest Development, the General Law on Ecological Balance and Environment, and the General Law on Wildlife. In addition, many state governments have their own forestry or environmental laws.

A number of special programmes were set up in the 1990s to bring about greater consistency in forest policy. The most important are:

- The National Forest Development Programme (PRODEFOR), which provides forest owners and CFEs with forest management training courses, helps them develop specific silviculture practices and skills in commercialising forest products, and provides financing to acquire sawmills and machinery, amongst other things;
- The National Reforestation Programme (PRONARE), which promotes the reforestation of degraded and deforested areas on state, private and community lands;
- The National Community Forest Development Programme (PROCYMAF), which supports communities in developing and implementing forest management plans, improves market access for community non-timber forest products and develops other activities (e.g. ecotourism); and
- The Plantations Development Programme (PRODEPLAN), which promotes development of plantations for timber for pulp production, tropical trees, non-timber forest products, Christmas trees and other products, involving private forest owners and rural communities.

In addition to these programmes, in 2002, CONAFOR launched a programme of payments for environmental services (PES). This programme supports private landowners and rural communities in developing conservation and forest management

projects to protect key watersheds, enhance carbon stocks, conserve biodiversity and develop agroforestry. The latest data (September 2008) shows that there are over 2600 communities, associations and private rights-holders receiving payments for watershed management, conserving biodiversity, carbon sequestration and agroforestry services. PES projects cover more than 1.75 million ha (Cibrián Tovar *et al.* 2008). Since 2007, the Pro-Tree (PROÁRBOL) programme operates all programmes which support sustainable forest management, including PES. In 2007, PROÁRBOL had a total budget of US \$603 million and its different sub-programmes already extend to more than 9 million ha.

A National System of Protected Areas complements CONAFOR efforts to improve reforestation rates, develop sustainable plantations, promote sustainable forest management and promote the conservation of ecosystem services. The Protected Areas National Commission (Comisión Nacional de Areas Naturales Protegidas – CONANP, a decentralised part of SEMARNAT) manages the system. Protected areas cover about 17.9 million ha (9.2% of the national territory), of which 5.6 million ha are tropical or subtropical. The system includes 34 biosphere reserves (10.4 million ha), 65 national parks (1.39 million ha), four natural monuments, 27 protected areas of flora and fauna (5.5 million ha), four natural protected areas for reclassification and one natural resources protection area. There are, however, discrepancies in the definition and number of protected areas. For example, it appears that some designated protected areas are on private land, and their status is unclear. CONANP also supports the development of Certified Conservation Areas (i.e. private or community-based conservation areas subject to monitoring and management plans). Currently, there are more than 177 Certified Conservation Areas, representing 207 887 ha.

Carbon forestry projects

Mexico has not yet developed any carbon forestry projects under the Clean Development Mechanism. However, it was one of the first countries to host voluntary carbon projects. The Scoler Te Plan Vivo Project, in the state of Chiapas and Oaxaca, has been operational since 1997 and has sold carbon offsets to international investors such as the International Automobile Federation Foundation and the World Bank Bio-Carbon Fund. The project has been supported by international research institutions, the Plan Vivo Foundation and the local nongovernment organisation (NGO) AMBIO. Offsets are generated through reforestation and forest conservation activities by hundreds of farmers and dozens of rural communities (<http://www.planvivo.org>). Other forest conservation and reforestation programmes in the state of Oaxaca and Queretaro have sought to commercialise carbon offsets in voluntary markets. But these have had less stringent standards and have been less successful.

Mexico's approach to REDD

There is not yet an international agreement on how REDD activities will be financed or how they will operate in each host country. The 14th meeting of the UNFCCC Parties (COP-14) held in Poznań, Poland, in December 2008, continued to develop methods to

establish emissions reference scenarios and possible financing mechanisms. Parties urged the UNFCCC Secretariat to prepare a technical paper on the likely costs of implementing and monitoring REDD schemes. The Secretariat invited organisations and Parties to submit their views on the participation of indigenous people and rural communities in REDD and likely negative impacts (Earth Negotiation Bulletin 2008). The types of forestry activities that would be included in a REDD framework have important implications for the technical aspects, particularly monitoring methodologies and costs, and for the volume of emission reductions that would be rewarded or traded. Some Parties would like to ensure that REDD incentives apply not only to reducing deforestation and forest degradation, but also to existing conservation efforts, and that they promote sustainable management of forests and enhancement of carbon stocks. Other Parties are more cautious and would prefer that incentives focus exclusively on activities that reduce emissions from deforestation and forest degradation (UNFCCC 2009). As of March 2009, the size and characteristics of potential support schemes for these different options in a post-2012 regime are still being negotiated and will most likely not be defined until COP-15 at the end of 2009 (Corbera *et al.* 2009a).

Whatever form REDD takes, REDD activities can strengthen Mexico's recent efforts in the forestry sector and can help involve more land managers in conservation. REDD activities will also help reduce the contribution of emissions from changes in land use, currently 14%, to Mexico's overall emissions (Comisión Intersecretarial sobre Cambio Climático 2007). Mexico has been one of the 14 developing countries to join the World Bank Forest Carbon Partnership Facility (FCPF), conceived to build capacity in developing countries in tropical and subtropical regions for reducing emissions from deforestation and forest degradation. The FCPF offers grants for establishing emissions reference levels, adopting REDD strategies and designing monitoring systems. FCPF also encourages countries to tap into any future international system of positive incentives for REDD. To this end, Mexico submitted a proposal to the FCPF in May 2008 co-authored by CONAFOR and a senior academic expert in land-use change and carbon accounting. The proposal was endorsed by a number of other government departments, well known academics and consultants (Sosa Cedillo *et al.* 2008).

The proposal suggests that any REDD mechanism needs to provide financial and technical assistance for developing plans to manage forest sustainably – through participatory planning with rural communities – and support for developing agricultural and animal husbandry policies that will reduce pressure on existing forests. The proposal stresses that strengthening law enforcement in areas where illegal logging occurs will be a major challenge. Local populations and forest industries will need to be involved in surveillance, and commercialising timber and non-timber products from managed forests. The proposal also emphasises that government departments and different sectors will need to cooperate to ensure that REDD activities are successful. Key actors in REDD implementation include government agencies, NGOs and community institutions, amongst others (Table 6.2).

Table 6.2 Key stakeholders for REDD implementation in Mexico

Government ministries, agencies and commissions
Environment Ministry (SEMARNAT)
National Protected Areas Commission (CONANP)
Enforcement Agency (PROFEPA)
National System of Protected Areas (Sistema Nacional de Áreas Protegidas – SINAP)
National Forestry Commission (CONAFOR)
Agriculture Ministry (Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación – SAGARPA)
Finance Ministry (Secretaría de Hacienda y Crédito Público – SHCP)
Social Development Ministry (Secretaría de Desarrollo Social – SEDESOL)
Intersecretarial Commission on Climate Change
Government-funded think tanks and institutes
National Statistics and Geographical Information Institute (Instituto Nacional de Estadística y Geografía – INEGI)
National Institute of Ecology (Instituto Nacional de Ecología – INE)
Science and policy interface bodies
Technical Advisory Committee on Environmental Services
National Forest Council
NGOs (examples)
Pronatura
Conservation International
Grupo Ecológico Sierra Gorda
Consejo Civil Mexicano para la Silvicultura Sostenible
Reforestamos México
Community and forest managers/owners (examples)
Community forestry enterprises (CFEs)
Regional forest management units (Unidades de Manjo Forestal – UMAFORs)
Logging companies
Community unions
Research organisations working on REDD (examples)
El Colegio de la Frontera Sur (ECOSUR)
Universidad Nacional Autónoma de México (UNAM)
Colegio de Posgraduados (COLPOS)
Potential funders, national and international (examples)
Fondo Forestal Mexicano
Mexican Carbon Fund (Fondo Mexicano de Carbono – FOMECAR)
Financiera Rural
World Bank
Ford and Rockefeller foundations

The proposal indicates that national, regional and state consultations with different stakeholder groups will be held during 2009. Issues such as establishing a national emissions reference scenario, developing deforestation risk maps, defining eligible areas, the potential distribution of incentives and involving marginalised populations are being addressed by CONAFOR, academic experts and consultants. The proposal sets out the challenges of implementing REDD, some of which have close parallels with the challenges of implementing ongoing PES programmes. These include governance, and technical and legal aspects, such as inter-governmental cooperation in land-use planning, defining the reference emission baseline and better enforcement of conservation rules in protected areas (Table 6.3).

According to the FCPF proposal, it seems that REDD implementation in Mexico will take place through a specific programme under PROÁRBOL. This will reward land managers for conserving forest areas threatened by imminent deforestation. New maps of eligible areas will be produced, which will show degrees of social marginalisation and community organisation, and REDD incentives based on opportunity costs. In this respect, Mexico is building upon experience from PES programmes. The capacities acquired by people at different governance levels, from CONAFOR officers to service intermediaries and consultants, are being used to design and deploy REDD incentives effectively and efficiently to land managers. Furthermore, CONAFOR brings these experts into REDD design and consultation processes in order to address the challenges faced by projects. CONAFOR is also considering whether REDD incentives could be used to extend financing for PES projects that are coming to the end of their five-year timeframe, especially those in areas at high risk of deforestation.

Table 6.3 REDD implementation challenges in Mexico

Institutional and governance challenges

- Strengthening environmental institutions; corruption needs to be tackled (the head of CONAFOR was dismissed in March 2009 for inappropriate management of PROÁRBOL finances);
 - Increasing effectiveness of programmes for delivering payments for maintaining natural forests;
 - Increasing financial and human resources to supervise logging permits;
 - Supporting community and indigenous forest management in dealing with internal conflicts and disputes;
 - Promoting infrastructure policies that prevent access to forested areas;
 - Promoting macroeconomic and agricultural policies that make clearing additional forest land for other uses less profitable;
 - Enhancing social organisation within participant communities, building local leadership capacity, and promoting participatory approaches and local consensus building mechanisms;
 - Strengthening collaboration with agrarian sector agencies to set up options for legal rights to lands, and to work in areas where there are conflicts over land tenure and where there is a high risk of deforestation.
-

Technical challenges

- Undertaking regular and systematic monitoring and analysis of deforestation and forest degradation;
 - Establishing and monitoring national baselines (reference scenarios);
 - Assessing the effectiveness of individual activities and ensuring that any financial system is both equitable and effective, and manages revenues appropriately;
 - Verifying both deforestation rates and project 'additionality' against a national baseline. This is expected to be primarily based on remote sensing and deforestation risk maps, but will require systems for 'ground truthing' data gathered remotely, particularly where governance risks are identified and biomass densities are unknown;
 - Current land-use change monitoring system, based on moderate resolution imaging spectroradiometer (MODIS) imagery, is not sensitive enough to detect forest degradation;
 - Identifying indirect methods to establish forest degradation rates. These methods will need to be developed;
 - Limited trained, skilled human resources for developing and implementing effective monitoring systems;
 - Insufficient information about emission factors (e.g. regional and/or biomass relationships, growth and yield models);
 - Costly, insufficient satellite imagery at an appropriate resolution for monitoring land use and land cover changes;
 - Data to identify eligible forest areas (which forests are under greatest threat without a REDD programme). The lack of guaranteed funding to reduce compliance risks. Developing potential indicators to measure effects on rural livelihoods and biodiversity conservation.
-

Legal (and enforcement) challenges

- Increasing the effectiveness of enforcement of laws, rules and regulations in order to reduce deforestation and forest degradation. There are areas of illegal logging and drug trafficking that law enforcement agents do not reach;
 - Strengthening protected areas to effectively restrict certain land uses;
 - Tenure conflicts. These affect just 15% of the land, which means that tenure conflicts should not be a central concern in REDD if conservation actions and pilot areas are well targeted.
-

Source: Authors' elaboration from Sosa Cedillo *et al.* 2008

REDD Scenarios

Two scenarios for the implementation of REDD activities in Mexico could co-exist.

a. National framework based on carbon markets and funds

In this scenario, Mexico would develop policies and activities across the country within a national framework, focusing on regions and areas with the highest risk of deforestation. The framework would set out a credible baseline against which reduced emissions from changes in land use would be measured. Carbon credits would be sold in carbon markets, or would be rewarded from non-market based carbon funds. This approach has been described in several publications and is supported by many developing countries in the current UNFCCC negotiations. A national framework deals with national leakage and makes it possible to map land-use change dynamics at wide geographic scales.

However, the development of a national framework for REDD has risks. Mexico could rush in without addressing the challenges that will be critical for success in the short- and medium-term. Developing a credible baseline is time consuming and costly as it needs to be based on reliable emissions factors for different types of biomass and growth, and reliable assumptions regarding trends in land-use change (taking into account shifting economic, social and technological dynamics). Furthermore, developing a national baseline bears the same risk as using a historic baseline to determine Annex I emission targets, namely creating excess emission allowances ('hot air'). This is particularly risky if there is evidence that deforestation is likely to ease in remaining forests (Corbera *et al.* 2009a). The FCPF initiative may be a way to finance and support the development of an appropriate baseline.

Another potential obstacle to a national framework is the need for additional public funding to tackle the technical, governance and legal challenges (Table 6.3) seriously. Devising a national framework that will provide upfront incentives to land managers to halt deforestation and forest degradation, whilst at the same time establishing sound monitoring practices and penalty systems to deal with non-compliance, would also be important. In the case of national PES programmes, research shows that evaluating performance has been jeopardised by the lack of human resources and standard monitoring methodologies, and the unwillingness of some rural communities and land owners to cooperate (Martínez Tenorio *et al.* 2007; Corbera *et al.* 2009b).

b. Subnational approach to REDD

This scenario does not start with a national, government-controlled REDD framework, but approaches REDD through regional or local initiatives. The advantage of this approach is that it can start with just a few initiatives in areas where the risk of deforestation risk is highest and where social actors, like NGOs, local governments or rural communities, can take the lead. There is no need for a national, well-established and coordinated system of REDD activities up front. Subnational activities could be a first step towards a national REDD framework, which could then integrate and coordinate subnational efforts with national efforts and government actions.

Subnational REDD initiatives would need to take similar approaches to carbon forestry. The government could support project design by providing funds specifically for capacity building. Each project or set of regional activities would need to define a credible baseline and show positive changes in avoided emissions over time due to reduced deforestation and forest degradation. Pilot projects that currently receive carbon credits have taken different approaches to estimating emission reductions, such as: (a) extrapolating past trends, (b) hypothesising future scenarios, (c) taking prevailing technology or practice, and (d) adjusting observed trends (De Jong *et al.* 2005). However, none of the methods objectively assess whether or not the chosen baseline is appropriate to the area in question or provide a measure of how accurate predictions are likely to be (De Jong *et al.* 2005). The methods will need to be improved if REDD subnational approaches are to be considered.

A potential drawback of a subnational approach to REDD is leakage. In contrast to national approaches – where the concern is international leakage – REDD project-based or regional approaches face a real risk of leakage within the country. Changes in land use may shift to areas where there are no REDD programmes or where there is weak regulation of land use, such as in regions where laws are not enforced or where there are persistent conflicts over land use. Subnational approaches also face the challenge of establishing adequate incentives for different types of land managers. Appropriate incentives should minimise the effects of reducing deforestation on forest-dependent people and build trust, minimising potential conflicts. As in existing carbon forestry projects, avoided emissions could be sold in voluntary or, maybe, Kyoto-compliant markets.

This last point brings us to the issue of permanence, which would be challenging in both scenarios. At the UNFCCC level, the Parties have proposed two main ways of dealing with permanence which are applicable at any scale. Brazil, for example, has suggested that countries could debit any increase in their emissions above the reference level against future credits. Although this could be a simple solution, it could also discourage countries that perform poorly, particularly in the initial stages when they are still establishing or strengthening capacities. Fewer countries would be able to participate effectively, and there would be less reduction of emissions globally in the short term. The second way of dealing with permanence is by issuing temporary Certified Emissions Reductions (tCERs). Here the onus would be on the buyer of carbon credits to renew them on a regular basis, as is currently the case for CDM afforestation and reforestation projects (Corbera *et al.* 2009a). Temporary credits, however, have an uncertain value; the only certainty being that they will be worth less than CERs (Schlamadinger *et al.* 2005), which to date has limited their attractiveness.

Conclusions and research directions

Mexico has a very rich history of forest policy and governance. Sustainable forestry and conservation, however, have only become a real priority for the government and civil society during the past three decades. This has translated into better resourced institutions and growing interest in rural communities for managing (often scarce) remaining forests. The fact that Mexico has recently begun clarifying land rights is a positive step towards sustainable forest management through forestry programmes promoted by the government. Clearer land rights will facilitate the design and implementation of REDD activities at regional and local levels.

Generally speaking, any future REDD framework in Mexico must provide further economic incentives to land users. Often, land users do not believe forests have much economic value. They must be given ‘incentives for sustainable management. Incentives can also strengthen participatory community planning, increase local forest management skills and contribute to the equitable distribution of forest revenues. Furthermore, REDD could help mainstream ecosystem conservation into agriculture and urban planning policy, improve cross-sector coordination and contribute to an understanding

of the consequences of different policies. Nevertheless, REDD implementation will be challenging (Table 6.3). To develop REDD initiatives efficiently and equitably, further effort needs to be put into coordinating existing policies, tackling corruption and devising mechanisms that provide incentives at local level, whilst strengthening conservation efforts and minimising social conflict.

In terms of research priorities, Sosa Cedillo and colleagues (2008) identified a number of issues that require special attention. From a technical perspective, research is needed to develop more sensitive methods for detecting and quantifying forest degradation, as well as to define cost-effective indicators for measuring carbon and biodiversity conservation on and off-site (e.g. through satellite imagery). From a governance perspective, it is critical to identify deforestation trends and patterns in each region, and to devise policies, actions and incentives that can reduce deforestation. Governance must involve those who play a major role in land-use change processes. Likewise, it is important to establish locally appropriate and equitable financial frameworks, which allow REDD incentives to be distributed to the right actors and which account for leakage and non-permanence.

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Chapter 7

Tanzania

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Introduction

Tanzania has a total area of about 88.6 million ha (94.5 million ha if the country's extensive water bodies are included). Forestland covers 35.3 million ha (39.8% of the land area) and around 18 million ha of this has been gazetted as forest reserves (managed by central government and local authorities, or as village land forests and plantation forests). National parks account for 2 million ha of 'reserved' forest. However, the rest of the forestland (17.3 million ha, or 49%) is 'general land forests', unreserved, largely unprotected and open access. General land forests are affected by a range of issues, including shifting cultivation, annual wild fires, harvesting of wood fuel, poles and timber, and heavy pressure to convert to other competing land uses, such as agriculture, grazing livestock, settlements and industrial development.

Tanzania's rate of deforestation is estimated at 412 000 ha a year. This is believed to be taking place mostly in general land forests. Forest reserves are being created in an effort to reverse this trend. However, forest assessments reveal a great deal of human disturbance inside forest reserves. These disturbances take the form of encroachment, illegal mining, pit-sawing, illegal harvesting for building materials, and collection of firewood and herbal medicines. Thus, not only are general land forests shrinking, but the condition of reserved forests is also deteriorating.

Climate change, one of the biggest global problems, is posing challenges to sustainable livelihoods and economic development, particularly for less developed countries like Tanzania. The adverse effects of climate change on the environment, human health, food security, human settlements, economic activities, natural resources and physical infrastructure are already noticeable in Tanzania. Amongst other things, this is because Tanzania has limited human and financial resources available for forest management. However, forests play an important role in mitigating climate change because they are sources and sinks of CO₂. Retarding the loss of forest in Tanzania would, therefore, contribute significantly to mitigating climate change and its effects.

In addition to being important sinks for removing CO₂ from the atmosphere, forests are sources of livelihoods and provide direct benefits, firewood, charcoal, fruits, poles, timber and traditional medicines, amongst others. The forests and woodlands also have an ecological value and are a source of vital services, such as conserving soils and water sources, harbouring biodiversity and important genetic resources. Forests provide bee nectar, serve as habitats for wildlife, and provide a wide range of cultural,

spiritual and recreational benefits. Sound forest management practices would perpetuate these benefits.

There is a growing market for forest carbon resulting from more recognition of the importance of forest management in reducing emissions and storing CO₂ to mitigate climate change and its effects. Carbon trade involves the sale of carbon credits as a way of helping mitigate the increase of CO₂ in the atmosphere. There are two main types of carbon trading, voluntary carbon trading (VCT), and the official Kyoto Protocol mechanism, Clean Development Mechanism (CDM). Improved forest management and avoided deforestation are not eligible under CDM at present. This has prompted renegotiation of climate change policy for the post-2012 period to include reduced emissions from deforestation and forest degradation (REDD) through various Conference of the Parties (COP) meetings.

The Government of the United Republic of Tanzania considers the REDD policy a viable option for meeting the country's obligations to manage her forests and woodlands on a sustainable basis and, at the same time, respond to poverty reduction initiatives. As such, the government is in the process of developing a REDD framework for implementing REDD policy. The framework is based on a situation analysis of the country's forests and their management. The gaps and weaknesses identified in the analysis will improve implementation of REDD policy. This paper shares Tanzanian experiences on strategic approaches to implementing REDD policy. Particular issues include:

- 'sustainable forest management';
- 'forest enhancement' and 'conservation';
- recognition of the needs of local and indigenous communities; and
- REDD demonstration activities to mitigate climate change.

Situation analysis and framework for implementation

We present a situation analysis of key issues, outstanding questions and gaps that need to be addressed in support of the REDD policy in Tanzania. This section also includes a framework for addressing each of these areas.

Baseline establishment, monitoring, reporting and verification

Any country implementing REDD must set a baseline, report regularly on progress, establish a monitoring system that generates up-to-date information, develop institutional capacity and establish a transparent system to verify findings (Table 7.1).

Determining a baseline and monitoring system

A key aspect of determining the carbon benefit of any forest carbon project is to accurately quantify changes in carbon levels to agreed levels of precision. Determining changes in carbon levels requires a baseline, that is, a starting point against which changes in carbon levels as a result of a carbon project can be measured.

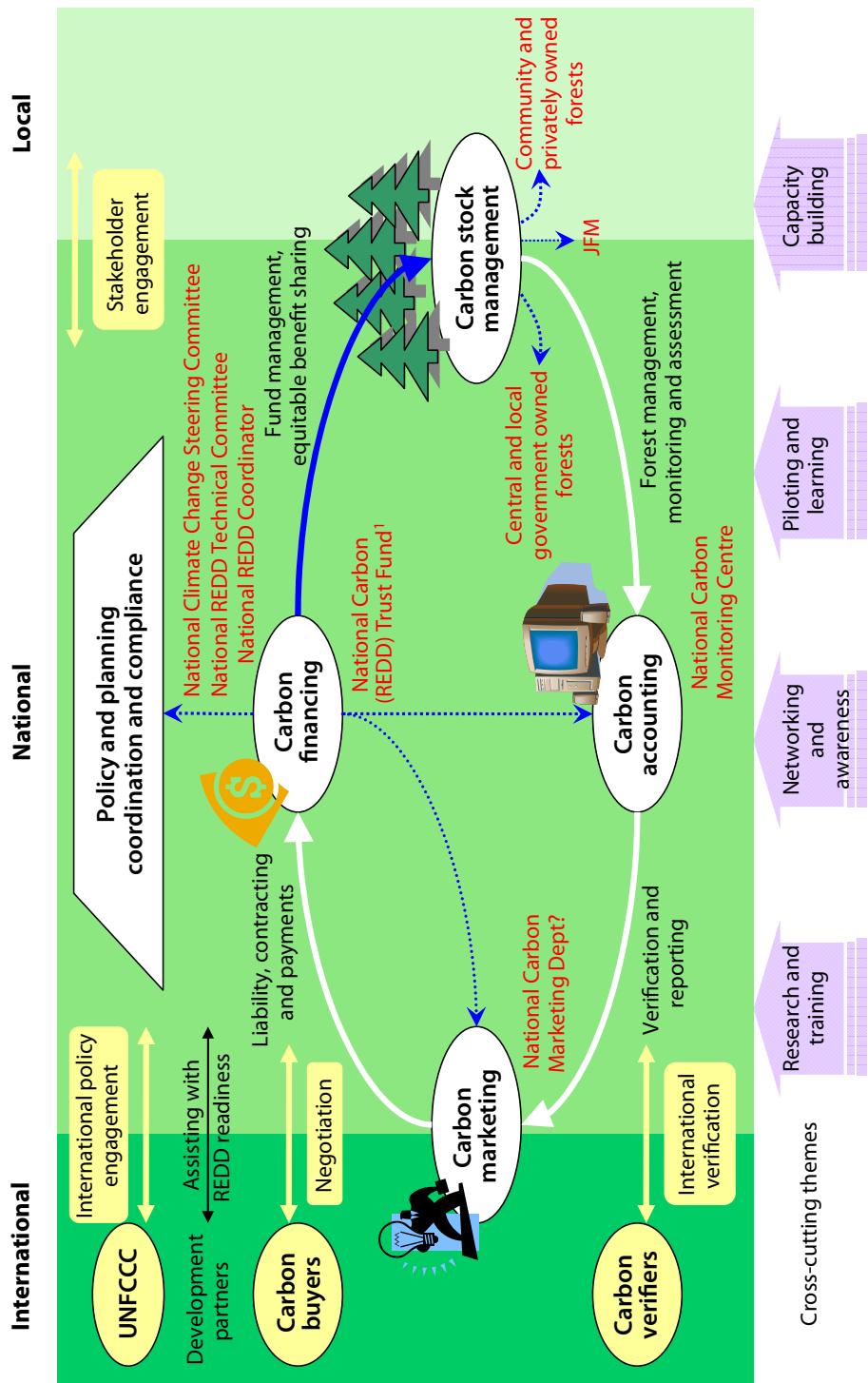


Figure 7.1 Key elements of REDD implementation in Tanzania, with a focus on forest carbon

Table 7.1 Baseline establishment, monitoring, reporting and verification

Issues to be addressed	Actions	Lead institution/ facilitator	When
Baseline determination and monitoring			
Baseline for deforestation			
Lack of access to remote sensing data	Carry out national forest inventory	FBD, FAO, relevant institutions	As planned 2009–2011
	Carry out research on the implications of different methods for achieving reduced emission levels through deforestation	Relevant institutions	Continues
Lack of ground data on forest carbon stock(s)	Address drivers of deforestation and their links with other sectors – agriculture and infrastructure policies – and their effects on deforestation; consider inclusion of demographic factors, such as population growth, trends and post-conflict rebounds	FBD, relevant institutions	Quick start
	Train personnel to undertake national and subnational forest inventories and remote sensing	FBD, relevant institutions	Quick start
	Develop tools to assess and monitor deforestation	Relevant institution	Continuing
Baseline for degradation			
Lack of methods, tools and guidelines to measure and monitor degradation	Develop and test methodologies to measure and monitor degradation	Relevant institutions	Quick start
	Carry out assessment and monitoring of forest degradation	FBD, relevant institutions	Quick start/ continuing
Lack of data on degradation	Develop tools, guidelines and manual for degradation assessment and monitoring	Relevant institutions	Quick start/ continue
Inadequate capacity for degradation assessment and monitoring	Review and synthesise existing studies of field/pilot cases	FBD, relevant institutions	Continuing
	Conduct case studies to quantify emission factors for different forest types	FBD, relevant institutions	Continuing
	Conduct demonstration projects to determine historic degradation emission factors, including cost implications, accuracy and causes	FBD, relevant institutions	Continuing

Issues to be addressed	Actions	Lead institution/facilitator	When
Future monitoring of deforestation and forest degradation			
• Absence of recurrent inventories	Establish permanent sample plots as part of the National Forest Inventory	FBD, relevant institutions	As planned 2009–2011
• Absence of annual forest assessment	Develop a carbon database to be linked to NAFOBEDA	FBD, relevant institutions	Continuing
• Inadequate data processing and management	Train personnel at all levels on continuous assessment and data handling	Relevant institutions	Quick start
• Inadequate capacity for monitoring deforestation and forest degradation			
Verification			
Lack of independent carbon verification system at national level	Establish independent, transparent verification system	FBD, relevant institutions	Quick action
	Carry out field spot checks of carbon data	Relevant institutions	Continuing
	Convene national meeting on issues of governance and transparency to provide NGOs and other institutions with meaningful inputs into the process (possibly not limited to monitoring)	FBD, relevant institutions	Continuing
	Country-level case study on verification, such as the use of LiDAR Technology	FBD, relevant institutions	Continuing
Lack of knowledge on independent verification at international level	Identify and engage independent international verifiers	FBD, VPO	Quick action
	Establish and use independent data sets for verification and make them available to verifiers	FBD, relevant institutions	Continuing
Lack of coordination on deforestation and forest degradation monitoring	Establish a semi-autonomous National Carbon Monitoring Centre for coordinating all carbon data in the country	FBD, relevant institutions	Quick start

Issues to be addressed	Actions	Lead institution/ facilitator	When
Reporting			
Lack of clear flow of reporting at various levels	Report on the carbon data to the national REDD scheme for funding	Relevant institutions	Continuing
	Report internationally (obligatory) reporting on REDD issues	FBD, VPO	Continuing
	Report on financial flows (community to national level and vice versa)	FBD, relevant institutions	Continuing
	Report on livelihood issues		
Co-benefits			
Lack of an integrated method to quantify other forest benefits such as: biodiversity, ecotourism, water catchment and all other benefits related to payment for environmental services	Review possibilities to include co-benefits in the assessment and monitoring methodologies	FBD, relevant institutions	Continuing
	Carry out multi-resource forest inventories	FBD, relevant institutions	Continuing
	Document benefits and develop and test quick assessment methods	Relevant institutions	Continuing

Options for crediting carbon benefits:

- Reduction in emissions from deforestation – using satellite imageries, maps;
- Reduction in emissions from degradation – using continuous carbon monitoring where there is no historical data;
- Enhancement – using continuous carbon monitoring;
- Forest conservation; and
- Carbon stock.

Verification of measurements:

- Verification of measurements by an independent party is necessary before transactions;
- Verifiers need to be licensed and registered agents;
- Verifiers need to undertake on-the-ground spot measurements to check the accuracy of field measurements by villagers;
- After verification, carbon will be purchased through a national REDD scheme.

Shortcomings and challenges:

- Tanzania lacks knowledge about international independent verification;
- A system for independent verification at the national level is also missing.

Solutions:

Establish an independent, semi-autonomous National Carbon Monitoring Centre (NCMC). Apart from verifying carbon data using approved guidelines, the NCMC will undertake the follow tasks:

- Develop and update the national baseline database;
- Develop and improve the approved carbon assessment methods;
- Train foresters in the approved carbon assessment methods;
- Develop and maintain the carbon database;
- Analyse data;
- Submit the results to the government REDD scheme and its stakeholders; and
- Submit the data to the National Forest and Beekeeping Programme Monitoring Database (NAFOBEDA).

Regular reporting:

Reporting will be needed at various levels.

- Individual projects need to report on the carbon data to the national REDD scheme for funding;
- The country needs to report the carbon data to the markets of the international community in addition to the obligatory international reporting on REDD issues to the United Nations Framework Convention for Climate Change (UNFCCC);
- Reporting on financial flows and livelihood issues will also be required at all levels.

Financial mechanisms and incentives

A central objective of REDD is to provide sufficient incentives to motivate stakeholders to reverse the effect of threats overshadowing the forests. One option is to pay stakeholders in proportion to the carbon savings they generate. However, differing climatic conditions in different places mean that outputs will vary even though input efforts are similar. Thus, it may be logical to make payments according to input efforts rather than outputs, for example to pay for assessing carbon rather than any increase in carbon. This could also apply to credits for maintaining forest stocks in conservation areas, because in these areas carbon stocks may only be enhanced a little if at all.

Transparency

Any payment system should be designed in a participatory way and involve representatives of the stakeholders, such that there is wide agreement on the system before any crediting takes place (Table 7.2).

Table 7.2 Financial mechanisms and incentives

Issues to be addressed	Actions	Lead institution/ facilitator	When
Financial mechanisms			
Lack of transparent financial mechanisms to receive and channel REDD funds to stakeholders	Review existing trust funds and fund holding arrangements and develop options for the efficient and independent management of a REDD Fund	FBD, EAMCEF, MFEA	Quick start
	Establish a National REDD Trust Fund	FBD, MFEA, Ministry of Law and Constitution	Continuous
	Review existing models and options for fair and equitable (financial and non-financial) benefit sharing	FBD, MFEA, Ministry of Law and Constitution, universities	Quick start
	Produce guidelines for benefit sharing mechanism	FBD	Quick start
	Assess REDD contractual requirements (both between GoT and carbon buyers, and GoT and beneficiaries/implementers)	FBD, VPO, LGAs	Continuous
Inadequate social safeguards	Implement REDD contractual requirements	FBD, VPO, LGAs, beneficiaries	Continuous
	Develop guidelines to ensure social safeguards and national oversight/monitoring for carbon markets	FBD, VPO, LGAs	Quick start
	Review issues of liability, taxation, etc.	MFEA, FBD, VPO, LGAs,	Continuous
Incentives for sustainable forest management			
Inadequate incentives for sustainable forest management	Undertake cost-benefit analysis of REDD to fully understand incentives and disincentives (including transaction and opportunity costs foregone)	FBD, VPO, LGAs	Quick start
	Investigate the feasibility of carbon tax relief to act as an incentive – needs to be reviewed	FBD, VPO, LGAs	Quick start
	Identify and value the co-benefits that could accrue through REDD actions	FBD, VPO, LGAs	Quick start
Identification of measures to address disincentives	Explore links with relevant sectors to address competing land-use options that act as disincentives to REDD	FBD, VPO, LGAs	Continuous
	Conduct a risk analysis of REDD incentives and co-benefits	FBD, VPO, LGAs	Quick start

In order to ensure a transparent mechanism for receiving and handling REDD funds, Tanzania needs to establish an independent National REDD Trust Fund. The REDD Trust Fund would have the following functions:

- To receive fund from buyers;
- To distribute funds to communities/implementers; and
- To ensure a performance based payment of funds.

Stakeholder engagement

The REDD approach will involve many stakeholders. State and non-state organisations will be needed to handle stakeholder interests, such as providing support, training in forest inventories, registering carbon stock changes, research and making payments (Table 7.3). Special attention will need to be paid to the involvement of local communities in management in a positive and mutually beneficial way. This is one of the very few effective means of controlling degradation over very large areas.

The existing Participatory Forest Management framework should be used as a springboard to implement REDD nationally.

Table 7.3 Stakeholder engagement and involvement of local communities

Issues to be addressed	Actions	Lead institution/ Facilitator	When
Lack of information on stakeholders	Stakeholder analysis (who, roles and responsibilities)	Consulting institutions	Quick start
	Stakeholder consultation and awareness	VPO, FBD, MDAs, CSO	Continuous
	Carry out study to assess stakeholders' willingness to participate in forming partnerships and implementing REDD programmes	VPO, FBD, MDAs, CSO	Quick start
Inadequate information on local and indigenous rights	Identification of the local and indigenous rights with respect to REDD	FBD, VPO, LGAs	Quick start
Lack of links between REDD and existing conservation approaches	Review and build on existing community involvement mechanisms	FBD, VPO, LGAs	Quick start
There are number of unforeseen risks	Carry out detailed analysis of risks related to REDD, such as distribution of power, replacement of existing culture of commercial and elite capture of conservation with legitimate beneficiaries	FBD, VPO, Research and academic institutions	Continuous

Coordination

It will be important to coordinate who is doing what and where. Clear coordination of all stakeholders in the national REDD scheme is needed in order to avoid possible conflicts, overlaps and or duplication of efforts (Figure 7.2).

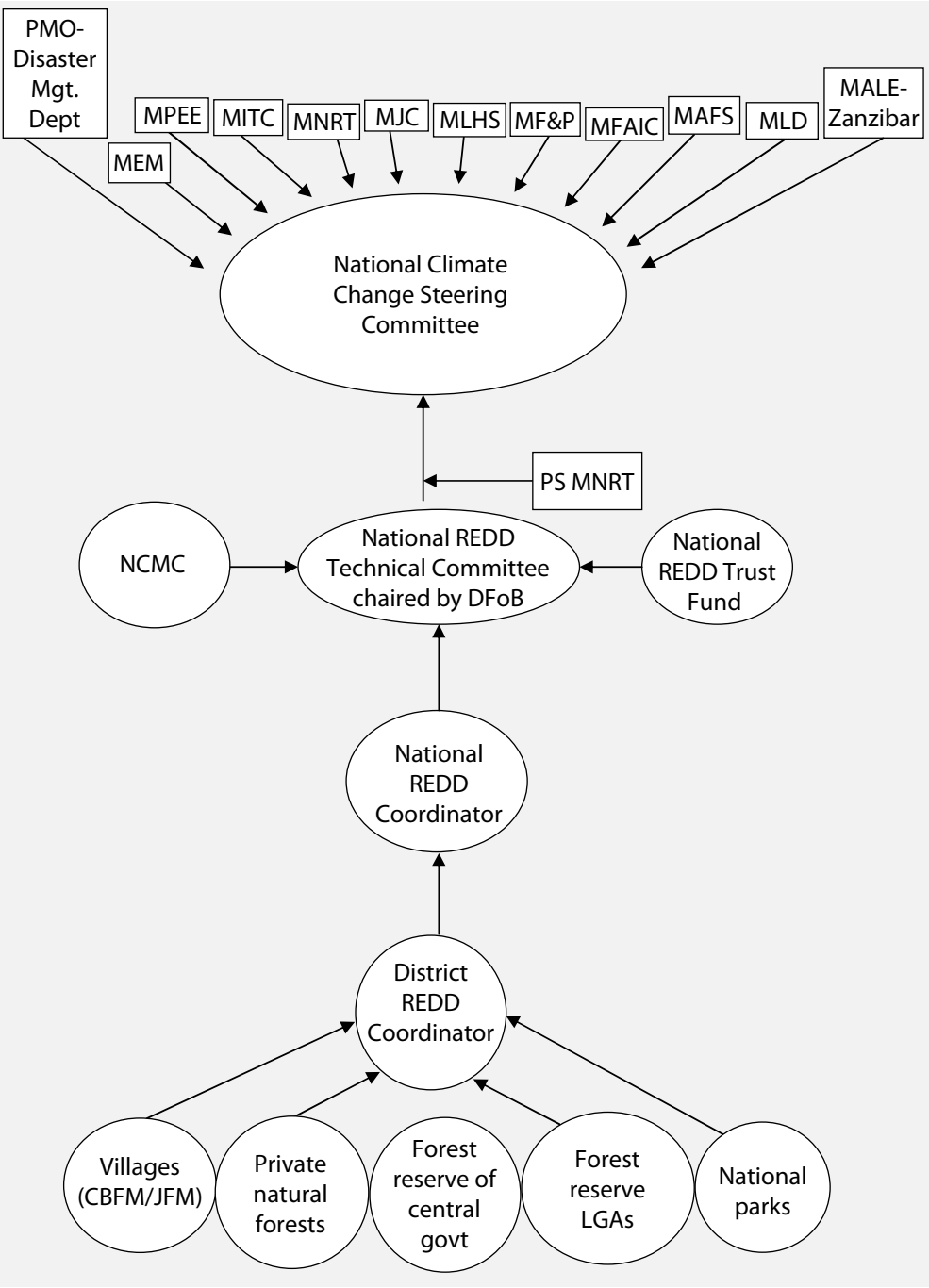


Figure 7.2 Proposed REDD reporting structure

The existing National Climate Change Steering Committee (NCCSC), which handles all issues related to climate change in Tanzania, will be the top decision-making body for the national REDD scheme. The Permanent Secretary of the Ministry of Natural Resources and Tourism will report on REDD matters to the NCCSC. There will be a National REDD Technical Committee (NRTC) which will oversee all REDD activities in the country (Table 7.4). The NRTC will be chaired by the Forestry and Beekeeping Division, which will report to the Permanent Secretary of the Ministry of Natural Resources and Tourism (MNRT).

To manage and run daily REDD activities there will be a National REDD Coordinator, who will work under the Director of Forestry and Beekeeping Division (DFoB), and be responsible for coordinating all REDD activities in the districts, NCMC and the National REDD Trust Fund. Under the National REDD Coordinator there will be District REDD Coordinators who will be responsible for coordinating all REDD activities in their districts. They will work independently of local governments and report directly to the National REDD Coordinator. This coordination structure (Table 7.5) will be a reporting rather than an administrative arrangement. Whilst the Forestry and Beekeeping Division will be responsible for implementing the mandate, the Department of Energy will continue to coordinate at the national level. It will, for example, be responsible for officially reporting to international forums and formulating policy.

Despite the proposed coordination there may still be unforeseen risks and a lack of mechanisms for conflict resolution.

Table 7.4 Structure and functions of the National REDD Technical Committee (NRTC)

Composition	Functions of the Technical Committee
The National REDD Technical Committee should have the following membership: • Director of Forestry and Beekeeping (Chairperson), Director of Wildlife Division, Director of Forestry-Zanzibar, Director from Division of Environment, representatives from the ministries of Land, Energy, Finance, Agriculture, PMO-RALG; • DGs of TAFORI, EAMCEF, NEMC, TANAPA; • Representatives of CSO/NGOs and of the private sector, Faculties of Forestry and Nature Conservation-SUA, IRA-UDSM, TIC; • REDD National Coordinator (Secretary).	Advise PS MNRT on REDD issues including: • Policy and legal framework; • Appointments; • Budgets, work plans and progress reports; • Receive, review and recommend project proposals; • Carbon accounting and payment.

Table 7.5 Coordination of REDD activities

Issues to be addressed	Actions	Lead institution/ Facilitator	When
Inadequate coordination and communication	Establish horizontal and vertical links between negotiators, implementers, the National Carbon Monitoring Centre, verifiers, the National Carbon Trust Fund and other stakeholders	FBD, VPO	Quick start
Lack of mechanism for conflict resolution under REDD	Develop modalities for conflict resolution Harmonise existing policies to accommodate REDD	FBD, VPO, LGAs	Continuous
Inadequate coordination between various sectors	Ensure strong coordination between primary institutions involved with REDD implementation and other sectors, such as water, agriculture and lands	FBD, VPO, LGAs	Continuous

Market access

As REDD policy is currently perceived in Tanzania, REDD funds will be received by the national REDD scheme and channelled to stakeholders responsible for reducing emissions. As such, no marketing will be needed at the local level. However, at the international level, the country will need to provide a credible, verifiable and transparent REDD carbon product that will compete in the international market. This will require, amongst other things, knowledge of international funding opportunities, and marketing and negotiation skills (Table 7.6).

Since REDD funding opportunities are still evolving, knowledge about funding opportunities is generally poor. This calls for market research and training.

Table 7.6 Market access/negotiations

Issues to be addressed	Actions	Lead institution/ facilitator	When
Lack of access to REDD markets	Support negotiations for international market access and security	VPO, FBD	Quick start/ continuous
Poor knowledge of funding opportunities	Prepare national positions for negotiations on REDD	VPO, FBD, MDAs, CSO	Quick start
	Analysis of markets	VPO, FBD, MDAs, CSO	Quick start

Governance and institutional arrangements

Most deforestation occurs in the general land forests, whereas degradation (i.e. loss of biomass) occurs across all forests. Studies have shown considerable human disturbance, even in forest reserves. Participatory forest management (PFM) has been found to be effective in halting deforestation and reversing degradation in unreserved forests and is now included as a major strategy in Tanzania's National Forest Policy and the Forest Act of 2002. Currently only 12.8% (about 4.1 million ha) of the country's forests are under PFM because of a lack of funds and capacity. Also, PFM projects are currently being established very slowly. Access to REDD funds could potentially facilitate and speed up this process and, possibly, reduce the high levels of deforestation and forest degradation.

PFM in Tanzania takes the form of joint forest management (JFM) and community-based forest management (CBFM). Under JFM, forest ownership remains with the government whilst local communities are duty bearers and, in exchange, get user rights and access to some forest products and services. With CBFM the local communities are the owners as well as the rights holders and duty bearers. Most of the CBFM areas are demarcated as village general land. Thus, they are also called village forest reserves (VLFRs). One of the bottlenecks in PFM is the issue of benefit sharing.

Drivers of deforestation and forest degradation

To participate in REDD, Tanzania will need to make efforts to reduce deforestation and forest degradation in general land forests and forest reserves. This will mean addressing the drivers of deforestation and forest degradation (Table 7.7).

Table 7.7 Drivers of deforestation and forest degradation in Tanzania

Drivers	Deforestation	Forest degradation
Shifting cultivation due to economic problems, soil infertility, land availability	✓	
Commercial farming e.g. biofuel, tobacco, sisal, tea	✓	
Lack of land use plans	✓	✓
Forest fires	✓	✓
Over exploitation of forests	✓	✓
Over grazing	✓	✓
Mining e.g. minerals, salts	✓	✓
Infrastructure development e.g. roads, power lines	✓	
Energy for domestic and industrial use	✓	✓
Refugees – civil wars, hunger	✓	✓
Natural disasters – drought, floods	✓	✓
Weak law enforcement	✓	✓
Expansion of settlement	✓	✓

Little separates the causes of deforestation from the causes of forest degradation. Since the causes are mostly the same in both, they essentially have to be addressed together to reduce emissions. Forest policy emphasises that local communities should participate in solving problems such as lack of proper land use plans, the limited spread of PFM and unsustainable harvesting of timber.

Policy and legal framework

The legal framework supports sustainable forest management and hence REDD policy. For example, the National Land Policy of 1995 aims to promote and ensure the wise use of land, guide allocations, prevent degradation and resolve conflicts. The National Environmental Management Policy of 1997 recognises the importance of forests in climate change mitigation. Similarly, both the current National Forest Policy of 1998 and the subsequent National Forestry Programme of 2001 recognise the need for improved governance in order to promote sustainable forest management and the utilisation of forests for improved livelihoods. The legal framework in Tanzania, therefore, promotes sustainable forest management and protection, which are important for the implementation of REDD policy. However it falls short of mentioning specific issues on climate change mitigation.

Land tenure

According to the National Land Policy, in Tanzania, the President owns the land in trust for present and future generations. The Commissioner for Lands acts on behalf of the President and administers the land. A right of occupancy, which is the main form of tenure, can either be acquired through a grant by the Commissioner for Lands or through custom and tradition.

The National Land Act and Village Land Act of 1999 provide the legal framework for the three land categories, namely general land, reserved land and village land. General land is a residual category. It is unoccupied land that is available for other purposes. It includes all land that is not reserved land or village land. Reserved land denotes all the land set aside for special purposes, including forest reserves, game parks, game reserves, land reserved for public utilities and highways, hazardous land and land designated under the Town and Country Planning Ordinance. The village land constitutes all land in the villages. Forests in the general lands are most vulnerable to deforestation and degradation. Most of the villages are not yet registered and their lands may be categorised as general lands. Registering the villages and implementing PFM are likely to support REDD (Table 7.8).

Table 7.8 Governance for REDD

Issues to be addressed	Actions	Lead institution/facilitator	When
Institutional arrangement			
Lack of proper land use plans, limited spread of PFM, unsustainable harvesting	Set up proper land use plans for the villages including protective and productive forest areas	VPO, FBD and relevant institutions	Quick start
	Scale up PFM activities	VPO, FBD and relevant institutions	Quick start
	Develop sustainable harvesting plans for productive forests	VPO, FBD and relevant institutions	Quick start
	Draw up forest management plans	VPO, FBD and relevant institutions	Quick start
Inadequate efforts to engage stakeholders in addressing drivers of deforestation and forest degradation, e.g. forest fires, poverty, shifting cultivation	Enhance good governance at all levels	VPO, FBD and relevant institutions	Quick start/continuous
	Make operational the Forest Fires Communication Strategy	FBD, LGAs, CSO	Continuous
	Enhance agroforestry practice	FBD, Agriculture, LGAs, CSO	Continuous
	Develop a Wood Fuel Action Plan	FBD, MEM, LGAs, MDAs	Quick start
Policy and legal framework			
Lack of policy and legal provisions to support REDD implementation	National Forest Policy and Act and other relevant acts should be reviewed to accommodate climate change issues, including REDD policy	VPO, FBD and relevant institutions	Quick start/continuous
Inadequate implementation of the National Forestry Programme	Support implementation of relevant programme components, e.g. biodiversity and ecosystem conservation component	FBD, VPO, LGAs, MDAs	Continuous
Land tenure			
Land security through land ownership	Harmonisation of the National Land Act and Village Land Act	VPO, FBD and relevant institutions	Quick start/continuous
	Registration of village land	VPO, FBD and relevant institutions	Quick start/continuous
	Analysis of factors limiting tenure security	VPO, FBD and relevant institutions	Continuous

Capacity building (training and infrastructure)

The Bali Roadmap stresses capacity building and technology transfer to developing countries in order to help them to benefit from emerging opportunities, such as REDD. REDD is a new policy requiring new and complex technologies and processes, such as monitoring, assessment reporting and verification (MARV), geographic information systems (GIS) and remote sensing, cost benefit analysis, and communication and negotiation techniques. Hence capacity building in terms of training and infrastructure development is needed at all levels (i.e. local, regional and national).

Tanzania is committed to ensuring that the capacity of local institutions is built during the REDD pilot phase (Table 7.9). In this regard local institutions will be given priority in undertaking REDD demonstration activities during the pilot phase. However, where there is limited capacity for local institutions to implement REDD activities foreign organisations will be encouraged to collaborate with local institutions.

Table 7.9 Capacity building (training and Infrastructure)

Issues to be addressed	Actions	Lead institution/facilitator	When
Capacity building for baseline establishment, monitoring, reporting and verification			
Lack of awareness of forest assessment and monitoring methodologies at all levels	Raise REDD awareness and motivate stakeholders to implement operational forest monitoring programmes through seminars and workshops at all levels	FBD, VPO, NGOs, research, academic institutions	Quick action
Inadequate technology	Training on various MARV tools including GIS, remote sensing LiDAR and forest inventory at various levels	Research and academic institutions	
Lack of awareness carbon accounting at all levels	Develop training of trainers for forest carbon monitoring and assessment programmes to be mainstreamed into national extension systems (education, forestry, agriculture, etc.)	FBD, relevant institutions	Quick action
	Implement the National Capacity Self Assessment Action Plan	VPO, FBD, relevant institutions	Continuing
• Shortage of equipment and software	Improve access to hardware, software, internet	FBD, relevant institutions	Continuing
• Inadequate remote sensing skills	Build infrastructure for NCMC, REDD Trust Fund, RS, e.g. set up RS labs	FBD, relevant institutions	Quick action
• Lack of physical infrastructure	Put in place infrastructure for communication with local communities	FBD, relevant institutions	Continuing
• Poor communication and transport	Purchase of equipment such as vehicles, measuring tools	FBD, relevant institutions	Continuing

Issues to be addressed	Actions	Lead institution/ facilitator	When
Capacity building for financial mechanisms and incentives			
Lack of business and negotiation skills relevant to REDD implementation	Train negotiators and beneficiaries to articulate and refine the national policy position with regards to REDD	FBD, VPO, LGAs, NGOs	Continuous
	Undertake participatory national workshops for all stakeholders on REDD and the Bali Roadmap	FBD, VPO, LGAs, NGOs	Quick start
Awareness of REDD at all levels with emphasis on communities	Develop communication, education, and public awareness strategies for REDD related issues	FBD, VPO, LGAs, NGOs	Quick start

Research

The fact that REDD is a new policy underscores the need for significant support from research to implement it. The global scope of climate change requires that the research programme should produce internationally recognised findings that can be debated globally. This calls for international collaboration between research institutions and scientific networks to meet the global challenges of climate change (Table 7.10). Research should be directed to climate change adaptation and mitigation issues in Tanzania (Table 7.11). Equally important is focused research in support of REDD implementation, for issues such as setting baselines.

Table 7.10 Information/knowledge dissemination and networking

Issues to be addressed	Actions	Lead institution/ Facilitator	When
Ineffective communication and information sharing mechanisms	Establish REDD networking mechanism and expert working groups	VPO, FBD, LGAs, MDAs	Quick start
	Establish a website/portal at the National Climate Change Focal Point	VPO, Consulting firm	Quick start
	Create a REDD web-based database	VPO, FBD, MDAs, CSO	Quick start

Table 7.11 Research to support implementation of REDD

Issues to be addressed	Actions	Lead institution/ Facilitator	When
Lack of a comprehensive research and methodology development programme for climate change adaptation and mitigation activities	Undertake research on climate change adaptation and mitigation	Research institutions	Quick start
Lack of focused research relevant to Tanzania in support of REDD implementation	Undertake focused research in the areas of REDD relevant to Tanzania	Research institutions	Quick start

Demonstration activities and preparation of a REDD strategy

Tanzania is already implementing REDD demonstration activities following the Bali Roadmap (Dec 2/CoP.13). Amongst other provisions, the Roadmap asked Parties to explore a range of actions, identify options and undertake efforts, including demonstration activities, to address the drivers of deforestation relevant to their national circumstances. Demonstration activities are designed to reduce emissions from deforestation and forest degradation and enhance forest carbon stocks through sustainable management of forests. Tanzania receives support from various development partners, including the Government of Norway, to undertake such activities and report its experiences and best practices to CoP-15 in Copenhagen, December 2009. The perceived best practices and experiences will be the basis for negotiations on the future global climate change regime and will provide lessons on REDD issues that can be scaled up by other Parties.

It is in this context that Tanzania implements REDD demonstration activities that will influence and contribute to shaping the future climate change regime (Table 7.12).

During 2008, the Government started developing a National Strategy and Action Plan for REDD. A National REDD Task Force was formed to initiate strategy development, with representation from the Forestry and Beekeeping Division (FBD), the Ministry of Natural Resources and Tourism (MNRT), the Department of the Environment (DoE) and the Vice President's Office (VPO). In early 2009, a stakeholder workshop was convened by the FBD to develop the first draft of a framework for ongoing strategy development. It is envisaged that the National REDD Strategy will be finalised by the end of 2010. As an interim measure, the Institute of Resource Assessment will independently facilitate the Task Force for REDD strategy development.

Criteria for selecting REDD demonstration sites:

- Previous experience of forest carbon data;
- PFM already in place (signed agreement, bylaws, management plan, VNRC);
- Land use plan in place with a forest to start with;
- There are deforestation/degradation threats;
- Size of the forest and opportunity for aggregation;
- Forest type representation (montane, miombo, mangrove);
- Community willingness to participate;
- Geographical representation including Zanzibar (by zones, regions, districts);
- Minimal resource conflict;
- Level of poverty (medium, high);
- Clear land tenure arrangements;
- Based on variety of management regimes.

Table 7.12 Quick start REDD demonstration activities

Issues to be addressed	Actions to be taken	Leading institution/facilitator	When
Inadequate pilot and/or demonstration activities	Select demonstration sites and institutions	VPO, FBD	Quick start
	Carryout baseline studies	FBD, research institutions	Quick start
	Carryout benchmark socioeconomic study	FBD, research institutions	Quick start
	Establish participatory carbon assessment and monitoring strategy	FBD, research institutions	Quick start
	Raise awareness on carbon trading	VPO, FBD, CSO	Quick start
	Develop resource use, conflict resolution mechanisms	VPO, FBD, LGAs	Quick start
	Draw up forest management plans	FBD, LGAs, research institutions	Quick start
	Develop an equitable benefit sharing mechanism	VPO, FBD, LGAs, CSO	Quick start
	Develop and test methodologies, manuals and guidelines based on evidence from research	VPO, FBD, research institutions	Quick start
	Set up a National Carbon Accounting System	VPO, FBD	Quick start
	Review policy and legal framework		
Inadequate capacity to implement REDD activities	Promote alternative energy sources	VPO, MEM, LGAs, FBD, CSO	Quick start
	Promote alternative income generating activities	LGAs, research institutions, CSO, VPO, FBD	Quick start
	Build capacity at all levels	VPO, FBD, MDAs, CSO	Quick start
	Implement demonstration/pilot activities	VPO, FBD, MDAs	Quick start
Uncoordinated ongoing activities	Coordinate demonstration activities	VPO, FBD, LGAs	Quick start
	MARV of demonstration activities	VPO, designated institution	Quick start
	Document all best practices, baseline scenarios and baseline information on ongoing activities (methodology, management and MARV)	VPO, FBD, PMO-RALG, CSO	Quick start

Criteria for selecting implementing institutions at the local level:

- Local experience;
- Experience and capacity (human, equipment and infrastructure) to implement REDD, including PFM and other land use interventions;
- Institution with ongoing REDD activities;
- Willingness to work in partnership;
- Operational capacity.

Criteria for selecting institutions at the national level:

- Experience of working in Tanzania;
- Experience and capacity to implement REDD, including PFM and other land use interventions;
- Must have operational capacity (human, equipment and infrastructure);
- Institution with ongoing REDD activities;
- Willingness to work in partnership;
- Conversant with policy and legal framework on REDD;
- Experience in forest carbon data handling and analysis;
- Specialised and/or experienced in either or both:
 - Carrying out research and training;
 - Carrying out extension services.

A typical REDD demonstration activity is described in Box 7.1.

Box 7.1 The Kyoto: Think Global, Act Local (K:TGAL) Research Project

Eligibility of community managed natural forests to be included as a carbon mitigation activity: important lessons learned

Tanzanian project partners: Department of Forest Mensuration and Management, Faculty of Forestry and Nature Conservation, Sokoine University of Agriculture P.O. BOX 3013, Morogoro, Tanzania¹

Between 2003 and 2008, researchers in a Kyoto: Think Global, Act Local (K:TGAL) project investigated the possibilities and potential for community forest management (CFM) of existing natural forest to be included as an eligible carbon mitigation activity under international climate change agreements. The programme also explored the value of CFM as a climate adaptation strategy.

The programme involved research teams in four regions, Tanzania, West Africa, Papua New Guinea and the Himalayas. It coordinated the work of a number of local NGOs and conducted experiments with them in villages that are already engaged in CFM. Apart from capacity building at local and regional levels, the programme:

- Developed and tested a field guide for assessing and monitoring reduced forest degradation and carbon sequestration by local communities;
- Measured the extent to which CFM practices increase sequestration in existing natural forests and reduce emissions of carbon by avoiding deforestation;
- Measured the (non-carbon) benefits of CFM in terms of sustainability and livelihoods;
- Tested a pilot scheme to purchase the forest carbon of the CFM. Under this scheme the funds were given to the respective village governments and the researchers produced a follow up document on how the funds were managed, used and/or distributed amongst villagers. This will shed light on the future possible responses of villagers to REDD funds;
- The findings were shared widely, and published as scientific articles and policy notes. <http://www.communitycarbonforestry.org/>.

Project sites in Tanzania

In Tanzania K: TGAL was located in different vegetation types in three districts.

District	Village	Forest	Vegetation type	Total forest area (ha)
Morogoro	Gwata	Ksuatfr and Kimunyu	Miombo woodland	1020
Morogoro	Ludewa	Mangala	Lowland forest	28,5
Muheza	Mgambo	Handei	Sub-montane	156
Babati	Ayasanda	Haitemba and Warib	Miombo woodland	550
Total				1726

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Objectives

The K: TGAL research team in Tanzania is compiling best practices learned from this programme and finalising some of the remaining activities in order to provide concrete information concerning ongoing REDD related activities to report to CoP-15 in Copenhagen.

Specific activities

- Continue measuring the extent to which REDD demonstration projects in Tanzania result in reducing levels of forest degradation and increasing carbon sequestration compared with unmanaged forests;
- Continue testing pilot REDD schemes for the purchase of forest carbon from the REDD demonstration projects at the village levels;
- Document and present the findings in side events at COP meetings, forest days, workshops and seminars;
- Establish a rational mechanism for rewarding communities participating in REDD;
- Publish scientific articles and policy notes.

Approach

Continue to measure the extent to which REDD demonstration projects in Tanzania result in reduced levels of forest degradation and increased carbon sequestration compared with unmanaged forests

Data from the REDD demonstration sites will continue to be collected and analysed to determine the extent to which these projects result in reducing levels of forest degradation and increasing carbon sequestration compared with unmanaged forests, i.e. the business-as-usual scenario.

Continue testing pilot REDD schemes for the purchase of forest carbon from the REDD demonstration projects at the village levels

It is envisaged that, under the REDD policy, payments for carbon will be made at the national level on the basis of verified reductions in carbon lost through deforestation and degradation over a given commitment period. This will be based on the national reference scenarios for deforestation and degradation agreed by the country and UNFCCC. For all stakeholders to benefit, a transparent system of institutional arrangements for implementing REDD, which allows funds received at the national level under the international REDD mechanism to be disbursed, should be put in place. Assuming this system will be part of the national effort to access REDD funding, it is still not known how the villages will respond to the funds. The K: TGAL research project, therefore, initiated a pilot scheme to purchase forest carbon from the village forests. The funds were given to the village governments and the researchers are compiling a follow-up document on how the funds were managed, used and/or distributed amongst the villagers. This is being done to get some ideas about the future possible responses of the villagers to REDD funds.

However, the funds used by K: TGAL were limited and more money needs to be allocated for this purpose.

Establish a rational mechanism for rewarding communities participating in REDD schemes

Given the difficulties of establishing baselines for forest degradation experienced in the K: TGAL project, it was more convenient to reward communities for enhancing forest rather than for reducing degradation. In this arrangement, payments were made for carbon sequestered. However, the net carbon sequestration depended on the type of forest, the climatic conditions of the area and size of the forest, amongst other things. There have been differences in the amounts of carbon sequestered in forests although the levels of efforts/inputs have been the same. The project will attempt to establish the most rational mechanism for rewarding REDD initiatives. This will shed light on how to reward efforts resulting in avoided deforestation/ degradation, which do not necessarily result in forest enhancement, e.g. in conservation areas.

Document and present the findings in side events at COP meetings, forest days, workshops and seminars

Previous findings, and other findings that will be generated by this project, will be presented in side events at CoP-5 and other forthcoming COPs. The results will also be shared at forest days (including Forest Day 3 in Copenhagen), workshops and meetings.

Publish scientific articles and policy notes

A number of scientific articles, to be published in local and international journals, will also be important outputs of the proposed project. Since REDD policy is still new, policy notes will be prepared to inform the policy makers and general public about important developments in REDD policy.

Annex 7A. Acronyms used in tables and figures and not defined elsewhere

CBFM	Community-based forest management
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
COP	Conference of Parties
CSO	Civil society organisations
DFoB	Director of Forest and Beekeeping
DG	Director General
DoE	Department of the Environment
EAMCEF	Eastern Arc Mountains Conservation Endowment Fund
FAO	Food and Agricultural Organization
FBD	Forestry and Beekeeping Division
GIS	Geographical information systems
GoT	Government of Tanzania
IRA-UDSM	Institute of Resource Assessment – University of Dar Es Salaam
JFM	Joint forest management
KSUATFR	Kitulangalo Sokoine University of Agriculture Training Forest Reserve
LGAs	Local government authorities
MAFS	Ministry of Agriculture and Food Security
MALE	Ministry of Agriculture, Livestock, Environment and Cooperatives, Zanzibar
MARV	Monitoring, assessment, reporting, and verification
MDAs	Ministries, Departments and Agencies
MEM	Ministry of Energy and Minerals
MF&P	Ministry of Finance and Planning
MFAIC	Ministry of Foreign Affairs and International Cooperation
MFEA	Ministry of Finance and Economic Affairs
MITC	Ministry of Information Technology and Communication
MJC	Ministry of Justice and Constitution Affairs

MLD	Ministry of Local Development
MNRT	Ministry of Natural Resources and Tourism
MPEE	Ministry of Planning, Economy and Empowerment
NCCSC	National Climate Change Steering Committee
NCMC	National Carbon Monitoring Centre
NEMC	National Environmental Management Council
NGOs	Nongovernmental organisations
PFM	Participatory forest management
PMO-RALG	Prime Minister's Office – Regional Administration and Local Governments
PS	Permanent Secretary
RS	Remote sensing
SUA	Sokoine University of Agriculture
TAFORI	Tanzania Forestry Research Institute
TANAPA	Tanzania National Parks
TIC	Tanzania Investment Centre
UNFCCC	United Nations Framework Conventions for Climate Change
VCT	Voluntary carbon trading
VNRC	Village Natural Resource Committee
VPO	Vice President's Office

Chapter 8

Madagascar

Barry Ferguson

Madagascar policy context: forests and conservation

Renowned biodiversity hotspot

Madagascar is renowned for its diversity of endemic species; around 80% of the fauna and 90% of the flora on the island are found nowhere else on earth. This has earned the island various labels that point to its importance for conservation, one of the most popular being 'biodiversity hotspot' (Myers *et al.* 2000). Madagascar is also typically portrayed as a prime example of poverty as the driver for deforestation (slash and burn subsistence agriculture). A popular environmental degradation narrative claims that 90% of Madagascar's habitats have been destroyed by man in the two thousand or so years since his arrival on the island.¹

National Environmental Charter and new institutions

Madagascar came to the forefront of global biodiversity conservation in the late 1980s when economic and political liberalisation led to better links with international financial institutions, northern governments, aid agencies and international NGOs. Following the adoption of a National Environmental Charter in 1990, multilateral and bilateral conservation programmes were rolled out under the framework of a three-phase/15-year National Environmental Action Plan (NEAP). The third phase of this plan is currently coming to an end. NEAP established various national organisations to support forest administration. Amongst these were ANGAP, to manage protected areas (ANGAP became Madagascar National Parks (MNP) in November 2008), a National Environmental Office (ONE), to oversee environmental impact assessments and monitor environmental change, and a National Association for Environmental Action (ANAE) to implement environmental interventions in the field.

Reform of forest services

Forest administration has evolved significantly over the last 20 years as statutory responsibilities for the management of water, the environment and tourism have been periodically subsumed and separated from the core forest service. At present, management of forests, including protected areas, falls under the Ministry of Environment and Forests

¹ In 2009 narratives such as '*only 10% of Madagascar's natural habitat remains...*' still feature in many academic articles, the popular media and conservation publicity materials, despite frequent questions about the accuracy of this statement and although a number of scholars have disproved it. (See Virah-Sawmy 2009 for a recent critique.)

(MEF).² At the central level this ministry has collaborated in a variety of bilateral and multilateral schemes or interventions to improve forest management. Some of the most significant recent ventures to reform forestry involving donors have been:

- USA cooperation
 - USAID Forest Sector Reform Programme (JARIALA – zoning, procedural improvement, deforestation analysis, sustainable forest production) implemented by the US-based company International Resources Group (IRG) (2004–2009).
- German cooperation
 - GTZ Projet de Gestion des Ressources Naturelles (PGRN – a forestry management programme) implemented by German Technical Cooperation (ongoing).
 - KfW – large protected area programmes.
- World Bank (and associated bodies)
 - Support for forest administration to implement parts of the third phase of the National Environmental Action Plan, PE3, and funding for Association Nationale pour la Gestion des Aires Protégées (ANGAP) operational costs (NEAP Phase 3: 2003–2009).
- French Development Cooperation
 - Fonds Française pour l'Environnement Mondial/Agence Française du Développement (FFEM/AFD) Priority Solidarity Funds (FSP) – implementing a range of forest policies and protected area reforms, and establishing community-managed forests and new protected areas (ongoing).

From colonial forest policy to integrated conservation and development projects

Many forestry policies in Madagascar originated before 1960, during the French colonial era, including the system of strictly protected areas (National Parks, Integral Nature Reserves and Special Reserves), classified forests and hunting reserves. As the NEAP began to roll out in the early 1990s, new policies were developed to improve forest management. An array of the early integrated conservation and development projects (ICDPs) were implemented in Madagascar (including renowned projects in Ranomafana, Ankarana, Andohahela, Masoala, Zahamena and Beza Mahafaly, amongst others). The aim of the ICDPs was to provide sustainable livelihoods (improved agriculture, ecotourism, honey/silk farming), education and health interventions on the periphery of national parks.

Community forestry policies

In 1996 the first community-based natural resource management (CBNRM) law was enacted in Madagascar. The policy, known as Gestion Locale Sécurisée (GELOSE: Secured Local Management), facilitated time-bound transfer of management rights for

² MEF (Ministère de l'Environnement et des Forêts) as it is now, was previously MEFT (Ministère de l'Environnement, des Forêts et du Tourisme). Before that it was MEEFT (Ministère de l'Environnement, des Eaux et Forêts et du Tourisme), prior to that it was MEEF (Ministère de l'Environnement, des Eaux et Forêts) and prior to that MEF (Ministère des Eaux et Forêts).



Hatsake – slash and burn agriculture for maize cultivation at Anjatsikolo, Ifotaka, at a REDD pilot site in southern Madagascar (© WWF-PHCF)



Antandroy women collecting firewood from what is now part of a REDD pilot project forest (part of WWF-PHCF) north of Behara, southern Madagascar. There are no plantation forests within 50 km of this area (Photo by Barry Ferguson)

natural resources to local communities. GELOSE was applied mainly to forests, but also to marine and freshwater fisheries. In 2000 a 'streamlined' policy specifically for forests was enacted, known as Gestion Contractualisée des Forêts (GCF: Contracted Forest Management), to transfer management of forests to communities. Under GCF (and to a lesser extent GELOSE) NGOs and donor programmes have established local associations for community forest management (CFM) across the island - Vondron Olona Ifotony (VOI) and Communauté de Base (COBA). These are legally recognised community associations with elected management committees, Comité de Gestion (COGE), which sign time-bound contracts with the forest service to take charge of forest management. Despite strong criticism regarding the efficacy and poor implementation of these CFM agreements (e.g. Hockley and Andriamaravololona 2007; Montagne *et al.* 2007; Casse 2007), many communities have had their contracts renewed after evaluation of the first 3-year term. It is worth noting that bans on clearing forest for agriculture were put in place at many times during the last century, but enforcing bans, and minimising complicity and corruption in forest administration and CFM, is far from successful. Legally, almost all natural forests in Madagascar still belong to the state, although there are various forms of customary tenure across much of the island. The national land tenure reform programme, Programme Nationale Foncière (PNF), has been operating since 2005, but principally focuses on simplifying the process for obtaining land titles for agricultural land, not on legitimising customary tenure of forests (although it could be applied to forests as long as they are not within special status areas such as new protected areas). Much work is still to be done to integrate well established customary forest tenure systems, and associated shifting and expanding agriculture, with legally recognised mechanisms, such as CFM and the PNF.

Durban vision triggers a massive expansion of protected areas

The next significant milestone in Malagasy forest policy was in 2003. The then President of Madagascar, Marc Ravalomanana, was convinced by part of the international conservation lobby to adopt a policy whereby his government would triple the area of Madagascar's protected areas within five years. Protecting an estimated 6 million ha of terrestrial habitat would mean that Madagascar would reach the IUCN recommended target of 10% coverage of the island by protected areas. This policy, which was announced at the World Parks Congress in Durban, South Africa, became known as the Durban Vision. In the six years since the Durban Vision, protected areas have expanded from 1.76 million ha to 5.58 million ha (Green Synergy 2009) more than triple the pre-2003 level, and now encompass 9.44% of Madagascar's land area.

The protected areas established in the colonial era, plus extensions and adaptations, and new protected areas created before 2003, all fit into the three strictest IUCN categories for protected areas (I, II, IV).³ These areas are often isolated, and characterised by difficult terrain that make them relatively unfavourable to permanent settlement and intensive agriculture. In general, they are also sparsely populated. In relative terms (for

3 I = Reserve Naturel Integral; II = Parc Nationale; IV = Reserve Speciale. (See Annex 8B for detailed presentations on the categories).

Madagascar) you could call many of the early generation of protected areas ‘wildernesses’. They are almost all managed by Madagascar National Parks (MNP – formerly ANGAP), with the exception of a few managed by other bodies, such as the Wildlife Conservation Society in the case of Masoala National Park.

In order to meet the ambitions of the Durban Vision it was necessary to establish dozens of new protected areas (NAPs) across Madagascar. Many of these new protected areas were home to bigger and more dispersed human populations than the earlier PAs and the inhabitants depend more on using and clearing forest for their livelihoods than people in the older PAs.⁴ These new protected areas typically fall into IUCN categories III, V and VI.⁵ Legislation for these new protected areas was drawn up after the Durban Vision was declared.⁶ Many have zoning and management arrangements which are based on agglomerations of community forest management transfers (GCFs). Some of the NAPs also have at their core, ‘strict conservation zones’,⁷ where management objectives are more in line with the older protected areas; others have more fragmented conservation zones.

International NGOs, community forestry and protected areas

NGOs and research agencies have played an important role in both developing and implementing community forestry policies, and in establishing new protected areas. Three of the four largest US-based international conservation NGOs (Brockington 2009) have major programmes in Madagascar, the World Wide Fund for Nature (WWF), Wildlife Conservation Society (WCS) and Conservation International (CI).⁸ All of them have promoted, implemented or funded community forest management transfers (through GELOSE/GCF) and, since the Durban Vision, the establishment of NAPs. Various other international and national NGOs have played pivotal roles in helping to reach the level of CFM and NAP coverage seen today. These include NGOs such as Missouri Botanical Gardens, Durrell Wildlife Conservation Trust, The Peregrine Fund, Vintsy/Birdlife International, Man and the Environment, FANAMBY, Association Intercooperation Madagascar (AIM), SAHA, GERP, Madagasikara Voakajy and Mitsinjo.

The research community has also been closely involved in conceiving CFM policies and in designing their implementation in certain areas. Researchers and consultants have played a key role in evaluating and critiquing CFM, and are currently studying the evolution of individual community forest management associations into federations, a new development in Madagascar’s protected areas. French and German applied research institutes, as well as scholars and practitioners from North American and

⁴ There are no doubt exceptions to this generalisation, such as the Makira Protected Area, which does have significant areas of relatively ‘inaccessible wilderness’ and, as a new protected area, is considered as IUCN Category II.

⁵ III = Monument Naturel; V = Paysage Harmonieuse Protegee; VI = Reserve des Ressources Naturel. (See Appendix p44).

⁶ Durbin (2006) provides an accessible overview of the development of new protected areas in Madagascar.

⁷ Core Strict Conservation Zones known as ‘*Noyau Dur*’ (hard core).

⁸ The Nature Conservancy has provided technical support for various priority setting and management planning tools (such as the 5S Target Setting System), but does not have an in-country programme.

other European academic institutions, have been closely involved in these activities and other forestry interventions in Madagascar. Organisations involved in this work include the Institute de la Recherche pour Développement (IRD), Centre International de Recherche en Agronomie pour le Développement (CIRAD), the World Forestry Institute (vTi) Hamburg, Madison Land Tenure Centre, Cornell University and the University of Roskilde.

Livelihood challenges persist: trials of compensation payments

To provide better and alternative sources of revenue to make community forestry and new protected areas work without degrading the quality of life of forest people, the conservation movement in Madagascar introduced payments for ecosystem services (PES). These kicked off in 2001 with a study by Durbin and colleagues (Durbin *et al.* 2001). PES are both an incentive for communities to engage in conservation and compensation for losing access to forest resources. Interventions of this kind are increasingly becoming obligatory as part of livelihood safeguard policies introduced by the Malagasy Government under pressure from the World Bank. However, as land tenure in most of rural Madagascar is unsecured (*de jure*) and the state still owns natural forests and, as forest clearing is illegal, PES initiatives have been designed to confer benefits (in-kind rewards, direct payments) at the community level, rather than at the household level. The intention is that the benefits of community projects will trickle down to individual households and generate jobs in forest management. A national working group on PES has been established (*Groupe de Travail sur les PSE à Madagascar*) and three examples of early progress on PES in Madagascar's forests are:

1. *Menabe* (western dry forest): In the *Menabe* forests of western Madagascar the Durrell Wildlife Conservation Trust has established an Inter-Village Competition for participatory ecological monitoring (PEM). Each village on the periphery of the protected area manages an area of forest (community management). Technicians and community members jointly carry out monthly forest surveys. Communities gain points for positive indicators of biodiversity (rare species, abundance of key species), and lose points for evidence of hunting, selective logging and forest clearing. The villages with high scores win funds to buy goods and improve community infrastructure. Preliminary findings⁹ suggest that the competition is having a positive effect on conservation in the *Menabe*. However, this seems to be because NGO staff patrol regularly and because the monthly surveys act as a deterrent to hunting, clearing and logging. This 'policing' influences individual behaviour more than the rewards to the community from the competition.
2. CAZ (tropical rainforest): In the Ankeniheny to Zahamena rainforest corridor (CAZ), in the east of Madagascar, Conservation International and its partners have established Conservation Agreements. These are broadly modelled on community forest management. The agreements permit certain sustainable uses of the forest, with payments for additional activities, such as patrolling the forest regularly.

⁹ Source: Interview with DWCT staff member, citing a forthcoming doctoral thesis, Antananarivo, July 2009.

Early indications¹⁰ are that conservation agreements are having a positive effect on conservation targets. However, the challenges of making them fully operational whilst avoiding social conflict, such as from competition for salaried patrol work, remain.

3. *Makira* (tropical rainforest): The Makira Protected Area is being developed by the Wildlife Conservation Society and is one of Madagascar's five REDD pilot projects. Project documentation indicates that 50% of the REDD carbon credits will be allocated for community activities to provide livelihood alternatives to unsustainable use of the forest (Green Synergy 2009).

Sustainable production forests, koloala and national forest zoning

National forest policy is, of course, not only about forest conservation; there is also an agenda to promote sustainable forest management for production. The vast majority of the Malagasy population, including urban dwellers, relies on forest resources to provide housing and fuel (wood and charcoal). For this reason, sustainable forest management zones have been established as part of a broad national forest zoning programme. One of the five types of zones established in the most recent national forest zoning exercise¹¹, *koloala*, is for timber and fuel production. Eleven *koloala* in the eastern and western regions of Madagascar have been established with USAID support (Keck 2008; Green Synergy, 2009). Further sites for *koloala* have been identified across the country. These will produce wood products sustainably. Forest exploitation will typically be managed by communities.

Efforts are also being made to address the effects of charcoal production for urban markets on natural habitats. This is a particular challenge in dry areas with limited forest plantations, such as Tulear, Fort Dauphin, Diego Suarez and Mahajunga, where, respectively, WWF, Jariala, GTZ and French cooperation agencies have intervened.

REDD emerges as a sustainable finance strategy for forests

All of these initiatives (including NAPs, CFM, PES and *koloala*) cost money. Madagascar faces the challenge of sustainably financing its now huge (5.58 million ha) protected areas system (SAPM). Forest carbon finance, with longer timescales than classic 1-, 3-5-year project funding, is seen as a major opportunity for sustainable financing¹². Whilst nobody seems to be under any illusions that REDD and other forms of payments related to carbon and biodiversity will pay for all the costs of conservation, in Madagascar REDD is emerging as a core component in national conservation strategies. Indeed, Madagascar National Parks, the body which manages the older generation of strictly protected areas, is investigating the possibility of accessing REDD funds through extensions to parks¹³

10 Source: Interview with CI staff member, Antananarivo, July 2009.

11 The five zone categories are Protection Zones (ZPT); Sustainable Forest Management Zones (ZAF '*Koloala*'); Native Habitat Restoration Zones (ZRT); Native or Exotic Reforestation Zones (ZRB) and Agroforestry Pastoral Zones (ZASP).

12 Minutes of CT-REDD. Presentation made at Madagascar side event, Poznań 2008. Interview with CI staff member, Antananarivo, July 2009; Carrat & Loyer 2003.

13 Green Synergy 2009a.

because subsidies (from the World Bank and others) are coming to an end and it is facing a significant downsizing in 2010.

Community forest management will likely be at the core of REDD

However, one of the building blocks for accessing REDD funding, be it for protected areas, sustainable production zones, community forests or plantations, is community forest management, which does not provide secure tenure of forests for rural communities. Evidence gathered by many scholars suggests that very few of the community committees or associations (COBAs/VOIs) to which management has been transferred are fully operational. Nor do most of them have adequate support for adopting alternatives to exploiting and clearing forest (see Hockley and Andriamaravololona 2007; Casse 2007; Montagne *et al.* 2007).

To bring the more than five hundred community forestry associations across Madagascar to the stage where they can and want to run autonomously, have good institutional governance and are economically viable, is still a huge challenge. Furthermore, it remains to be seen how the ethical and human rights issues for people dependent on forests will be addressed, and how an effective conservation and forest product supply system will be structured.



Men from an Antandroy community meet to discuss the transfer of forest management through GCF to their association, Bekiria-Ifotaka, southern Madagascar (a PHCF/WWF REDD pilot)

Table 8.1 Area of Madagascar forests by management categories (2009)

Type of management regime	Area (ha)	% forest
1. Classic protected areas Managed by Madagascar National Parks (MNP) or declared prior to 2003 and managed by MEF (IUCN Categories I, II, IV): National Parks, Integral Nature Reserves, Special Reserves (2003 area + extensions). (i/ii)	1 787 961	18.99
2. New protected areas With temporary protection status and under various management regimes (IUCN Categories III, V, VI) (include some of the areas under GCF and GELOSE community forest management): Natural Monuments, Protected Harmonious Landscapes, Natural Resource Reserves. (i/ii)	3 796 609	40.33
3. Total protected areas (I+II)	5 584 570	59.32
4. <i>Koloala</i> : sustainable production forests Include some of the areas under GCF and GELOSE community forest management. (iii)	803 625	8.53
5. Other forests (VI-(III+IV)) Include some of the areas under GCF and GELOSE community forest management as well as areas destined to become <i>koloala</i> production forests.	3 025 023	32.13
6. Total forest area (2005) (iv)	9 413 218	100

Sources: i) Green Synergy 2009; ii) REBIOMA 2009; iii); Keck 2008; iv) MEFT *et al.* 2009

Progress with REDD at the national level

Madagascar has been prominent in international efforts to move forward with the REDD agenda. The fact that there are five REDD pilot projects operating on the island means that Madagascar has been cited as a model at many international conferences¹⁴ (Blaser 2006; Loyer 2008; Aquino 2008a, 2008c; FCPF 2008a; Holmes 2008; Rakotoarijaona 2008; GoM 2008b, 2009; CCTV 2008). This suggests that Madagascar is amongst the most advanced countries in Africa as regards REDD. Indeed, a recent review, 'Readiness for REDD' (Johns and Johnson 2009), found only two pilot REDD projects in Africa, and these were in Madagascar (CAZ and Makira). Significantly, in 2008 the Makira Project signed a 25-year agreement (until 2033) with the Government of Madagascar to sell carbon credits (WCS 2008); an agreement which received a great deal of media attention.

At the national level, REDD is increasingly being seen by the conservation movement as an important part of the sustainable financing strategy for conservation, particularly for the management of protected areas. This thinking emerged in the public domain in

¹⁴ International meetings where Madagascar's progress on REDD has been showcased include Bad Blumau, Austria, REDD Technical Workshop; Tokyo, UNFCCC REDD Technical Workshop; Poznań, Poland, COP-14 side event; Costa Rica, FCPF presentation; Paris, FCPF Meeting; Lima Peru, Translinks Conference; Manaus, Brazil, South South REDD exchange presentation; Bonn, Germany, TV interview at COP-14 negotiations.

2003 at the same time as the Durban Vision was declared (Carratt and Loyer 2003). Environmental issues, increasing protected areas and minimising deforestation also feature prominently in national and regional development policies (MAP, PDRs).¹⁵

From Masoala to Makira: conceptualising REDD in Madagascar

Early discussions about linking carbon finance to avoided deforestation in Madagascar can be traced back to a paper in *Science* in 2000. This paper considered the broad economic prospects of carbon finance for Masoala National Park (Kremen *et al.* 2000). Subsequently, from 2001, a series of consultants' reports considered technical issues and practicalities, and evaluated the carbon content of the eastern rainforests (Rarivoarivelomanana 2001). Studies of the carbon sequestration potential of Makira Forest (in the northeast and adjacent to Masoala) were then conducted by a team of PAGE¹⁶ consultants supported by USAID (Meyers and O'Berner 2001).

Currently there are five REDD pilot projects active in Madagascar and at least six other REDD projects are being developed - all by international NGOs, or national NGOs closely allied to them. The five operational pilot projects cover 16 sites and 1 762 400 ha in four of Madagascar's five major forest habitats. Estimates put their carbon offset potential over the next 30 years at around 40–45 million t. An estimated 17 million t of this is not currently being considered for sale as it forms part of the WWF/Good Planet and GTZ/IC projects whose immediate objectives are not to generate carbon credits, but to develop knowledge and methods (Vaudry personal comment; Andriamananoro personal comment; Green Synergy 2009).

REDD pilot projects

The five pilot projects vary widely in their goals and activities. Two of them, PHCF and REDD-FORECA, are time-bound projects which do not currently intend to sell carbon credits. The other three are each tied to a protected area and REDD is only part of the financing strategy (Makira, CAZ and COFAV). All five projects aim to develop new REDD methodologies, deforestation and carbon monitoring protocols, as well as to build capacity for REDD. Many of the lessons from these projects, and the studies associated with them, are expected to be useful elsewhere in the tropics. Indeed, the project proponents recognise that the significant investments that they are making are 'loss leaders', necessary investments to move REDD forward.

Engaging with the Forest Carbon Partnership Facility (FCPF)

In 2008 a Madagascar REDD technical committee (known both as CT-REDD and REDD Task Force) was established, and was charged with coordinating efforts to develop

15 MAP – (Madagasikara Am'Perinasa) Madagascar Action Plan (The Nation Development Strategy for 2007–2012). PDRs – Plans de Développement Régionale (Regional Development Plans).

16 PAGE – Programme d'Appui à la Gestion de l'Environnement – Environmental Management Support Programme was implemented by the US-based consultancy firm International Resources Group (IRG) as part of USAID support to the second phase of the National Environmental Action Plan (PE2).

a REDD Readiness Plan (R-PLAN) at the national level. Madagascar was, at that time, part of the first group of countries to formally enter into the World Bank Forest Carbon Partnership Facility (FCPF) (Aquino 2008). What was known as the R-Plan, has recently been rebranded as the REDD Readiness Preparation Proposal (R-PP) (FCPF 2009).

Madagascar submitted a REDD Readiness Project Identification Note (R-PIN) to the FCPF in March 2007 (GoM 2008a). This was revised the following April, reviewed in June and approved by the FCPF Participant's Committee in July 2008 (FCPF 2008a, b), allowing Madagascar to proceed to the next stage and receive funds through the preparation mechanism.¹⁷ The Malagasy REDD Technical Committee (CT-REDD) has since contracted a consultancy firm, Green Synergy, to provide technical input, research and support for the CT-REDD to develop the R-PLAN/R-PP. This document is being prepared and, if approved, will facilitate a grant of up to US \$3.6 million from the World Bank to help Madagascar prepare for REDD.

The Climate Change Focal Point (PF-CC) for Madagascar is in the Ministry of Environment and Forests (MEF) Directorate for the Valorisation of Natural Resources (DVRN). Madagascar sent a strong delegation to the UNFCCC COP-14, in Poznań in 2008, and hosted a side event there (GoM 2008b). A smaller delegation also took part in negotiations in Bonn (June 2009). Most recently the consultants to the CT-REDD completed a review as background to the Readiness Plan. This is a key document for understanding progress on REDD in Madagascar and its context (Green Synergy 2009). Some of the issues being considered by REDD pilot projects and by the Technical Committee (CT-REDD) are:

- **The definition of 'forest'.** Madagascar has many forest types, ranging from tropical rainforest along the eastern side of the island, to spiny thicket in the south, dry deciduous forests in the west, and montane and littoral forests in various parts of the island. The current definition of 'forest' adopted by the Climate Change Focal Point (PF-CC) for Madagascar excludes many of the dry habitats. The dry habitats are home to many unique species found nowhere else on earth and to Malagasy communities with some of the toughest living conditions worldwide. These habitats are perceived, by some, to be some of the most in need of REDD funds. The dry habitats also have high rates of deforestation although deforestation in dry habitats is notoriously difficult to detect accurately by remote sensing (Scales 2008; Ferguson *et al.* forthcoming). But, despite their low carbon content, these habitats have a significant potential for generating carbon credits through REDD. The debate is now about how 'forest' should be defined, and how the definition can be established and recognised so that an eventual REDD mechanism covers the full range of extant forest types.
- **Establishing baselines for forest cover and deforestation, and monitoring methods.** The challenge that the diversity of forest habitats presents in terms of establishing a definition of 'forest' is linked to the challenge of establishing baselines for forest

¹⁷ Currently due to the unconstitutional accession to power of the current Interim Malagasy Government, FCPF funds are allocated directly to the state, but FCPF work on Madagascar continues.

cover and deciding on methods for monitoring change. The CT-REDD is currently developing what they have termed a 'nested approach' where both projects and national programmes are integrated in the monitoring system (Rakotoarijaona 2008).

Madagascar's FCPF R-PIN

WRI carried out an analysis of the REDD-Project Identification Note (R-PIN) submitted by the Malagasy Government to the FCPF in 2008. The most significant issues and challenges concerning governance that emerged from the review can be summarised as follows:

1. Part of the state law conflicts with cultural and traditional values, and many laws are outdated and difficult to apply;
 2. Communities and households do not have legally recognised secure tenure of forests, which is an obstacle for REDD, but a national land reform programme is underway (PNF);
 3. Carbon rights need to be clarified before REDD can work;
 4. Few indigenous communities or true forest dwellers exist in Madagascar;
 5. Forest change monitoring is largely *ad hoc* and driven by donors, and national capacity building is much needed;
 6. Alternative livelihood activities are inadequately discussed, and transparent, equitable and viable systems of benefit sharing need to be established;
 7. The R-PIN ignores the lack of enforcement of forest laws.
- (Adapted from WRI 2009).

In regard to the points made by WRI above, it is important to note two major concerns about the rights of indigenous people. First, the National Land Tenure Reform Programme (PNF) has not been applied to forests, which are still considered state property in Madagascar. It is currently not clear that there is an intention to reform forest tenure beyond the current situation where community forest management contracts allow the time-bound transfer of use rights and management costs, but do not confer either private or collective ownership. (Tetik'asa Mampody Savoka (TAMS) has valuable experience in establishing land certificates which will better inform this debate, but the tenure report was unavailable to the author at the time of writing).

A second concern is that the Madagascar R-PIN seems to consider 'indigenous people' and 'forest dwelling people' as almost 'non-issues' for most of Madagascar. The fact that Madagascar's different ethnic groups typically identify themselves as both distinct groups and as Malagasy has led to a situation where they are not formally considered to be indigenous. A notable exception is the Mikea of the southwest. However, it could be argued that the organisation and governance of clan hierarchies and customary tenure amongst many of Madagascar's ethnic groups merits their classification as 'indigenous'. Furthermore, unless people have to live in or under a tree to be defined as truly 'forest dwelling', Madagascar would seem to have more forest dwelling people than the R-PIN would like to make out (GoM 2008). In order to address this issue properly it is important that careful consideration be given to the application of the UN Declaration on the

Rights of Indigenous Peoples (UNDRIP 2007), ILO Convention 169 (ILO 1989) and World Bank Operational Directives on Indigenous Peoples (for additional consideration of these issues see also Griffiths 2008; Peskett *et al.* 2008; Meridian Institute. 2009, 25-28 and 91-100; Lawlor and Huberman 2009; Rai 2009).

Deforestation and monitoring deforestation

Distribution of natural forest habitats

Madagascar's forests fall into four broad categories: dry forest, spiny forest, humid forest and mangrove. Although the spatial distribution of these habitats is often complex, and there is great heterogeneity within each, habitats generally correspond to broad bioclimatic zones. Humid forests dominate in a band along the east coast, spiny forests across the south and southwest, dry forests in the west of the island and on the northern tip, and mangroves in coastal areas.

Evolution of habitat classification systems

A range of systems for classifying and mapping the forests of Madagascar has existed since the advent of modern cartography. These systems have become increasingly sophisticated, combining aerial photography (Humbert and Cours Darne 1965), LANDSAT satellite images (Faramalala 1988) and geological characteristics (Du Puy and Moat 1996) with on the ground botanical surveys and surveys of forest cover. Most recently, the Madagascar Vegetation Mapping Project (VEGMAD), a collaboration between the Royal Botanical Gardens Kew, Missouri Botanical Gardens and Conservation International, Madagascar, carried out a detailed mapping and ground-truthing exercise in order to improve knowledge on habitat change and the ability to monitor it. VEGMAD published a new online vegetation atlas for Madagascar which adopts 11 forest categories (Moat and Smith 2007). Table 8.2 shows recent deforestation rates for each of these habitats.

Deforestation rates and the potential for REDD in Madagascar

Madagascar's status as a biodiversity hotspot stems, in part, from the threat to endemic biodiversity posed by high rates of deforestation. Although misleading statements that humans have cleared around 90% of Madagascar's natural forest still pervade in academia and the media, the notion that Madagascar was once all forested has been abandoned. Nonetheless, the national rate of deforestation (as measured since the introduction of remote sensing) is still significant. Harper *et al.* (2007) estimate that, between 1950 and 1970 the deforestation rate was 0.3% p.a. This rose to 1.7% p.a. between 1970 and 1990 (the socialist era) and then slowed with the advent of modern day conservation to 0.9% p.a. between 1990 and 2000. More recent estimates by MEFT *et al.* (2009) suggest a slightly lower deforestation rate of 0.83% p.a. between 1990 and 2000, and 0.53% p.a. between 2000 and 2005. The relatively high rate of deforestation, combined with a low level of forest cover (15.88%)¹⁸ means that Madagascar has a high potential for both REDD and CDM Reforestation Credits (Westholm *et al.* 2009).

18 MEFT *et al.* 2009 figure for 2005 forest cover; Andriambolantsoa *et al.* 2007 figure for land area of Madagascar.

Table 8.2 Deforestation rates in Madagascar by habitat

Habitat	Deforestation rate (% per year)	
	1990–2000	2000–2005
Mangrove	0.03	0.01
Western dry forest/thicket	0.40	0.40
Western humid forest	0.00	0.00
Western dry forest	0.13	0.51
Degraded southwestern spiny forest	0.71	0.60
Southwestern dry spiny forest/thicket	0.26	1.09
Eastern humid forest	0.20	0.23
Littoral forest	0.08	0.16
Degraded humid forest	2.77	0.80
Southwestern coastal bushland	1.49	1.77
Sub-humid western forest	0.12	0.02
National deforestation rate	0.83	0.53

Source: MEFT *et al.* 2009, using a variation of the '11 category habitat classification system' of Moat and Smith (2007).¹⁹

Recently, proposals to establish a REDD+ regime have emerged. These proposals add biodiversity and other values (on top of avoiding deforestation and forest degradation) to a future UNFCCC mechanism for offsetting carbon emissions based on forests.²⁰ A REDD+ system would mean that Madagascar could generate added value REDD credits for protecting endemic species with highly restricted ranges and critically endangered species, and for participation of local communities, as these abound in Madagascar. These proposals have been supported by the Marburg Declaration (ATBC 2009, paragraph 10), as well as by efforts of the Communities, Climate and Biodiversity Alliance (CCBA) to establish voluntary standards for REDD+ offsets (CCBA 2008). They currently form part of the negotiation document for UNFCCC COP-15 to be held in Copenhagen in December 2009.

Patterns of deforestation and drivers (recent studies)

Table 8.3 presents recent deforestation rates across Madagascar's 22 administrative regions.

¹⁹ The final VEGMAD atlas presents a different variation of this classification (combining the 'western dry forest' and 'western dry forest/thicket' categories and adding 'Tapia forests', a habitat in the highlands around Ambositra).

²⁰ Known as: REDD+, GDM (Green Development Mechanism) and PINC (Proactive Investment in Natural Capital).

Table 8.3 Deforestation in Madagascar across the 22 administrative regions

Region	Base 1990 (ha)	Loss 1990–2000 (ha)	Loss per year (%)	Base 2000 (ha)	Loss 2000–2005 (ha)	Loss per year (%)
Sava	770 435	23 815	0.31	787 733	4 692	0.12
Diana	643 135	40 014	0.62	602 171	15 675	0.52
Itasy	262	196	7.49	66	22	6.66
Analamanga	51 078	8 571	1.68	47 577	2 481	1.04
Vakinankaratra	36 771	10 012	2.72	14 228	2 910	4.09
Bongolava	8 578	0	0.00	8 584	22	0.05
Sofia	717 784	74 898	1.04	676 479	10 110	0.30
Boeny	454 437	41 235	0.91	413 665	8 366	0.40
Betsiboka	69 785	3 111	0.45	66 156	970	0.29
Melaky	569 631	12 784	0.22	542 116	5 410	0.20
Alaotra Mangoro	544 502	52 720	0.97	471 418	8 669	0.37
Atsinanana	381 838	43 049	1.13	326 970	9 216	0.56
Analanjirofo	571 441	33 667	0.59	599 477	4 199	0.14
Amoron'I Mania	61 705	17 070	2.77	40 688	3 029	1.49
Haute Matsiatra	76 714	17 045	2.22	57 977	213	0.07
Vatovavy Fitovinany	195 398	29 273	1.50	153 232	1 839	0.24
Atsimo Atsinanana	288 279	28 963	1.00	244 010	6 638	0.54
Ihorombe	139 930	3 809	0.27	132 056	1 592	0.24
Menabe	956 927	49 274	0.51	901 514	26 867	0.60
Atsimo Andrefana	2 032 104	241 895	1.19	1 790 209	87 415	0.98
Androy	499 835	31 042	0.62	469 015	15 453	0.66
Anosy	516 955	24 258	0.47	499 999	25 416	1.02
National	9 587 525	786 700	0.82	8 845 339	241 204	0.55

Source: Andriambolantsoa *et al.* 2007



Figure 8.4 Madagascar forest cover and recent deforestation for the periods 1990–2000 and 2000–2005 (from MEFT *et al.* 2009)

Table 8.3 shows that both the distribution of forests and the rates of deforestation vary significantly between regions. Seven of the 22 regions have less than 100 000 ha of forest and, because of the scarcity of wood, this has led to annual deforestation rates of up to 6.66% (2000–2005). Of the remaining 15 regions, eight have deforestation rates below 0.5% for the same period. The highest rates of deforestation are in the three regions of the southern spiny forest (Anosy 1.02%, Androy 0.66% and Atsimo-Andrefana 0.98%), two dry forest regions (Menabe (west) 0.6%, Diana (north) 0.52%,) and two of the eastern rainforest regions (Atsimo-Antsinanana 0.54% and Antsinanana 0.56%).

The major drivers of deforestation in Madagascar are slash and burn agriculture (both for subsistence and cash crops, depending on the region), and extraction of wood products (particularly charcoal and construction materials for urban markets). Several of the dry regions have difficulty in stemming the clearance of natural forests because they have few plantation forests. Bertrand and Sourdat (1998) present a very detailed review of the extensive literature on deforestation in Madagascar.

Deforestation monitoring systems

The sections above give an overview of deforestation in Madagascar. In terms of the availability of data with which to start accessing REDD funds, Madagascar is in a better situation than many other REDD candidate countries (Herold 2009). However, most deforestation studies in Madagascar have been driven by international donors, have been carried out on an *ad hoc* basis, and often rely on external financial and technical support. The agencies of the Malagasy state which are responsible for these functions, the National Environment Office (ONE) and the Ministry of Environment and Forests (MEF), are widely perceived to lack both capacity and resources to carry out the regular monitoring which will be needed for REDD (Herold 2009). If Madagascar is to access REDD there needs to be significant support for human resources, access to communications and finance in order to establish an in-house monitoring system.

Box 8.1 An innovative system for monitoring (forest) fires by satellite

An interesting tool has been developed to monitor forest fires in Madagascar. The University of Maryland, NASA and Conservation International have teamed up to establish a satellite system to monitor forest fires. Members of the public, and conservation and forest practitioners, can subscribe to receive weekly fire alerts for a particular region or for the whole island. The system, which uses a MODIS satellite, will be very useful in detecting fires from slash and burn agriculture in forest areas and could simplify state policing of unwanted deforestation under an eventual REDD mechanism. Caution is urged, however. Forest administration field agents are notoriously oppressive, and are open to bribes or issuing illegal permits. They frequently turn a blind eye to illegal deforestation by delinquent farmers in return for relatively small bribes. In the wrong hands, and without proper follow up and safeguards to ensure proper use and the well-being of farmers, these 'fire alerts' could encourage and facilitate more bribery and oppression of rural farmers by field agents.

REDD pilot projects in Madagascar

Corridor Ankeniheny – Zahamena (CAZ)

CAZ is a Conservation International (CI) flagship project that covers 20 communes and three regions. A new protected area of 425 000 ha in the eastern rainforest connects three older protected areas (Zahamena and Mantadia national parks and Mangerivola Special Reserve) and extends 20 km further south from Mantadia. Within the corridor the CDM forest carbon project TAMS restores habitats, and promotes sustainable farming and plantations. The new protected area has a core conservation zone of approximately 80 000 ha. The remainder is a buffer zone where certain community uses are allowed. Communities in the buffer zone are, or will be, supported in sustainable livelihood activities. The CAZ area was granted temporary protection status in 2005. Many of the 107 individual forest management units in the project area are under community forest management (GCF/GELOSE); a few private holdings and conservation contracts make up the remainder. CI conservation agreements boost local incomes. Communities agree to undertake additional activities such as patrolling or habitat restoration/planting.

The project is funded by contributions from the Global Environment Facility (GEF), USAID and Conservation International itself. The REDD element of CAZ, which has an estimated budget of around US \$1 200 000 will be funded by CI and the World Bank (IDA funds). The first payments for the TAMS element of the project were due to be disbursed by the Biocarbon Fund in 2008 (US \$100 000) and 2009 (US \$200 000), but have not yet been received despite suggestions to the contrary (Aquino 2008c; Johns and Johnson 2009). The emissions reductions contract with the Biocarbon Fund (for 0.43 million t CO₂) is considered by CI to be conservative, and additional reductions could be marketed subsequently.

CAZ is working on a detailed methodology to monitor emissions reductions from mosaic deforestation (Pedroni 2008). Winrock International is developing the methodology, which estimates that up to 10 million t CO₂ emissions will be avoided over a 30-year crediting period; the target is 4 million t CO₂ emissions reductions by 2017. CAZ proposes to sell these emissions to the voluntary market. The Project Design Document (PDD), which is being developed, will probably seek accreditation under the Climate, Community and Biodiversity Alliance Standard (CCBS). The protected area management plan is complete (CI 2009) and environmental and social studies are underway.

Technical studies of the CAZ forests estimate that the natural forest has a carbon storage capacity of up to 549 t CO₂/ha. Deforested areas have a lower capacity (10.2 t CO₂/ha) as do restored forest areas (TAMS: 148.4 t CO₂/ha). The historic deforestation rate is 0.25% p.a. and the project target is to reduce this to 0.07%. Monitoring will be done by ground surveys and remote sensing (Landsat 5, 7 – IDRISI), and forest cover will be monitored every five years.

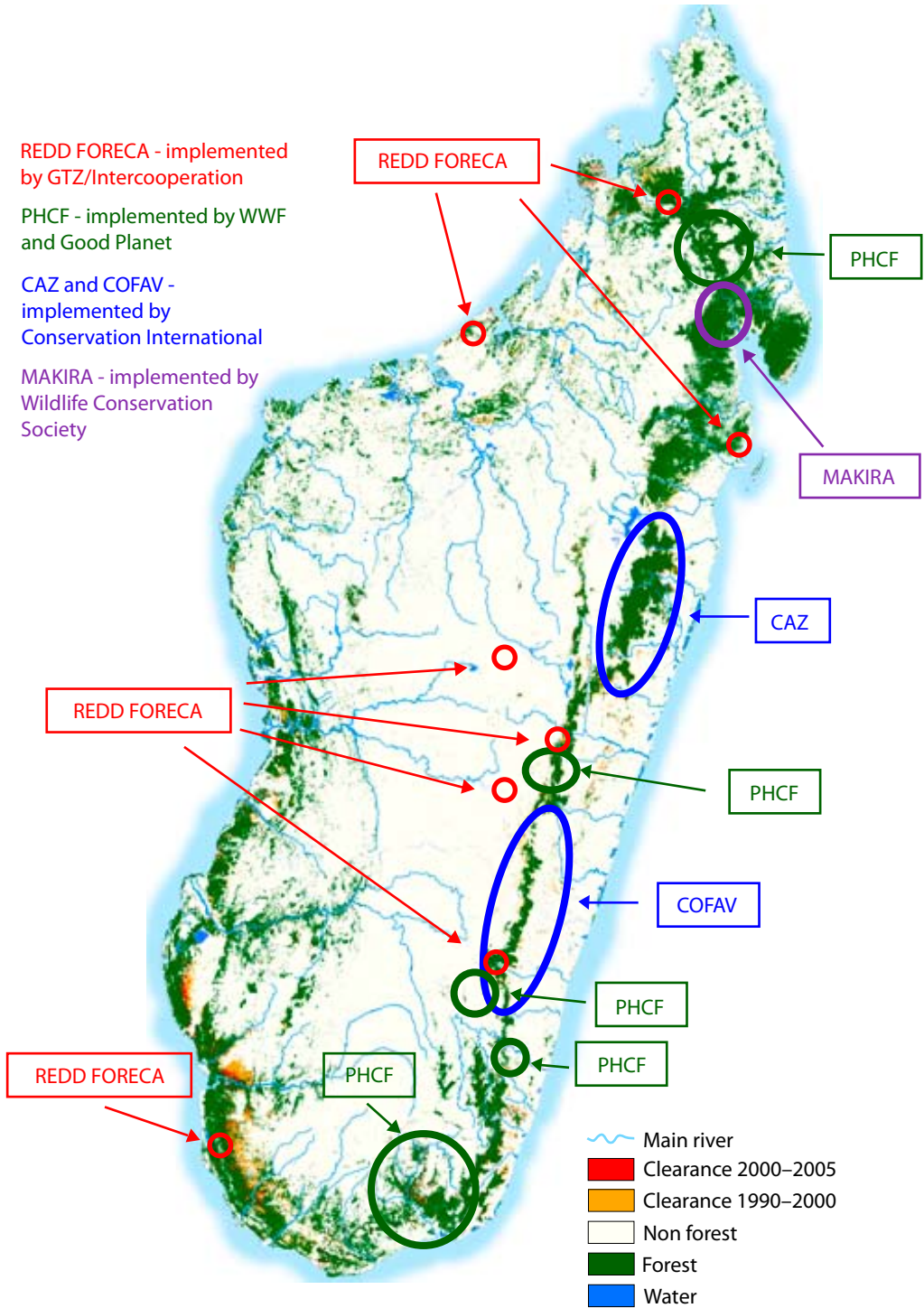


Figure 8.5 Map of REDD pilot projects in Madagascar (Base map taken from MEFT *et al.* 2009)

Corridor Fandriana - Vondrozo (COFAV)

COFAV, a new protected area in the eastern rainforest in the central and southern parts of the east coast of Madagascar, is another Conservation International flagship project. The new protected area connects classic protected areas managed by Madagascar national parks at Ranomafana, Andringitra, and Ivohibe almost as far as Midongy-Sud. Covering an area of 240 000 ha of forest across five of Madagascar's 22 regions, the project consists of a series of community-managed forests, protection zones and sustainable use zones. The area gained temporary protection status in 2005 and hopes to attain permanent protection status in 2009.

The methodological aspects of COFAV are very similar to those of CAZ, with monitoring systems and methodologies being developed by Winrock International. CI anticipates up to 9 000 000 t CO₂ emissions reductions over a 30-year period. The historic deforestation rate is 0.25% p.a. and the project aims to reduce this to 0.07%. Monitoring incorporates ground surveys and remote sensing (Landsat 5,7 – IDRISI), and forest cover will be monitored every five years.

The Malagasy authorities requested that Conservation International take the lead in the initial marketing of carbon credits from COFAV. This will be done through the voluntary market, and will probably be accredited according to the Climate, Community and Biodiversity Alliance Standard (CCBS). Work on the REDD/carbon aspects of the COFAV project began in 2008. DELL has signed a 5-year contract to support project conservation activities.

Both CAZ and COFAV have established management structures whereby the Malagasy Government is the responsible agency and the contracting body for carbon finance. This differs from the NGO contract agreement established for Makira.

Makira

Makira is arguably the most advanced of the REDD pilot projects in Madagascar. The project is led by the Wildlife Conservation Society (WCS), with significant support from Conservation International. Makira is a large forest area in the northeast of the island adjacent to Masoala National Park and is seen as a critical site to assure ecological connectivity between the existing protected areas at Marojejy, Mananara-Nord and Anjanaharibe-Sud. The area gained temporary protection in 2005, and the project currently covers an area of 651 000 ha, consisting of 371 000 ha of conservation/protected area (IUCN Category II), and a further 280 000 ha of forests under community management (Jaozandry 2007). About 900 people live within the protected area, and a further 150 000 in 120 villages in and depending upon community forests (buffer zone). The proposed distribution of revenue is 50% for the local population, 25% for WCS to manage Makira, 15% for forest administration, 5% for the Makira Carbon Company for marketing, 2.5% for verification and 2.5% to operate a foundation to manage the funds.

Although there have been eight classified forests in the region since the colonial era, the current Makira project only began in earnest in 2001 (Myers and O’Berger 2001) with studies examining the potential for a carbon sequestration project. In 2003, the WCS signed an agreement with the Government of Madagascar, and Winrock International conducted a feasibility study and began carbon accounting work (Martin *et al.* 2004). The methodology applied mirrors that at CAZ and COFAV.

In 2008, WCS signed an agreement with the Government of Madagascar allowing the Makira Carbon Company to sell carbon credits from the core protected area. The potential emissions reductions are estimated at 9 200 000 t CO₂ in the 30-year credit period (Martin *et al.* 2004). For the first period (2004–2007) emissions reductions were 320 000 t CO₂ (246 ha of deforestation was reportedly avoided).

The project received funding from musicians (Dixie Chicks, Pearl Jam), and is finalising the PDD to seek accreditation through the Climate, Community and Biodiversity Standards to qualify for the voluntary carbon market (supported by the Rainforest Alliance/Smartwood). Operating costs are estimated at US \$620 000 annually.

REDD-FORECA

REDD-FORECA is a joint initiative of the Swiss NGO Intercooperation and the German agency GTZ. The project, which runs from 2007 until 2009, is not intended to generate carbon credits, but to develop knowledge and capacity in Madagascar for REDD. Project partners are the GTZ-supported Decentralised Natural Resources Management Programme (PGDRN), the Forestry Department of the School of Agronomy in Antananarivo University (ESSA Forêts) and the Johann Heinrich von Thünen-Institute, Federal Research Institute for Rural Areas, Hamburg, Germany. The von Thünen-Institute and ESSA Forêts each have four doctoral students conducting research work as part of REDD-FORECA. The results of this research are eagerly anticipated.

The project has four main aims (REDD FORECA, 2007):

- To develop a REDD methodology for Madagascar using local and national level approaches (a nested approach);
- To promote ‘REDD engaged forests’ policies for protected areas and *koloala* through the development of policies and systems;
- To develop information and training materials for use in communities to explain the ‘REDD engaged forests’ policies; and
- To disseminate the findings from REDD-FORECA widely to technical and policy people at the UNFCCC and its technical advisory panels (Subsidiary Body for Scientific and Technological Advice – SBSTA).

The project has eight sites across Madagascar where it has piloted carbon inventories, undertaken socioeconomic surveys, established regional deforestation baselines and identified community livelihood alternatives to deforestation. The remote sensing is

based on a multi-layered approach (Kohl 2007). The intervention sites represent Tapia forest, spiny thicket and rainforest (see Madagascar REDD projects map).

Holistic forest conservation project (PHCF)

The most recent REDD pilot project in Madagascar, which started in 2008, is also the largest, exceeding 500 000 ha. The holistic forest conservation project (PHCF) is led by WWF and Good Planet, with funding of €4.2 million from Air France. Like REDD-FORECA, PHCF does not intend to sell carbon credits because both WWF-Madagascar and Good Planet are 'withholding judgement' on the appropriateness of REDD, and/or what methods and standards should be established, until the lessons from the project are clear. It is likely that if, when the project is completed, WWF decides to access carbon credits for avoided deforestation, the WWF Green Standard would be adopted (Reitbergen-McCracken 2008).

WWF²¹ lead the aspects of the project which are concerned with establishing new protected areas (350 000 ha), restoring forest (23 000 ha) and community forest management (140 000 ha). Many of the project sites have had a WWF presence for several years, and amongst the sites in the new protected area are some which were already seeking this status under other funding schemes. The sites where the project operates are in four broad regions:

- Mandrare Valley, southeast (spiny);
- Vondrozo/Ivohibe, southeast (humid);
- Fandriana/Marolambo, east central (humid);
- Andapa, northeast (humid).

Good Planet leads the aspects of the project concerned with developing methodologies, including testing remote sensing approaches (SPOT and radar), ground truthing (using leaf area index, biomass and soil organic carbon inventories), and establishing baselines and scenarios using land use and allometric models. Good Planet collaborates with the Université de Marne la Vallée, Centre Nationale de la Recherche Scientifique (CNRS), Institute de Recherche pour le Développement (IRD), SPOT Image and the Université d'Antananarivo.

Other REDD initiatives in Madagascar

Needless to say, now that REDD is becoming a real opportunity for funding conservation, an array of foundations, conservation practitioners, private businesses, consultants and NGOs are taking a keen interest. In Madagascar the following activities are understood to be under development:

²¹ Vaudry 2008, personal communication.

Tany Meva Foundation (www.tanymeva.org.mg)

This Malagasy environmental foundation has a specific conservation carbon project. Tany Meva has established a partnership with the GEF Small Grants Scheme (Madagascar) to support communities in the south and southwest of the island. The two organisations developed an R-PIN proposing a REDD project for an area of community-managed forests near Ampanihy, in the south of the island. The R-PIN was submitted to the UNEP/UNEP RISOE/FFEM project CASCADE-Africa to seek support for developing a PDD. The forests include sacred forests with ancestral burial grounds of the native Mahafaly people, 19 villages and about 8100 inhabitants. The project covers an area of 22 500 ha and has an anticipated emissions reduction contribution of 610 700 t CO₂e (Tany Meva 2009). This R-PIN was submitted together with other R-PINS: most had no REDD components but one includes both REDD (about 7000 ha) and CDM activities (Conservation of the Makirovana-Tsihomanaomby Forest Complex in the Sava Region (northeast). Neither project with a REDD element was supported by CASCADE, but facilitating REDD activities for communities continues to be an ambition of the Tany Meva-GEF-SGS alliance.

Missouri Botanical Gardens (MBG)

MBG have undertaken research and training activities in Madagascar for more than two decades. Since the Durban Vision was announced, they have increasingly promoted new protected areas. In 2007, following a feasibility study, MBG selected 'orphan conservation sites'²² to establish as new protected areas (NAPs) with funding from The Goldman Foundation, GEF-SGS and CI-CBC amongst others. They are currently establishing up to 11 NAPs across Madagascar, including Mahabo, Analavelona and Anadabolava. MBG are liaising with Ecosystem Restoration Associates and Tany Meva to explore the potential for REDD funding.

Fanamby

Fanamby is a national Malagasy NGO which works in conservation in various sites in western, central and northern Madagascar. It is closely allied with Conservation International, from whom it has received significant funding. Fanamby is developing a significant project for GEF (project development funds have already been allocated) to advance their protected area work in five new protected areas (Anzozorobe, 52 300 ha, Menabe, 204 500 ha, Bombetka, 77 500 ha, Daraina, 70 000 ha and Andrafiarena/Andavakoera, 80 000 ha). The project anticipates accessing carbon finance, including REDD. A tender for a team of project development consultants was advertised in July 2009.

22 Orphans in the sense that they had been identified for their conservation importance during the Durban Vision prioritisation exercise, but subsequently had no active partners advancing their establishment as new protected areas.

Man and the Environment (MATE)

MATE is a conservation and development NGO established in 1993. Their work in two sites (Vohimana and Vohibola) includes carbon activities (avoided emissions and habitat restoration), as well as a range of sustainable forest management activities (essential oils, charcoal and construction wood production from invasive species, and tourism). One of their sites, Vohimana, is to the south of Mantadia national park, and includes restoration and reforestation activities in the same vein as the CI-led TAMS project.

Durrell Wildlife Conservation Trust (DWCT)

DWCT, who have had a country programme in Madagascar since the early 1990s, currently work on species conservation and establishing new protected areas in seven sites across Madagascar (Menabe, Aloatra, Ankarafantsika, Baly Bay, Tsimembo/Antsalava, Manombo and Nosy Volo). They are renowned in conservation circles in Madagascar as pioneers in recovering endangered species, community engagement, participatory ecological monitoring and conservation payments. DWCT are exploring the potential for REDD finance in their areas of intervention.

Madagascar National Parks (MNP)

MNP is in charge of managing the network of 'classic protected areas' across Madagascar. In 2003, a study by Carret and Loyer (2003) suggested that accessing carbon finance could form part of a sustainable finance strategy for MNP to manage protected areas (known at that stage as ANGAP). All MNP protected areas have been established for a long time (many in colonial times) and already ban deforestation and most extractive uses. They have almost no resident populations (some parks have enclaves within the park which are not officially designated as park). This is potentially a challenge for meeting the REDD additionality criteria. If a future REDD mechanism provides finance for these sorts of protected areas then MNP is well placed to benefit. MNP envisages engaging with REDD by expanding parks and adopting new protected areas.

Madagascar Foundation for Protected Areas and Biodiversity Conservation

The Foundation was established to provide finance for the whole protected areas system in Madagascar and to conserve biodiversity. It has been granted substantial endowments from private foundations, multilateral and bilateral donors and through debt relief. Although the Foundation has not publicly declared an interest in REDD finance, it may if the eventual REDD mechanism permits it to do so (in the same way as Tany Meva has done). This is the reason it has been included in this report.

Other non-REDD forest carbon projects

Madagascar has a plethora of activities related to conservation and climate change. This review does not deal with them all (see Green Synergy 2009 for comprehensive

information on climate change policy). However, there are four non-REDD projects that involve forest carbon and grapple with similar issues, which are significant to the REDD debate.

Tetik'asa Mampody Savoka (TAMS)

TAMS is a project led by Conservation International which has been working in the area between Mantadia National Park, Analamazoatra and Maromizaha, and in the area of Andasibe (100 km east of the capital city of Antananarivo) for over ten years. The TAMS areas are part of the broader Ankeniheny-Zahamena Corridor (CAZ), which is a REDD pilot project. TAMS focuses on restoring natural forest (3020 ha) and promoting fuelwood plantations (661 ha), sustainable gardens (927 ha) and mixed fruit farms (333 ha). The project is approved under the Clean Development Mechanism (Afforestation Method 4) and is implemented in partnership with various local NGOs, government bodies (and quangos) and donors (including the World Bank-Biocarbon Fund, USAID and Tany Meva). Officially, for CDM purposes, the Malagasy Government leads the project, but CI undoubtedly plays a crucial facilitation role. CDM funds will be disbursed through agreements between the government and the landholders, for which a detailed tenure study has been conducted.²³ By 2009, restoration work had been carried out on 1050 ha. The project anticipates carbon sequestration of 113 000 t CO₂ by 2012 and eventually 1.2 million t CO₂ over a 30-year crediting period (Green Synergy 2009). The project information sheet and other background documents provide more details (Martin *et al.* 2004; TAMS 2007; Aquino 2008; Sullivan 2008; Pollini 2009).

Carbon finance for agriculture, silviculture, conservation and action against deforestation (CASCADe-Africa)

CASCADe is a UNEP, UNEP RISOE and FFEM project. Aspects of implementation are carried out by Winrock International. The project, launched in Madagascar in September 2008, provides training, advice and mentoring to help projects in Madagascar access carbon finance. A national training workshop was organised, a call for project identification notes (PINs) announced and a series of projects selected to receive support. The projects submitted addressed a range of topics from biofuels, forest plantations and intensive agriculture to REDD projects (no REDD projects were selected for support in the end). More information is available on www.cascade-africa.org.

WWF/Conservation International – potential climate change effects study

In 2006 the MacArthur Foundation funded CI and WWF to undertake a project to study the potential effects of climate change in Madagascar. Field studies and technical, desk-based modelling work were undertaken. Subsequently, additional studies were commissioned by USAID to synthesise the findings from the WWF/CI work and to

²³ The tenure study was unavailable to the author during the preparation of this report, but it will certainly have many insights to inform the debate.

combine them with additional information. A national conference was held in January 2008, and a report published (Combest-Freidman and Winterbottom 2008).

Tany Meva

The Tany Meva Foundation has three carbon forestry projects underway (Green Synergy 2009):

- Ankotrofotsy Reforestation Project (Menabe, western Madagascar – in partnership with Intercooperation and a local association, FCC). This project started in 2007 and was planned to run until 2012. It was concerned with reforesting 979 ha in three *fokontanys* (the smallest administrative units). The project provides for individual land tenure for the areas to be planted. Exotic and native tree species are to be used (eucalyptus, neem). The project is designed to sequester 100 000 t CO₂ over a 30-year crediting period through the Clean Development Mechanism.
- Antanetikely (Analamanga Region, near Antananarivo). This project, started in 2008, is to be undertaken in partnership with ONFI and will involve reforesting 500 ha on individual titled plots. The project will access carbon finance either from voluntary or CDM sources. The carbon sequestration capacity of the project has not yet been calculated.
- Project Ala Meva (beautiful forest). This project deals with small forest plantations (10-100 ha) in scattered sites in various regions of Madagascar. It does not specifically intend to access carbon finance, but Tany Meva plans to undertake carbon accounting for these project sites.

Conclusion, recommendations and issues for reflection

As we have seen in this chapter, there are many REDD activities underway in Madagascar. Approaches vary from micro community forest management and restoration projects, and new protected areas co-managed by the state and communities, to more strictly managed protected areas. All will contribute to a better knowledge of mechanisms to tackle forest loss whilst looking after the needs of forest people and other users of forest products.

It is not yet clear how subnational REDD projects, of the kind which already exist in Madagascar, will fit into a national REDD scheme. Considering that some critics argue strongly against a subnational approach stressing that emissions reduction can only be properly accounted for at the national level and higher, it will be interesting to see how the role of NGOs will develop in the longer term. Thus, emerging issues for concerned scholars to observe and reflect on centre around the role of NGOs and private companies in facilitating subnational REDD initiatives and elite capture across scales in the new REDD carbon markets. Already some activists have warned of the battalions of ‘carbon entrepreneurs’ who are ready to cash in on the inclusion of avoided deforestation in any future international agreement on mechanisms for carbon emission reductions.

Two main recommendations emerge from this review:

1. Community forest management will be a basic building block for REDD in Madagascar but it needs a lot more support to make it work. Most field sites where REDD is being tested on the ground are protected areas with strict conservation in corridors and core zones, and community use zones on the periphery or in buffer zones. Most legally recognised community forests are, at present, not fully operational (indeed some are not operational at all) and, as these are the basic building blocks of a future REDD regime, very significant efforts are going to be needed to improve this situation. Scaling up investments in livelihood alternatives for forest communities, as well as more time and capacity building, are needed to ensure such alternatives work. Communication with the communities concerned should be improved; all too often many members of the communities lack a good understanding of the rules and procedures of community forestry. The forest administration needs to be reformed from the ground level up. Forest officers are still illegally bribing and fining farmers, and the national forest observatory admits that it is unable to do much about this in many cases. Finally, more committed efforts are required to ensure good governance in local forest management associations (COBAs/VOIs).
2. Many Malagasy could be considered to be 'indigenous people' and 'forest dwellers' and, as such, they should have legal rights over their lands, including the forests. The existence of forest dwellers in Madagascar seems to have been downplayed and there is a reluctance to recognise that many of Madagascar's ethnic groups could be formally classified as 'indigenous'. The unwillingness of the Malagasy state to recognise customary tenure over forests has been well documented. The state appears not to want to cede ownership of the forests to rural people as would be required of them under ILO Convention 169 (1989) and the UN Declaration on the Rights of Indigenous Peoples (UNDRIP 2007). Unfortunately many anthropologists and social scientists specialising in the people of Madagascar, and their customary tenure systems, are somewhat disengaged or distant from contemporary policy debates. It is very important that space is made at the national level to better incorporate knowledge of the Malagasy customs and systems which are, *de facto*, managing rural lands and forests. If this space is not created, and if policy does not change substantially, the combination of tradition and an ineffective state will continue to undermine many forest conservation efforts and lead to violations of the human rights of the indigenous rural Malagasy and/or the failure of REDD.

In Madagascar there are certainly issues concerning the definition of 'forest', as well as the development and mainstreaming of effective deforestation and forest degradation monitoring mechanisms. Aside from these technical issues, there are a series of questions about institutional design and sharing revenues from REDD for the authorities in Madagascar to consider. These questions include:

- How will future income from REDD be dispersed to, and used by, community and state actors and their NGO/private sector partners?
- How will 'forest dwellers', 'forest dependent communities' and 'indigenous people' be defined, recognised and compensated within the context of a future REDD mechanism?

- How will interactions between the national land tenure reform programme (PNF) and the massive expansion of protected areas under SAPM evolve?
- How will Madagascar ensure that any deforestation and forest degradation which is avoided in a given area of the country does not experience leakage and affect other forest resources elsewhere?

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Annex 8A. Abbreviations

2CFC	Climate Change Forests and Communities (UEA-CIFOR Research Network)
AFD	Agence française du développement
ANAE	Association nationale pour les actions environnementale (National Association for Environmental Actions)
ANGAP	Association nationale pour la gestion des aires protégées (National Association for the Management of Protected Areas)
AP	Aire protégée (protected area)
APC	Aire protégée communautaire (community protected area)
APP	Aire protégée privée (private protected area)
CASCADE	UNEP/Winrock International Programme to Improve Capacity to Access Carbon Finance
CAZ	Corridor Ankeniheny-Zahamena
CBNRM	Community based natural resource management
CCBA	Climate Community and Biodiversity Alliance
CDM	Clean Development Mechanism
CFM	Community Forest Management
CFN	Carbon Forestry Network
CI	Conservation International
COAP	Code des Aires Protegees (Protected Areas Code)
COBA	Communauté de Base (Basic Local Community)
COFAV	Corridor Fandriana – Vondrozo
COGE	Comité de gestion (management committee)
COP-14	Conference of the Parties 14 (14th Meeting of the signatories of UNFCCC, Poznań 2008)
CT-REDD	Comité Technique REDD (also known as REDD Task Force)
DREF	Direction Régionale de l'Environnement et des Forêts
DVRN	Direction pour la Valorisation des Ressources Naturels (Directorat for the Valorisation of Natural Resources)
DWCT	Durrell Wildlife Conservation Trust
FAPB or FAPBM	Foundation pour les Aires Protégées et la Biodiversité de Madagascar (Madagascar Foundation for Protected Areas and Biodiversity)
FCPF	Forest Carbon Partnership Facility (World Bank)
FFEM	Fonds française pour l'environnement mondial
GCF(i)	Gestion contractualisée des forêts (contracted forest management)
GCF(ii)	Global Conservation Fund (of Conservation International)
GEF-SGS	Global Environment Facility – Small Grants Scheme
GELOSE	Gestion Locale Sécurisée (Secured Local Management)
GoM	Government of Madagascar
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German Technical Cooperation)
IC	Swiss Foundation for Development and International Cooperation (Intercooperation)

ICDP	Integrated Conservation and Development Project
IRD	Institute de Recherche pour le Développement
IRG	International Resources Group
IUCN	International Union for the Conservation of Nature
JARIALA	Forest Sector Reform Programme (funded by USAID, implemented by IRG)
MATE	Man and The Environment (also known as l'Homme et l'Environnement)
MEF	Ministère de l'Environnement et des Forêts (Ministry of Environment and Forests) (formerly MEFT, MEEFT, MEEF)
MNP	Madagascar National Parks
MONAT	Monument Naturel (Natural Monument)
NAP	Nouvelle Aire Protégée (New Protected Area) – Protected Area created after Durban Vision declaration (2003)
NEAP	National Environmental Action Plan (Phase 1 PE1, Phase 2 PE2, Phase 3 – PE3)
ONE	Office Nationale pour l'Environnement (National Environment Office)
ONF	International- Office Nationale des Forêts – International
PDD	Project Development Document (CDM/Carbon Finance Terminology)
PEM	Participatory Ecological Monitoring
PGES	Plan de Gestion Environnementale et Sociale (Environmental and Social Management Plan)
PGRN	Projet de Gestion des Ressources Naturelles
PHCF	Programme Holistique de Conservation des Forêts (Holistic Forest Conservation Programme)
PHP	Paysage Harmonieux Protégée (Protected Harmonious Landscape)
PN	Parc National (National Park)
PNAT	Parc Naturel (Natural Park)
PNF	Programme National Foncière (National Land Tenure Reform Programme)
PNUD	Programme des Nations Unis Pour le Développement (UNDP)
REBIOMA	Reseau de la Biodiversite de Madagascar
REDD	Reduced Emissions from Deforestation and Degradation
REDD+	Reduced Emissions from Deforestation and Degradation + Conservation
RNI	Reserve Naturelle Intégrale (Integral Nature Reserve)
R-PIN	Readiness – Project Information Note (Concerning REDD)
R-Plan	Readiness Plan (Concerning REDD) – now known as R-PP
R-PP	Readiness – Preparation Proposal (Concerning REDD)
RRN	Reserve de Ressources Naturelles (Natural Resource Reserve)
RS	Reserve Spéciale (Special Reserve)
SAPM	Système des Aires Protégées a Madagascar (Madagascar System of Protected Areas)

SBSTA	Subsidiary Body for Scientific and Technical Advice (Advises UNFCCC)
UNFCCC	United Nations Framework Convention on Climate Change
UNEP RISOE	United Nations Environment Programme Risoe Centre on Energy, Climate and Sustainable Development
USAID	United States Agency for International Development
VCS	Voluntary Carbon Standard
VEGMAD	Madagascar Vegetation Mapping Project
VOI	Vondron Olona Ifotany (Community Association established for GELOSE and GCF(i))
vTi	Johann Heinrich von Thünen-Institute, Federal Research Institute for Rural Areas, Hamburg, Germany
WCS	Wildlife Conservation Society
WRI	World Resources Institute
WWF	World Wide Fund for Nature

Annex 8B. Categories of protected areas in Madagascar (SAPM 2007)

IUCN category	IUCN management objectives	Madagascar's application of IUCN management categories (GoM 2008c)
I	Strict nature reserve: managed mainly for science. Wilderness area: managed mainly for wilderness values.	Reserve Naturelle Intégrale (RNI) TAHIRIN-JAVABOARY Integral Nature Reserve
II	National park: managed mainly for ecosystem protection and recreation.	Parc National (PN) and Parc Naturel (PNAT) VALAN-JAVABOARY National Park and Natural Park
III	Natural monument: managed mainly for conservation of specific natural features.	Monument Naturel (MONAT) TAHIRIM-BAKOKA VOAJANAHARY Natural Monument
IV	Habitat/species management area: managed mainly for conservation through management intervention.	Reserve Spéciale (RS) TAHIRIN-JAVABOARY Special Reserve
V	Protected landscape/seascape: managed mainly for landscape/seascape conservation and recreation.	Paysage Harmonieux Protégée (PHP) TONTOLO MIRINDRA VOAARO Protected Harmonious Landscape
VI	Managed resource protected area: managed mainly for the sustainable use of natural ecosystems.	Reserve de Ressources Naturelles (RRN) TAHIRIN-KARENA VOAJANAHARY Natural Resource Reserve

Governance categories of protected areas

There are four governance categories for Madagascar's protected areas (SAPM 2006), although at present these are not described in the Protected Areas Code (COAP (GoM 2008c)). In practice the governance categories are used in the design of organisations/committees, etc. for the management of new protected areas. The categories, which correspond with the IUCN system, are:

- a. State management;
- b. Co-management;
- c. Private management (Aire protégée privée (APP));
- d. Community management (Aire protégée communautaire (APC)).

Acknowledgements

This report was made possible thanks to the kindness of many individuals who either met with me or provided important information during June and July 2009. Thanks are due particularly to Romuald Vaudry, Flavien Rebara, James MacKinnon, Christian Burren, Johannes Ebeling, Malika Virah-Sawmy, Vololona Rasoarimanana, Randrianjafison Haniela, Bruno Ramamonjisoa, Chris Birkenshaw, Martin Nicoll, Richard Lewis and Monique Andriamanano. My thanks also go to Johannes Ebeling, Frank Muttenter and Jacques Pollini for their very useful feedback and corrections. Needless to say, all errors remain my own. Part of the time spent preparing this chapter has been supported by an ESRC/NERC Research Studentship to the author.

Chapter 9

Nepal

Oliver Springate-Baginski and Binod Bhatta, with Francesca Booker

Overview

This paper addresses how reduced emissions from deforestation and forest degradation (REDD) might be achieved in Nepal. It also looks at the challenges to REDD in the Nepal's distinctly different regions and the likely consequences for local people of REDD interventions.

Nepal presents uniquely interesting perspectives on how emerging REDD mechanisms may work, and how they may affect local forest peoples and their livelihoods. The forested area in Nepal is much smaller (14.3 million ha) than in countries like Brazil, Indonesia or the Democratic Republic of Congo. Nevertheless, Nepal has had significant experience in reversing deforestation in a relatively pro-poor manner. In the 1970s, the widely influential 'Theory of Himalayan Environmental Degradation' hypothesised that upstream deforestation caused downstream flooding¹. This prompted the development and spread of community forestry across Nepal's middle hills. Today, approximately 21% of Nepal's forests are under community management (Department of Forests, CF Division 2009).

Nepal's Community Forestry (CF) programme has become an internationally recognised paradigm for sustainable, localised and relatively equitable forest management (albeit achieved with high levels of donor inputs). It is reasonable to expect that Nepal's experience could inform the international debate on how a rights-based REDD mechanism might work. However, some aspects of Nepal's Community Forestry model may be location specific, as its transferability is proving difficult across regions within Nepal. Nepal has five main physiographic regions: *tarai* plains, inner *tarai* foothills, mid hills, high hills and mountains. In the lowland *tarai* forest, unlike in the hills, handover of forest management to communities is not widespread. The very high value and accessibility of *tarai* forest *sal* timber makes it more challenging for communities to protect forests, particularly as established illicit timber mafias allegedly sometimes work in conjunction with officials. Defining the *tarai* 'community' is also a central issue. Because the Tarai region is newly settled there are few well established, cohesive communities along the forest frontier. So, organising the variety of different people who use the forests (to a greater or lesser extent) into effective groups has proved much more difficult than in other regions. Despite a moderate degree of handover (169 549 ha of forest has been handed over as CF in Tarai and Inner-Tarai (Department of Forests, CF Division 2009)),

¹ The theory was subsequently discredited. See Ives and Messerli 1997.

much of the *Tarai* forest is still managed as national government forest. And, as the capacity of the Department of Forests to regulate forest use is limited, deforestation and degradation in these forests has continued apace. The extensive high hills forests, where there is little habitation and little use of the forests for livelihoods, have also proved difficult to protect by either communities or the State. In some areas these are being illicitly cut for the timber trade.

Considering its small size, Nepal is surprisingly highly placed in global rankings of emissions due to deforestation and forest degradation.² (However these rankings are unreliable as the data vary in quality and age). Conversion of *tarai* forests to agricultural uses has played an important role in national development since the 1950s, relieving population pressure and land hunger in the hills, and raising agricultural production. But the deforestation processes in the *tarai* are intrinsically inequitable. The *de facto* open access forests that are used by the land-poor and indigenous forest people are being settled and privatised by more politically influential constituencies from the hills. The ratio of forest area per household is declining. This has put increasing pressure on the remaining *tarai* forest. Extraction of forest products, such as fuelwood, timber for construction, and fodder, has rapidly degraded *tarai* forest as well as the forest in the adjacent Churia foothills since the 1950s. The ethnic groups indigenous to the Tarai region, marginalised because of immigration into the area, are amongst the poorest in Nepal.

A primary challenge for the REDD initiative in Nepal is *effectiveness*. Can REDD interventions successfully reverse long-term deforestation driven by land conversion? Given weak governance of forests it is likely that some form of community participation will be essential. Avoiding deforestation is, in principle, likely to be relatively *equitable* if effective access to common property can be established and if marginalised groups are involved. The equity issues are similar for forest degradation: the increasing demand for forest products from a growing *tarai* population in the context of with a decline in forests and very weak capacity to protect them, is causing forest degradation. For both effectiveness and equity, some form of inclusive community management is likely to be needed but, as yet, workable and mutually acceptable models that resolve the range of problems around transfer of the hill model of CF to the *tarai* have not emerged.

Whatever regulations are introduced with REDD, reducing forest degradation is likely to negatively affect the livelihoods of the poorest in the short- to medium-term, unless pro-poor provisions support livelihood adaptation. This support might include the provision of permits for the poorest to continue to harvest forest resources, and/or alternative livelihood options and sources of tree products. REDD programmes in Nepal need to take account of additionality and incentives. Communities are already protecting forests in the hills and, inevitably, expect that if there are funds for forest protection their efforts deserve to be recognised.

2 13th highest according to the Climate Analysis Indicators Tool (CAIT) Version 6.0 (World Resources Institute 2009). However, this is likely to be overstated as the data for Nepal (as with many countries) is highly questionable and there has been no national forest assessment in Nepal on which to base such estimates since the mid 1990s.

The combination of physical ruggedness, weak governance and current political instability make developing workable REDD mechanisms in Nepal particularly challenging. The limited capacity of the Nepal Government for forest management, developed significantly only since World War II, is part of the reason why the State was willing to hand over control of the forests to communities in the hills. Hill areas in Nepal are extremely rugged, limiting access for policing, forest surveys and regulating forest use. The capacity of the Department of Forests to police the national forests is unlikely to improve dramatically. These limitations are compounded by the disruption caused by the 1997–2006 Maozadi (civil war).

Emerging from the civil war, Nepal put a new provisional constitution in place. But political turmoil over the ultimate form which the Republic will take continues, particularly as regards federalisation. At the same time, numerous local interest groups believe that a post-war settlement should favour them; and, for many, an allocation of land is a high priority. Politicians are under pressure to deliver, and short-term expediency is likely to prevail over longer-term strategic concerns such as REDD. An additional concern is the skewed distribution of development benefits between Kathmandu and the rest of the country. A contributory cause of the conflict has been a well-founded perception that Kathmandu elites have captured a disproportionate share of the benefits from development assistance whilst the rest of the country has stagnated. If REDD is to support the post-conflict peace-building process it will be important that the distribution of benefits is not captured by Kathmandu elites. This may be a challenge. Media discussions about REDD have inflated expectations as to just how much REDD funds may flow into Nepal. As more realistic assessments eventually emerge, as they must, this could lead to disappointment and perhaps resentment.

Despite these challenges, climate change adaptation and mitigation are important issues in Nepal. Due to the constraints to industrial development, the economy of Nepal is closely linked to agricultural production, which has stagnated in recent decades. Agriculture is highly dependent on the vagaries of climate. Studies suggest that the effects of climate change in Nepal are already amongst the most serious experienced by any country. Higher mean temperatures, more erratic monsoons and less winter rainfall have serious implications for the agricultural sector and food security. The erratic monsoon of 2009 had serious negative consequences for agricultural production and, therefore, on incomes for rural populations. This seems to confirm the trend towards climate change. Thus, both the immediate need for adaptation and wider concerns of mitigation are treated as very serious issues nationally.

REDD policy processes are already underway in Nepal. The World Bank Forest Carbon Partnership Facility has selected Nepal as one of its partner countries, and the Ministry of Forests and Soil Conservation has already funded the preparation of a Readiness Plan Idea Note (2007). A Readiness Plan has been developed and is currently under discussion and negotiation with the World Bank. There has also been much discussion about REDD projects, and several independent projects are currently being developed or are underway.

A fundamental challenge, both for understanding the scale of deforestation and forest degradation problems, and for monitoring the extent of forest reduction, is the lack of data. In common with many countries, data is decades out of date and there is no capacity to maintain datasets on forest extent, condition and change. The last forest assessment was conducted in the early 1990s, and a specific study of *tarai* forests³ was done in 1995–1996. Therefore, data on the current extent of forest, its condition, and deforestation rates are only estimates based on outdated information; the use of this data in international CAIT and FAO Forest Resource Assessments (2005, 2010) should come with health warnings. Clarifying the actual status of Nepal's forests is an urgent priority. It is understood that the Ministry of Forests and Soil Conservation plan to do a full survey in 2010 with Finnish assistance. This will hopefully provide a baseline for monitoring.

The rest of this paper considers the geographical and historical context of forest management in Nepal, and then discusses in turn the *tarai*, the Churia hills, the high hills and the mid hills. Overriding governance challenges are considered, and the current REDD policy processes and initiatives are discussed. Finally some tentative conclusions are offered.

Geographical and historical context

Nepal is an extremely diverse country in terms of physical environment, biological diversity⁴ and sociocultural composition. The agroclimatic zones in Nepal's 14.3 million ha land area range from the highly fertile subtropical Gangetic *tarai* (or *terai*) plains, through fragile alluvial foothills (Siwalik hills), middle hill valleys and hillsides, high hill forests and alpine meadows above the tree line, to the high Himalaya, the highest mountain range in the world (Figure 9.1). Figures 9.2 and 9.3 show the climatic zones, settlement patterns and distribution of forest cover.

Of Nepal's total land area of 14.3 million ha, an estimated 3.6 million ha remain forested (just over 25%), compared with 4.8 million ha in 1990. The area of forest is estimated to be declining at the rate of about 1.4% per year (FAO 2006, 2009).

Historically, Nepal's population inhabited the mid hills region. Modern Nepal emerged through the unification of numerous hill principalities by the Shah Dynasty after 1743 (Whelpton 2005). The dense *tarai* malarial forests were inhabited only by indigenous tribal groups who were resistant to the disease. The forest belt was an effective barrier to incursions from the plains and allowed Nepal to maintain its independence from British colonialism.

3 Although no complete forest survey was performed, external forest boundaries were verified by comparison with earlier forest maps and aerial photographs to establish the change in forest area and whether the rate of decrease had changed compared with earlier finding of 1.4% per year.

4 Containing part of the so-called Eastern Himalaya Biodiversity Hotspot.

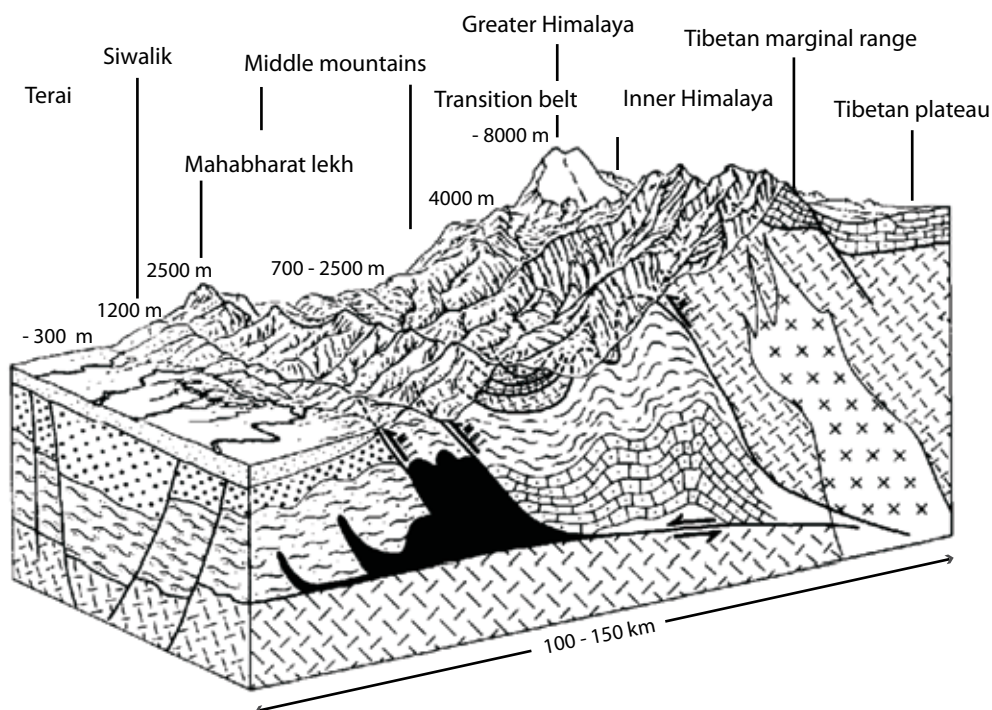


Figure 9.1. Schematic cross-section of Nepal Himalaya

Source: Daniel Vuichard, Institute of Mineralogy, University of Berne; topography, modified after W. J. H. Ramsay (from Ives and Messerli 1989)

This situation rapidly changed in the 1950s due to the malaria eradication campaign. With the *tarai* now habitable and a growing hill population with extreme land hunger, the *tarai* forests became attractive for conversion to agriculture. Government resettlement policies and the construction of a national highway through the densest forest areas encouraged agriculture. Thus, by the 1980s much of the most fertile land had been converted from forest to agriculture. Migrants from the hills continue to settle in the *tarai* and often unofficially occupy land. Much of the current deforestation in the *tarai* is due to this.

Nepal's population of approximately 26.9 million (CBS 2008) is divided almost equally between the *tarai* and mid hills. In both areas the distribution of agricultural land is skewed, and the lowest economic quartile of the population lives in chronic and acute poverty (most pronounced in the least developed, western areas). Decades of poor economic growth, limited industrial development and stagnant agricultural output have been compounded by the disruptions of civil conflict. Nepal's economy is thus very weak. With a per capita income of US \$470 (CBS 2009) and a mean Human Development Index of 0.509 (UNDP 2009), Nepal is one of the world's poorest countries.

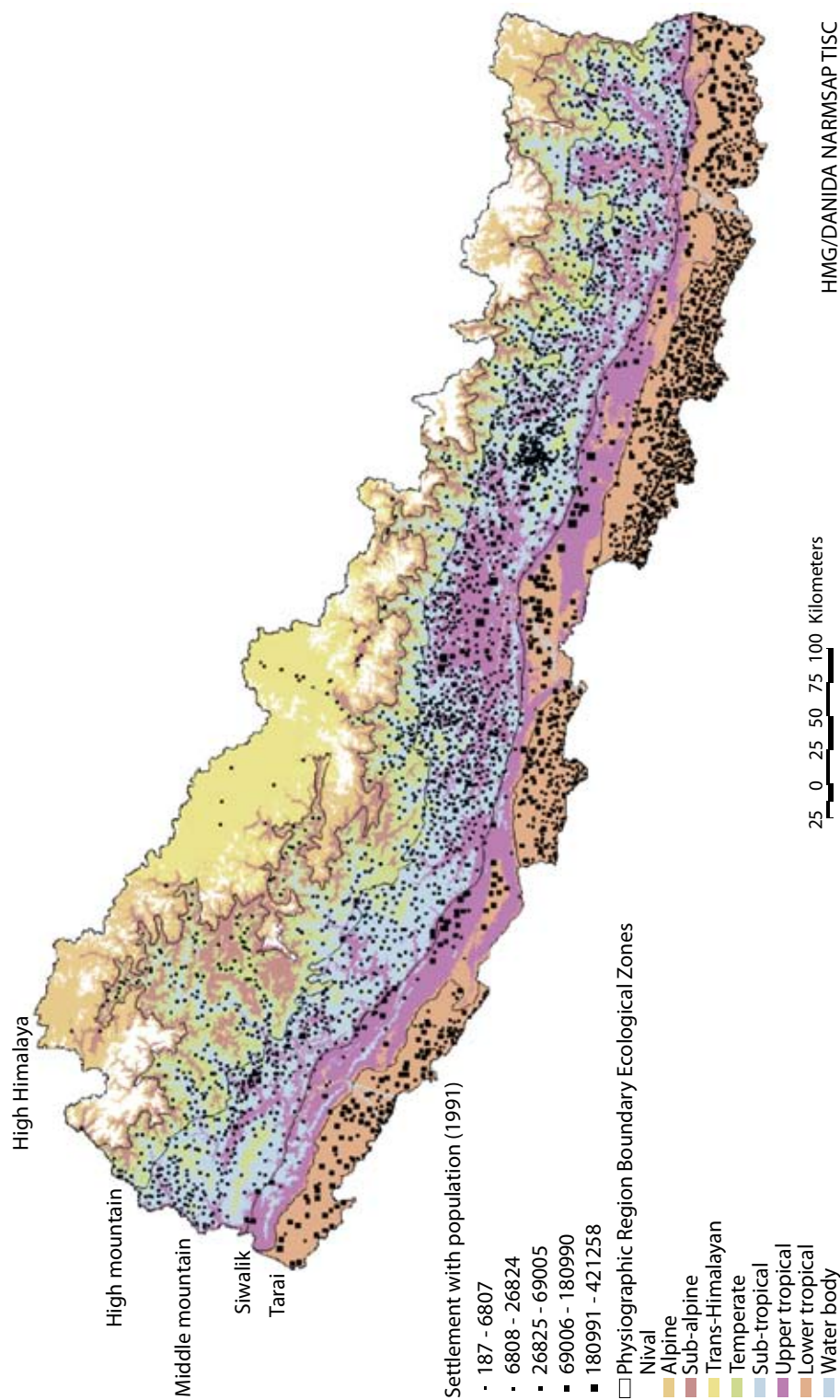


Figure 9.2 Settlements, ecological zones and physiographic regions in Nepal

Source: Lillesø *et al.* 2005

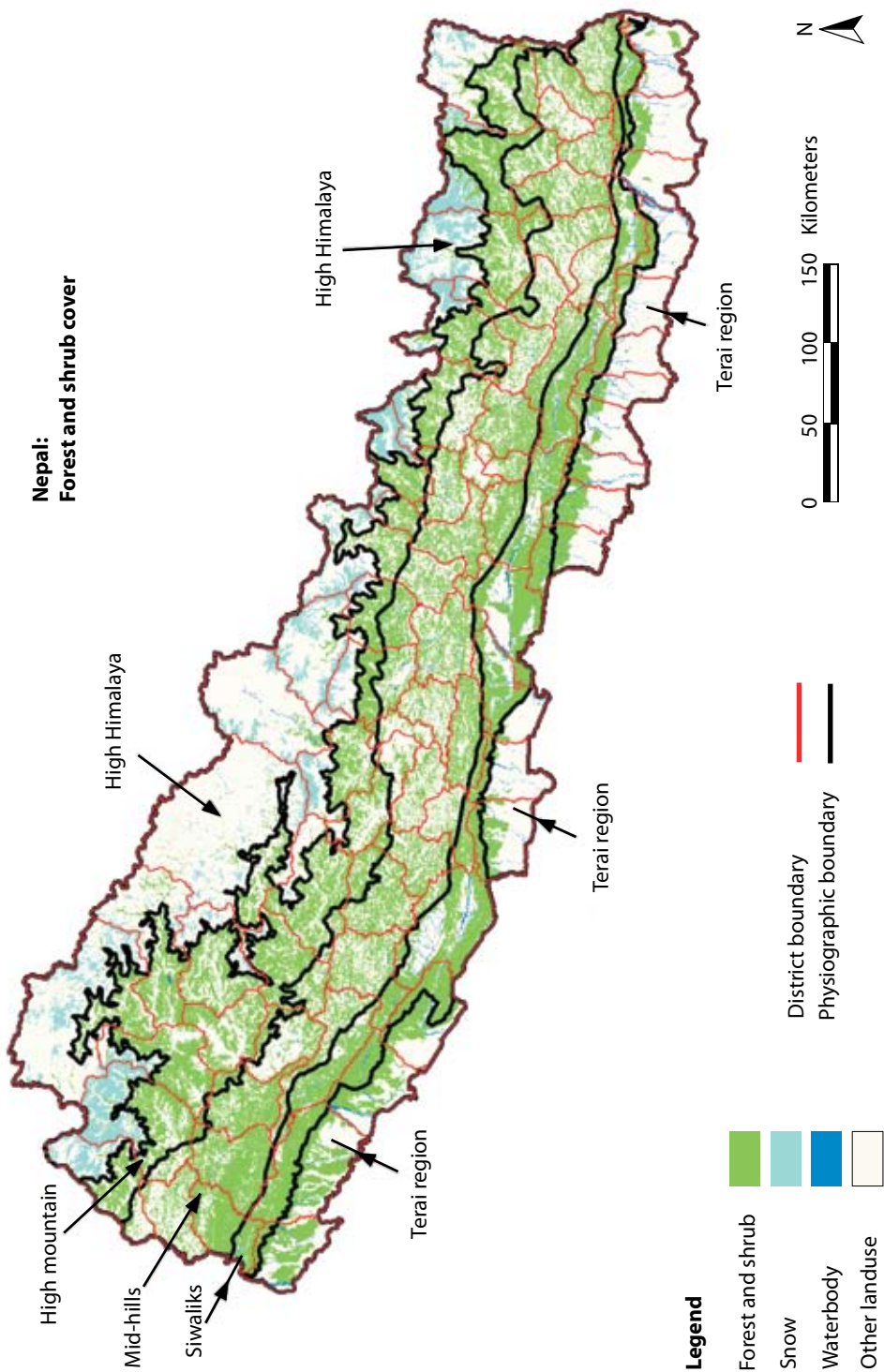


Figure 9.3 Forest and shrub cover in Nepal
Source: Winrock (2002) p.10 (note: based on Forest Survey 1995 data)

The REDD challenge by region

Nepal's forest landscapes have had diverse and interrelated trajectories, as illustrated in Table 9.1. Remaining forest is spread over the five regions. The mid hills have around a third of the forests (32.8%), most of which are well protected. The high hills contain the next largest area of forest (29.7%). These slow-growing forests have historically experienced almost no pressure but, in recent years, there has been an increase in illicit felling, particularly for export to Tibet. The Churia foothills area contains just over a quarter of remaining forests (26%). Although the Churia has a low population it has experienced increasing pressure as forest users from both the plains and the hills seek forest products. Lastly, about 8.6% of the *tarai* plains are forest. The *tarai* is under severe pressure both from clearing, and the extraction of timber and forest products. The challenges for REDD in these different regions are discussed below.

Table 9.1 Forest area in Nepal by physiographic region

Physiographic region	Forest area 1986 (million ha)	% of total forest in Nepal	Population (*2001)	Trend in forest degradation
High Himalayas	0.155	2.81	1 687 859	No significant problems
High hills/ mountains	1.639	29.70		Degradation intensified in recent years
Middle hills/ mountains	1.811	32.82	10 251 111	Forest degradation largely stopped. Regeneration in most areas. Some remaining national forest still being degraded.
Siwalik range (Churia hills and inner <i>tarai</i>)	1.438	26.06	11 212 453	High degradation pressure
<i>tarai</i>	0.475	8.61		High degradation pressure
Total	5.518	100.00	23 151 423	

Sources: data from www.cbs.gov.np

*2001 Census (Central Bureau of Statistics).

The *tarai*

The lowland *tarai* plains comprise about 14.6% of the country. As the central *tarai* belt became habitable in the post-war period, immigration from other parts of Nepal and forest clearance for agriculture gradually pushed the forest frontier from the historically cultivated southern agricultural belt northward, reducing the forest cover to around 39%.



Tarai (Photo by Oliver Springate-Baginski)

Table 9.2 *Tarai* forest (combined data 2002–2006)

Total area^a (ha)	Land classified as forest^b (ha)	Forest land (%)	Forest 'encroachment'^b (ha)	Number of CFUGs^c	Total CF area^c (ha)	Forest land under CF (%)
2 846 700	1 115 400	39%	54 175	922	92 191	8%

Sources: a. Anonymous (2004) District Development Profile, b. Adhikari 2002, c. DoF 2006

CFUG – community forest user group

Districts: Banke, Bara, Bardiya, Dhanusha, Jhapa, Kailali, Kanchanpur, Kapilvastu, Mahottari, Morang, Nawalparasi, Parsa, Rautahat, Rupandehi, Saptari, Sarlahi, Siraha, Sunsari

However, although *tarai* forest clearance has passed its peak, deforestation and forest degradation continue, and it is important to distinguish between the historical drivers for rolling back forest and the current situation. Most of the remaining *tarai* forests are national forest under government tenure and, apart from a few experiments, most of this forest is not actively managed. There is a moratorium on government felling. Protection efforts are constrained by limited capacity. Thus, the forest is, to a great extent, a *de facto* open access resource.

Land hunger and political patronage still thwart efforts to stabilise the forest frontier (Bhatta *et al.* 2007). Current estimates put the area of illegal encroachment on forests at between about 55 000 ha and 80 000 ha (MoFSC 2008 R-PIN). Encroachers no doubt anticipate that their illegal land grabs will become legalised in due course, and when this happens this acts as a signal to others to try the same tactics. Land hunger is particularly rife in western areas of the *tarai*, in part because bonded labourers have been freed and flood victims relocated.

The people in the *tarai* generally depend on fuelwood for heating and cooking. This means that the much diminished remaining forests are under intense pressure. Additionally, timber mafias operate in the region and, although it is difficult to know the extent of their activities, they undoubtedly contribute to degradation.

The historical *tarai* communities (e.g. Tharu and other tribal groups traditionally dependent on forests) lose out as the forest frontier is pushed back beyond their reach. As immigrants from other areas clear trees and settle near the remaining forests, many indigenous groups find themselves far from the forests they depend on.

Community forestry has not spread as extensively in the *tarai* as in the hills, mainly because of the reluctance of the Department of Forests to hand over forests. Most *tarai* communities tend to be a heterogeneous mix of recent settlers and lack the cohesion needed for collective action. However, some 8% of *tarai* forests have already been put under community management and many more communities are informally protecting their forests and are seeking recognition (Bhatta *et al.* 2007). Despite limited systematic assessment, it is apparent that in *tarai* CF forests, deforestation and degradation have, generally, been effectively reduced.

There are, however, major concerns about equity. The composition of community forest groups is prone to inequity as some users (such as the Tharu mentioned above) are excluded from group membership and therefore cannot access forest resources. Within the *tarai* groups, wealthier members and elites capture benefits and hidden subsidies through timber harvesting and pricing policies (e.g. Ivesen *et al.* 2005).

The scalability of *tarai* community forestry is also an issue. The *tarai* forests that have been handed over to communities tend to form a belt along the southern forest or agriculture frontier. Protecting the forests beyond this belt, where there are virtually no inhabitants, may not be so easy through simple community forestry models.

Collaborative forest management (or Coll.FM) has been put forward by the Ministry, with Dutch support, as a forest policy innovation that would address the very real difficulties experienced in both national forests and community forestry programmes in the *tarai*. Coll.FM organises regional collaborative committees to oversee forest management and use at the landscape scale (rather than on a local scale as with community forestry). However, as yet, the programme has been struggling to demonstrate its merits and find wider acceptance outside the three *tarai* project districts. It is particularly unpopular with the Federation of Forest Users of Nepal (FECOFUN) and its members as they feel they were not consulted when the policy was drafted.

Continuing deforestation and forest degradation show that government protection of the national forest does not work. The Department of Forests does not have the capacity or incentives, nor does it have the consent of the people to effectively police extensive areas of forest. To work effectively, REDD will need to change this. Radical enhancement of capacity is one option, but this is unlikely to happen in the medium term. However, federalisation, if it occurs, may support the development of capacity in key problem areas and may have a significant effect. Any policy solution is likely to involve some form of participatory or rights-based arrangements to give local people incentives to regulate how they use forests. We see that CF in *tarai* has worked relatively well but that it has performed poorly in terms of equity. This will need to be improved. Therefore, in the *tarai*, we recommend that an effective and equitable REDD approach should:

- **Freeze forest boundaries** and stop land grants in forest areas. Addressing encroachments without encouraging further encroachment will, of course, be a politically difficult issue for which no simple solutions exist. The different ministries will need to coordinate their activities to restrict land grants, particularly the Ministry of Land Reform and the Ministry of Forests.
- **Create mechanisms whereby the value of forestland to those in control is higher than the value of conversion.** A variation of the Community Forestry handover is probably the most effective way to achieve this. However, the challenge is how to institutionalise such a transfer equitably. Close attention must be paid to inclusion, transparency and fairness.
- **Institutionalise appropriate co-management arrangements for each location.** Because conditions are so diverse, a repertoire of models is likely to be necessary. In some cases collaborative partnerships involving government, communities and private partners may be better than user groups in dealing with collective action and equity issues, particularly where forests are far from people's homes.
- **Reward local groups for acting as forest guardians, with safeguards to ensure the poorest receive an equitable share of the benefits, if there are to be REDD payment for environmental services (PES) schemes.** PES schemes are likely to provide better incentives for protection than payments for policing or to intermediaries. However, achieving distributional equity is again very challenging and, therefore, stringent equity conditionality and monitoring will be essential. But as PES schemes cannot be guaranteed in perpetuity, institutional arrangements should be sustainable without them. REDD PES schemes may therefore work best as a transition to community-based sustainable forest management.
- **Provide alternative sources of forest resources and livelihood opportunities to reduce pressure on remaining forests.** If extraction of forest products is to be regulated, substitutes will need to be provided. These might include bamboo plantations, fast growing fuelwood species on community woodlots and so on.

The Siwaliks (Churia hills and Inner Tarai valleys)

The Churia hills and the Inner Tarai areas adjoining the Tarai constitute about 12% of the country. The narrow belt of forested alluvial foothills has, in general, a low population density although some districts such as Dang have more lowlands and are more densely



Churia hills (Photo by Binod Bhatta)



Churia forest use (Photo by Hari Dhungana)

populated. Forests are exposed to increasing pressure and the *tarai* forests are either degraded or closed to use.

Table 9.3 Churia/Inner Tarai forests

Total area ^a (ha)	Forest land ^b (ha)	Percentage of district classified as forest land	Forest encroachment ^b (ha)	Number of CFUGs ^c	Total CF area ^c (ha)	% of forest area under CF
1 460 400	923 857	63%	13 846	1235	215 977	23%

Districts: Chitwan, Dang, Makwanpur, Sindhuli, Surkhet, Udaypur

Sources: a. Anonymous (2004) District Development Profile, b. Adhikari (2002), c. DoF (2006)

Many forest areas in the Siwalik foothills are subject to similar pressures as the *tarai* plains below them. The major problem in more remote foothill areas is degradation, as local people from fuelwood deficit areas in the *tarai* harvest forest products (e.g. fuelwood) for their own use or sale. Additionally, illicit timber mafias cut timber for sale, including recent timber harvesting by insurgents. On the other hand regulated and generally sustainable legal timber harvesting is being conducted by the extant *tarai* community forest user groups (CFUGs).

In terms of REDD, the Siwalik area may have the biggest potential for reducing emissions. Enforcement alone has not succeeded and has hit the poorest hardest. Workable co-management systems need to be found, and forest users need to be helped to reduce their dependence on forests by developing substitutes, for instance woodlot plantations.

The community forest model has been introduced along many forest fringe areas. However, it is unlikely to be effective within forests. Managing forest areas as national forests appears to be possible by creating consortia of stakeholders and developing and agreeing management plans. These plans may include developing livelihood opportunities, for instance from cultivating non-timber forest products (NTFP) (e.g. *serpentina spp.* and *Asparagus racemosa*), setting up plantations in some areas and introducing more effective protection in others.

The mid hills

Historically this has been the main area of settlement in Nepal, although, after emigration to the plains, it is now home to only about half of Nepal's population. Community forestry emerged as the main forest management model in the Nepal hills in response to an environmental the Himalayan Environmental Degradation narrative. This, although problematic for a number of reasons, had great persuasive power and led to intense donor efforts to reverse forest degradation in the hill areas. The increase in deforestation was attributed to the nationalisation of forests in 1957. Common pool management systems were undermined and not replaced effectively. This led to *de facto* open access at a time when hill towns were growing rapidly and demand for construction timber and fuelwood were booming.



Mid hills (Photo by Oliver Springate-Baginski)

Community Forestry models were developed in the 1970s and scaled up, particularly after democratisation in 1990. This led to the handover of virtually all the accessible mid hills forests to communities. Very little national forest remains. There are currently around 15 000 CFUGs and about 24% of the mid hills area, the most accessible parts, are under CF.

The policy has generally stabilised the area and condition of forest in the region. However, there are concerns about deforestation in some remaining patches of national forest though, in general, there seem to be no significant emissions issues to address. However, after their extensive regeneration and protection efforts CFUG members will feel they are treated unfairly if REDD funds only target problem areas. If they receive REDD support, they will have an incentive to continue protection.

The high hills

These extensive and inaccessible high altitude forests, generally beyond inhabited areas, extend to the tree line, above which there are the Himalayan massifs. Historically, high altitude forests have not been exposed to much pressure. However, in recent years, use has increased and these forests are believed to be degrading, especially in the more accessible areas. Evidence on the nature and extent of the problem is limited.



High hills (Photo by Oliver Springate-Baginski)

Overall

The underlying cause of deforestation and forest degradation is the strong demand (and high prices) for land, timber and non-timber forest products driven by poverty and food insecurity. Deforestation and degradation occurs mainly in the 80% of forests which are national forest, particularly in the *tarai*, Siwalik and high hills areas. The 21% of forests under community management are believed to be protected and managed relatively effectively in general, although community regulation has undoubtedly led to transfer of pressure to neighbouring national forests. Weak governance makes enforcing regulations in national forests very challenging.

Carbon and forests in Nepal

The ability to estimate current forest-related emissions is very limited. The FAO (2005) estimates (Table 9.4) were calculated from 1990s forest assessment data and so must be treated as approximate. Limited monitoring capacity and lack of time series data make it very difficult to track changes in forest condition. There is no national agency to regularly monitor and update forest data in Nepal.

Table 9.4 Status of carbon in forest and shrub land of Nepal

Category	Carbon (million tonnes)		
	1990	2000	2005
Carbon in above-ground biomass	278	385	359
Carbon in below-ground biomass	97	135	126
Subtotal: carbon in living biomass	375	520	485
Carbon in dead wood	56	78	73
Carbon in litter	17	13	13
Subtotal: carbon in dead wood and litter	73	91	86
Soil carbon to a depth of 100 cm	432	350	326
Total carbon	880	961	897

Source: FAO 2005

Table 9.5 Status of forests and forest carbon in Nepal by legal classification

Category	Sub-category	Area (million ha)	Above-ground biomass (million tonnes)	Below-ground biomass (million tonnes)	Dead wood biomass (million tonnes)	Carbon (million tonnes)
National forest	Government managed forest	3.900	767.83	268.74	155.49	596.03
	Community forest	1.200	236.26	82.69	47.84	183.39
	Leasehold forest	0.014	2.76	0.96	0.56	2.14
	Religious forest	0.001	0.11	0.04	0.02	0.08
	Protected forest	0.710	139.78	48.92	28.31	108.51
Private forest		0.002	0.01	0.004	0.002	0.009
Total		5.830	1146.75	401.36	232.22	890.16

Source: Oli and Shrestha 2009

Prospects and progress for REDD

Underlying governance challenges for REDD

Nepal is still in a period of post-conflict uncertainty. Political conflict intensified in the late 1990s into outright civil war, claiming the lives of thousands and brutalising the nation. The origins of the conflict have been schisms within the communist party, with a radical faction taking to an armed struggle for reform. However, an underlying problem and valid source of grievance stems from the clamour from Kathmandu elites for a share of the 'creamy layer' of lucrative opportunities, particularly from international assistance, whilst the rural masses, particularly the poorer strata, see little improvement in their condition. Indeed, for the poor, conditions often deteriorated as agricultural productivity stagnated and the population inexorably increased (Panday 1999). Conditions were also made worse by imbalances in development practices; these were urban and regionally biased and the mid- and far- western regions were neglected.

The recent constitutional settlement ended the insurgency, but the new constitution is being developed, and federalisation is a highly political issue. Several groups, including ethnic and indigenous groups, are claiming that they should be given the right to self determination, meaning that provinces should be formed according to their agenda. This situation has made it difficult to predict the future of forests in Nepal. The uneasy post-conflict settlement, in which many groups have grievances and are seeking to secure their interests, has created a very unstable political situation. Marginalised and land-hungry groups will undoubtedly continue to lobby for an allocation of forests as a condition for settlement.

In this very challenging context REDD interventions will need to address three main challenges:

1. Stabilising the *tarai* forest frontier to avoid deforestation;
2. Reversing degradation by regulating overuse and stopping illicit extraction of timber in the *tarai*, Churia and high hills areas. (Since *tarai* forests are mainly subtropical and fast growing they fix carbon quickly and could play a key role in sequestration.);
3. Ensuring equitable treatment of community forestry groups which have reversed deforestation and degradation over the last two decades.

Because of the sectoral nature of forest governance, the Ministry of Forests and Soil Conservation is, in a sense, in competition with other ministries to assert management of forests. The Ministry of Finance may be the key mediating gatekeeper. If REDD financing becomes available and forests start generating significant revenue, it may be easier to defend the conservation of forest against competing land uses.

National policy process

The Government has appointed the Ministry of Science, Environment and Technology (MoSET) as the focal ministry for climate change initiatives. MoSET is currently

preparing a national adaptation plan of action (NAPA) with the support of various donors, including the Asian Development Bank (ADB) and the Danish International Development Agency (DANIDA). The Government recently indicated that although MoSET is the focal ministry for climate change initiatives, this *excludes* REDD. However, it did not say which ministry would be the focal point for REDD. Meanwhile, the REDD cell in the MoFSC is active. MoSET are overwhelmed, behind schedule and so are, from necessity, neglecting the role of REDD.

World Bank and R-PIN

The main policy process so far has been the preparation of a Readiness Plan Idea Note (R-PIN) with US \$200 000 from the World Bank Carbon Partnership Facility (WBCPF). A REDD cell established to prepare and coordinate REDD activities submitted the R-PIN to the WBCPF in April 2008. Quoting from the R-PIN:

- 'One of the prominent causes of deforestation and degradation in the *Terai* and high altitude forests is the lack of clarity in the tenure system.'
- 'The government nationalisation of forests in 1957 was one of the key factors that accelerated deforestation throughout Nepal. In the *Terai* and *Siwalik*, deforestation is widespread as a result of the government's resettlement programme, displaced settlements and their illegal clearing of forests for agriculture and the illicit felling of timber for smuggling across the border.'

An informal climate change and REDD group has been meeting regularly and a readiness plan has been developed which is currently under discussion and negotiation with the World Bank.

REDD projects

In terms of other projects, the World Wide Fund for Nature (WWF) has initiated pilot studies related to REDD under its western Tarai Arc Landscape project, which is implemented in partnership with the Ministry of Forest and Soil Conservation (MoFSC). The Department of Forest and the Department of National Parks and Wildlife Conservation are the main partners. WWF initiated this in August 2008 and have plans to develop, document and test the methodology for the REDD process in 100 000 ha of forest in Banke and Dang districts (near the Rapti River). They have signed a memorandum of understanding with MoFSC, MoSET and FECOFUN. In addition, the consortium has engaged Winrock International as consultants.

The International Centre for Integrated Mountain Research and Development (ICIMOD) has initiated a joint action research project with the Asia Network for Sustainable Agriculture and Bioresource (ANSAB) and the Federation of Community Forest Users Nepal (FECOFUN). The project covers approximately 100 community forests in three watersheds across three physiographic regions.

The Government of Finland will soon be initiating a national forest inventory. It is expected that this project will develop methodologies which will assist in establishing the baseline for REDD.

Box 9.1 WWF - Reducing poverty in Nepal, through innovative and equitable carbon financing mechanisms (REDD)

Recent analysis of remote sensing data shows an increase in forest cover and regeneration of grasslands in the corridors of the Terai Arc Landscape (TAL). The proposed project builds upon the long-term benefits generated by an earlier project and successful forest conservation activities in order to qualify the restored forests for carbon trading.

Forest resources in many developing countries play important roles in national economic development. In particular, they provide a source of income and meet the customary needs of local people, which are often crucial, if not critical, to local communities, especially in poor areas.

The proposed project links to the ongoing project Strengthening the Restoration of a Biological Corridor in the Terai Arc Landscape, Nepal, which is supported by the government of Finland (2003–2008). This project achieved significant success through community-based anti-poaching operations, corridor restoration, capacity building, education and awareness, and promoting alternative energy to improve livelihoods.

Objectives to be achieved by 2012:

1. Enhance knowledge of and the scientific basis for forest carbon measurement;
2. Strengthen the capacity of government and local communities to measure forest carbon, including for REDD mechanisms;
3. Develop a policy and institutional framework for the implementation of REDD.

The partners are the Ministry of Science, Environment and Technology (MoEST), the Department of National Parks and Wildlife Conservation (DNPWC), the Department of Forest, the National Trust for Nature Conservation (NTNC) and local communities, including Buffer Zone (BZ) and Community Forestry Coordination Committees (CFCC).

The Government of Nepal has endorsed a 10-year strategy for TAL. This project has identified forest carbon as one of the key funding mechanisms for sustaining forest conservation in the area.

Source: WWF Nepal website

There are many other subnational REDD projects in various stages of development. As of October 2009 they include the following:

- The Nepal Federation of Indigenous Nationalities (NEFIN) has initiated a regional project which focuses on capacity building of indigenous people so that they can benefit from the REDD mechanism;
- The Regional Community Forestry Training Center for Asia and the Pacific (RECOFTC) has also initiated a project on REDD with FECOFUN; FECOFUN is their main implementing partner in Nepal.

Conclusions

There are, clearly, significant opportunities for REDD interventions to support communities in managing forests better. However, there are a number of challenges in ensuring that these are effective, efficient and equitable. Weak governance and limited capacities make implementing and monitoring any forest management programme difficult. A compounding problem is the ongoing political uncertainty over State restructuring and federalisation in Nepal. The extent to which forest management may be federalised and, if so, whether the centre will provide regulatory guidelines for forest management is, as yet, unknown. Many influential groups are lobbying for full decentralisation of natural resource governance. With this uncertainty in mind, we suggest that the major, overriding issues for REDD interventions in Nepal are:

- **Improving forest resource monitoring systems.** Poor data is a core challenge. Up-to-date data is needed to identify areas where there is rapid deforestation and forest degradation, and to monitor change over time.
- **Improving forest law enforcement.** The Government needs to stop illicit timber marketing and encroachments whilst, at the same time, providing space for the poor who are dependent on forests to gradually adapt. The ways to do this will only become clear once the federalisation issue is resolved and the new National Constitution agreed.
- **Building the capacity of community forestry user groups forests (CFUG).** This will involve developing activities to promote equity in processes and distributional outcomes, including marginalised groups and protecting pro-poor livelihood activities.
- Legal clarification of the status of carbon rights.

There are a number of research priorities for implementing REDD in ways which can support local communities:

1. **Effectiveness.** In the *tarai*, inner *tarai* and high hills, what forest governance mechanisms can reduce degradation and deforestation?
2. **Equity.** In a polity fraught with patronage and stratification, how can incentives/benefits reach the poorest? What steps are required to avoid REDD generating another 'creamy layer' for elites (e.g. government and intermediaries) to take the major share? Good governance (e.g. transparency, accountability, responsibility in relation to and regarding fund allocation, overhead levels and benefit distribution) will need to be emphasised.
3. **Efficiency.** Considering the attenuated expectations regarding REDD, just what level of funding is it realistic to anticipate? Which areas are priorities? And which intervention strategies and incentive levels make the best use of funds?
4. **Diversity:** Can the different circumstances across Nepal be addressed within the same national framework?

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Annexes

Annex 1. Workshop participants

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Annex 2. Annotated bibliography

Publications, Journal Articles, and Websites relating to REDD and impacts on local people.

Compiled summer 2009, Ken Brown, University of Vermont

Contents:

Organized by search terms run in EndNote and key words listed below entries.

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I. Adaptation [\(return to top\)](#)

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Adaptation

Project description and resource links.

<http://www.iied.org/climate-change/key-issues/economics-and-equity-adaptation/economics-climate-change-adaptation-least-developed-countries#about>

Christoplos, I., Anderson, S., Arnold, M., Galaz, G., Hedger, M., Klein, R. J. T., et al. (2009). **The human dimension of climate adaptation: The importance of local and institutional issues**

Stockholm: Commission on Climate Change and Development.

Adaptation

De Jong, B., Bazán, E., & Montalvo, S. (2007). **Application of the "Climafor" baseline to determine leakage: the case of Scolel Té.** *Mitigation and Adaptation Strategies for Global Change*, 12(6), 1153-1168.

Implementation

De Jong, B. H. J., Hellier, A., Castillo-Santiago, M. A., & Tipper, R. (2005). **Application of the 'Climafor' approach to estimate baseline carbon emissions of a forest conservation project in the Selva Lacandona, Chiapas, Mexico.** *Mitigation and Adaptation Strategies for Global Change*, 10(2), 265-278.

Implementation

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Policy

Gustavsson, L., Sathre, R., Schlamadinger, B., & Robertson, K. (2006). **Preface.** *Mitigation and Adaptation Strategies for Global Change*, 11(5), 933-934.

Biomass

Special issue on the use of biomass in climate change mitigation.

Hooda, N., Gera, M., Andrasko, K., Sathaye, J., Gupta, M. K., Vasistha, H. B., et al. (2007). **Community and farm forestry climate mitigation projects: case studies from Uttaranchal, India.** *Mitigation & Adaptation Strategies for Global Change*, 12(6), 1099-1130.

Implementation, CDM

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Policy

Kirschbaum, M. (2006). **Temporary Carbon Sequestration Cannot Prevent Climate Change.** *Mitigation and Adaptation Strategies for Global Change*, 11(5), 1151-1164.

Policy

Knutsson, P., & Ostwald, M. (2006). **A Process-Oriented Sustainable Livelihoods Approach: A Tool For Increased Understanding of Vulnerability, Adaptation and Resilience.** *Mitigation and Adaptation Strategies for Global Change*.

Livelihood, Governance

Locatelli, B., Kanninen, M., Brockhaus, M., Colfer, C. J. P., Murdiyarso, D., & Santoso, H. (2008). **Facing an uncertain future: How forest and people can adapt to climate change** (pp. 86p.).

Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Adaptation

The most prominent international responses to climate change focus on mitigation (reducing the accumulation of greenhouse gases) rather than adaptation (reducing the vulnerability of society and ecosystems). However, with climate change now inevitable, adaptation is gaining importance in the policy arena, and is an integral part of ongoing negotiations towards an international framework. This report presents the case for adaptation for tropical forests (reducing the impacts of climate change on forests and their ecosystem services) and tropical forests for adaptation (using forests to help local people and society in general to adapt to inevitable changes). Policies in the forest, climate change and other sectors need to address these issues and be integrated with each other—such a cross-sectoral approach is essential if the benefits derived in one area are not to be lost or counteracted in another. Moreover, the institutions involved in policy development and

implementation need themselves to be flexible and able to learn in the context of dynamic human and environmental systems. And all this needs to be done at all levels from the local community to the national government and international institutions. The report includes an appendix covering climate scenarios, concepts, and international policies and funds.

<http://www.cifor.cgiar.org/Publications/Detail?pid=2600>

Minang, P., McCall, M., Skutsch, M., & Verplanke, J. (2008). **A data support infrastructure for Clean Development Mechanism forestry implementation: An inventory perspective from Cameroon.** *Mitigation and Adaptation Strategies for Global Change*, 13(2), 157-178.

Implementation, CDM

Murdiyarso, D., & Herawati, H. (2005). ***Carbon forestry: Who will benefit?: Proceedings of workshop on carbon sequestration and sustainable livelihoods, held in Bogor on 16-17 February 2005.*** Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Livelihood, Implementation, CDM

Carbon sequestration projects through land use, land-use change and forestry (LULUCF) activities could demonstrate a win-win situation from the point of view of climate change and sustainable development. Under the current rules of the Clean Development Mechanism (CDM) of the Kyoto Protocol the activities are limited to afforestation and reforestation. Properly designed, these projects conserve and/or increase carbon stock and at the same time improve rural livelihoods. Such projects have been developed and implemented in a number of countries with different ecosystems and social settings. They do not necessarily comply with the current legally binding carbon market under CDM but demonstrate the participation of the low-income rural communities in sustainable forestry, agroforestry and other natural resource management activities. This publication is a collection of the lessons learned from a number of case studies ranging from small to large scale projects, from community-based to corporate operations, and from development to conservation activities. Although most projects are still in their infancy stage and many more lessons to be learned it was realized that bundling climate change and community development projects is a practical approach to support sustainable livelihoods. At the same time the strategic approaches to influence the next rounds of climate negotiation were also addressed. These are dealing with issues, such as, avoiding deforestation and adaptation measures for vulnerable ecosystems and communities, who have relatively low adaptive capacity. Emerging markets for carbon in the context of rural development and organization were identified. This transition has had implications for the development of its institutional arrangements at project management and community levels, which in turn have affected the project's legitimacy and its ability to promote equitable outcomes. It has been demonstrated that purely carbon management-oriented activities are able to convince rural communities and investors to participate. Broader carbon forestry activities have the potentials to be integrated in the sustainable development agenda.

<http://www.cifor.cgiar.org/Publications/Detail?pid=1733>

Murdiyarso, D., Herawati, H., & Iskandar, H. (2005). ***Carbon sequestration and sustainable livelihoods: A workshop synthesis.*** Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Livelihood, Implementation, CDM

Carbon sequestration projects conducted as part of community development strategies can offer considerable environmental and social benefits. Such initiatives do have some degree of compatibility with the dual objectives of the Kyoto Protocol's Clean Development Mechanism (CDM). The lessons learned from such initiatives in Mexico, Colombia, Costa Rica,

Philippines, Indonesia, and Timor Leste generally demonstrate the importance of engaging strong local participation. Although most of these projects do not fully comply with the rigid guidelines governing the Kyoto Protocol's Clean Development Mechanism, this is partly because the current agreement only allows afforestation and reforestation project activities. Conservation of areas that store large amounts of carbon, such as in peat lands, is ineligible for funding under existing rules. This synthesis also looks at how strategic approaches might be addressed for including deforestation avoidance initiatives in the next round of negotiations and subsequent commitment period. To succeed, these projects employ a scientifically sound methodology in determining the baseline, monitoring additionality and leakage, and permanence. The workshop reviewed in this paper examined a range of possibilities, including mainstreaming gender equity, reviving traditional laws and implementing adaptation measures. Findings from the workshop suggest that climate change projects must include practical livelihood options and that further investigation of donor and policy responses is needed to determine the level of public funding these projects should receive and how to best encourage private sector involvement. The complexity of these projects is demonstrated with examples from a range of on-going projects. The workshop and this synthesis provide a valuable opportunity to share the lessons learned from community-based projects in different regulatory and institutional frameworks.

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Indigenous peoples

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Livelihood, Implementation

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Indigenous peoples

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Forest management, Adaptation

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Deforestation, Implementation

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Policy, Indigenous peoples

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Indigenous peoples, Implementation, CDM

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Livelihood, Implementation

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Forest management, Implementation

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Forest management, Adaptation, CDM, Livelihoods

Roshetko, J., Lasco, R., & Angeles, M. (2007). **Smallholder agroforestry systems for carbon storage.** *Mitigation and Adaptation Strategies for Global Change*, 12(2), 219-242.

Implementation, CDM, Livelihood

Sathaye, J., & Andrasko, K. (2007). **Special issue on estimation of baselines and leakage in carbon mitigation forestry projects.** *Mitigation and Adaptation Strategies for Global Change*, 12(6), 963-970.

Implementation

Introduction to Vol. 12, issue 6, which has 11 articles on baselines and leakage in carbon forestry.

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Forest management, Implementation

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Implementation

Seppälä, R., Buck, A., & Katila, P. (Eds.). (2009). **Adaptation of Forests and People to Climate Change: A Global Assessment Report.** International Union of Forest Research Organizations (IUFRO), Global Forest Expert Panels of the Collaborative Partnership on Forests (CPF).

Adaptation, Forest management, Livelihood, Governance

The report is the first product of the Global Forest Expert Panels of the Collaborative Partnership on Forests (CPF) and presents the state-of-knowledge about the impacts of climate change on

forests and people and options for adaptation. One of the key messages that emerged from this assessment is that the carbon-regulating services of forests are at risk of being lost entirely unless current carbon emissions are reduced substantially; this would result in the release of huge quantities of carbon to the atmosphere, exacerbating climate change.

The report as well as a policy brief (available in all UN languages) can be downloaded at:
<http://www.iufro.org/science/gfep/>

Shahbaz, B., Ali, T., & Suleri, A. (2007). **A critical analysis of forest policies of Pakistan: Implications for sustainable livelihoods.** *Mitigation and Adaptation Strategies for Global Change*, 12(4), 441-453.

Livelihood, Governance

Smith, D., & Vivekananda, J. (2007). ***A climate of conflict: The link between climate change, peace and war.*** London: International Alert.

Impact on the poor, Governance, Adaptation

Climate change is upon us and its physical effects have started to unfold. That is the broad scientific consensus expressed in the Fourth Assessment Review of the Inter-governmental Panel on Climate Change. This report takes this finding as its starting point and looks at the social and human consequences that are likely to ensue – particularly the risks of conflict and instability.

<http://www.international-alert.org/publications/pub.php?p=322>

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Implementation

Vlassova, T. (2006). **Arctic residents' observations and human impact assessments in understanding environmental changes in boreal forests: Russian experience and circumpolar perspectives.** *Mitigation and Adaptation Strategies for Global Change*, 11(4), 897-909.

Indigenous peoples

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CDM, REDD, Policy

II. Community [\(return to top\)](#)

Boyd, E., Gutierrez, M., & Chang, M. (2007). **Small-scale forest carbon projects: Adapting CDM to low-income communities.** *Global Environmental Change Part A: Human & Policy Dimensions*, 17(2), 250-259.

Policy, Governance, CDM

Corbera, E., Kosoy, N., & Martinez Tuna, M. (2007). **Equity implications of marketing ecosystem services in protected areas and rural communities: Case studies from Meso-America.** *Global Environmental Change Part A: Human & Policy Dimensions*, 17(3/4), 365-380.

Equity, Governance

De Jong, B., Bazán, E., & Montalvo, S. (2007). **Application of the “Climafor” baseline to determine leakage: the case of Scolel Té.** *Mitigation and Adaptation Strategies for Global Change*, 12(6), 1153-1168.

Implementation

De Jong, B. H. J., Hellier, A., Castillo-Santiago, M. A., & Tipper, R. (2005). **Application of the ‘Climafor’ approach to estimate baseline carbon emissions of a forest conservation project in the Selva Lacandona, Chiapas, Mexico.** *Mitigation and Adaptation Strategies for Global Change*, 10(2), 265-278.

Implementation

FAS. (2008). *The Juma Sustainable Development Reserve Project: Reducing Greenhouse Gas Emissions from Deforestation in the State of Amazonas, Brazil.* Amazonas Sustainable Foundation (FAS).

REDD, Implementation

Project Design Document For validation at: Climate, Community, & Biodiversity Alliance

http://unfccc.int/files/methods_science/redd/application/pdf/pdd_juma_reserve_red_project_v5.0.pdf

Validation Report here:

http://unfccc.int/files/methods_science/redd/application/pdf/validation_report_juma_ccba_30sep_2008.pdf

Fry, I. (2008). **Reducing Emissions from Deforestation and Forest Degradation: Opportunities and Pitfalls in Developing a New Legal Regime.** *Review of European Community & International Environmental Law (RECIEL)*, 17(2).

REDD

http://www.fern.org/media/documents/document_4263_4264.PDF

<http://www3.interscience.wiley.com/journal/121376026/issue>

Gera, M., Bisht, N. S., & Gera, N. (2003). **Carbon sequestration through community based forest management: A case study from Sambalpur Forest Division, Orissa.** *Indian Forester*, 129(6), 735-740.

Forest management, Implementation

Grieg-Gran, M. (2008). **Community Development Carbon Finance Toolkit**. [Project webpage]. *International Institute for Environment and Development*.

Implementation

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<http://www.iied.org/sustainable-markets/key-issues/environmental-economics/community-development-carbon-finance-toolkit#about>

Grieg-Gran, M. (2008). **Community-based forest carbon project in Mozambique**. [Project webpage]. *International Institute for Environment and Development*.

Livelihood, Implementation

Brief project description.

<http://www.iied.org/natural-resources/key-issues/forestry/community-based-forest-carbon-project-mozambique#about>

Hooda, N., Gera, M., Andrasko, K., Sathaye, J., Gupta, M. K., Vasistha, H. B., et al. (2007).

Community and farm forestry climate mitigation projects: case studies from Uttaranchal, India. *Mitigation & Adaptation Strategies for Global Change*, 12(6), 1099-1130.

Implementation, CDM

Janetos, G., & Henman, J. (2007). **Conservation and community benefits from the carbon market**. *Ecos - A Review of Conservation*, 28(3/4), 64-70.

Livelihood

Jindal, R., Swallow, B., & Kerr, J. (2008). **Forestry-based carbon sequestration projects in Africa: Potential benefits and challenges**. *Natural Resources Forum*, 32(2), 116-130.

Implementation, Livelihood, Governance, CDM

Kaimowitz, D. (2008). **The prospects for Reduced Emissions from Deforestation and Degradation (REDD) in Mesoamerica**. *International Forestry Review*, 10(3), 485-495.

REDD

Klooster, D., & Masera, O. (2000). **Community forest management in Mexico: carbon mitigation and biodiversity conservation through rural development**. *Global Environmental Change-Human and Policy Dimensions*, 10(4), 259-272.

Implementation, CDM

Larson, A. M., & Ribot, J. C. (2007). **The poverty of forestry policy: double standards on an uneven playing field**. *Sustainability Science*, 2(2), 189-204.

Equity, Policy, Impact on the poor

Locatelli, B., Kanninen, M., Brockhaus, M., Colfer, C. J. P., Murdiyarso, D., & Santoso, H. (2008). **Facing an uncertain future: How forest and people can adapt to climate change** (pp. 86p.). Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Adaptation

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<http://www.cifor.cgiar.org/Publications/Detail?pid=2600>

Luttrell, C., Schreckenberger, K., & Peskett, L. (2007). **The implications of carbon financing for pro-poor community forestry.** *Forest Policy and Environment Programme, Overseas Development Institute, Forestry Briefing 14.*

REDD, Impact on the poor

"REDD has the potential to act as a pro-poor influence in the regulation and distribution of benefits associated with community forestry"

<http://www.odi.org.uk/resources/download/438.pdf>

<http://www.odi.org.uk/resources/details.asp?id=438&title=implications-carbon-financing-pro-poor-community-forestry>

MacDicken, K., & Smith, J. (2000). **Capturing the value of forest carbon for local livelihoods: Opportunities under the clean development mechanisms of the Kyoto protocol** (pp. 16p.). Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Livelihood, CDM

Projects implemented as part of the Clean Development Mechanism (CDM) of the Kyoto Protocol will have the dual mandate of reducing greenhouse gas emissions and contributing to sustainable development. It is not yet clear what, if any, forestry activities will be eligible for CDM. Nor is it known what rules will guide the implementation of CDM projects. These decisions have important implications for poor people who live in and around forests in developing countries. Suitably designed CDM forestry projects can significantly benefit local communities by supplementing and diversifying income, increasing access to forest goods and services, improving land productivity, developing the local knowledge base and local institutions and increasing the energy efficiency of using forest products. In some cases there will be trade-offs between the amount of greenhouse gas reductions sought and direct benefits to local livelihoods. Without adequate safeguards, some CDM activities could have negative effects on local people, such as denying them access to resources they depend on for their livelihood. Pro-active efforts will be needed in some cases to ensure that community-based CDM forestry projects and local land uses can compete effectively in carbon trading markets with projects managed by large-scale operators. As this policy brief describes, however, CDM guidelines can be designed to not only minimize the likelihood of negative effects on local communities but to directly improve their livelihoods while achieving net greenhouse gas emissions reductions. Proposed measures include: explicitly including forest management and agroforestry in the CDM; implementing social impact assessments for all CDM projects; providing incentives for projects with multiple benefits; approving tonne-year carbon accounting; reducing transactions costs of community-based projects; and building capacity at local, national and international levels.

<http://www.cifor.cgiar.org/Publications/Detail?pid=732>

Mattsson, E., Ostwald, M., Nissanka, S. P., Holmer, B., & Palm, M. (2009). **Recovery and protection of coastal ecosystems after tsunami event and potential for participatory forestry CDM - Examples from Sri Lanka.** *Ocean & Coastal Management*, 52(1), 1-9.
Implementation, CDM

Minang, P. A., Bressers, H. T. A., Skutsch, M. M., & McCall, M. K. (2007). **National forest policy as a platform for biosphere carbon management: The case of community forestry in Cameroon.** *Environmental Science & Policy*, 10(3), 204-218.
Governance, Implementation, CDM

Minang, P. A., & McCall, M. K. (2008). **Multi-level governance conditions for implementing Multilateral Environmental Agreements: The case of CDM forestry readiness in Cameroon.** *Energy & Environment*, 19(6), 845-860.
Implementation, Governance, CDM

Minang, P. A., McCall, M. K., & Bressers, H. T. A. (2007). **Community capacity for implementing Clean Development Mechanism projects within community forests in Cameroon.** *Environmental Management*, 39(5), 615-630.
Livelihood, Implementation, CDM

Murdiyarso, D., & Herawati, H. (2005). **Carbon forestry: Who will benefit?: Proceedings of workshop on carbon sequestration and sustainable livelihoods, held in Bogor on 16-17 February 2005.** Bogor, Indonesia: Center for International Forestry Research (CIFOR).
Livelihood, Implementation, CDM

Carbon sequestration projects through land use, land-use change and forestry (LULUCF) activities could demonstrate a win-win situation from the point of view of climate change and sustainable development. Under the current rules of the Clean Development Mechanism (CDM) of the Kyoto Protocol the activities are limited to afforestation and reforestation. Properly designed, these projects conserve and/or increase carbon stock and at the same time improve rural livelihoods. Such projects have been developed and implemented in a number of countries with different ecosystems and social settings. They do not necessarily comply with the current legally binding carbon market under CDM but demonstrate the participation of the low-income rural communities in sustainable forestry, agroforestry and other natural resource management activities. This publication is a collection of the lessons learned from a number of case studies ranging from small to large scale projects, from community-based to corporate operations, and from development to conservation activities. Although most projects are still in their infancy stage and many more lessons to be learned it was realized that bundling climate change and community development projects is a practical approach to support sustainable livelihoods. At the same time the strategic approaches to influence the next rounds of climate negotiation were also addressed. These are dealing with issues, such as, avoiding deforestation and adaptation measures for vulnerable ecosystems and communities, who have relatively low adaptive capacity. Emerging markets for carbon in the context of rural development and organization were identified. This transition has had implications for the development of its institutional arrangements at project management and community levels, which in turn have affected the project's legitimacy and its ability to promote equitable outcomes. It has been demonstrated that purely carbon management-oriented activities are able to convince rural communities and investors to participate. Broader carbon forestry activities have the potentials to be integrated in the sustainable development agenda.

<http://www.cifor.cgiar.org/Publications/Detail?pid=1733>

Murdiyarso, D., Herawati, H., & Iskandar, H. (2005). *Carbon sequestration and sustainable livelihoods: A workshop synthesis*. Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Livelihood, Implementation, CDM

Carbon sequestration projects conducted as part of community development strategies can offer considerable environmental and social benefits. Such initiatives do have some degree of compatibility with the dual objectives of the Kyoto Protocol's Clean Development Mechanism (CDM). The lessons learned from such initiatives in Mexico, Colombia, Costa Rica, Philippines, Indonesia, and Timor Leste generally demonstrate the importance of engaging strong local participation. Although most of these projects do not fully comply with the rigid guidelines governing the Kyoto Protocol's Clean Development Mechanism, this is partly because the current agreement only allows afforestation and reforestation project activities. Conservation of areas that store large amounts of carbon, such as in peat lands, is ineligible for funding under existing rules. This synthesis also looks at how strategic approaches might be addressed for including deforestation avoidance initiatives in the next round of negotiations and subsequent commitment period. To succeed, these projects employ a scientifically sound methodology in determining the baseline, monitoring additionality and leakage, and permanence. The workshop reviewed in this paper examined a range of possibilities, including mainstreaming gender equity, reviving traditional laws and implementing adaptation measures. Findings from the workshop suggest that climate change projects must include practical livelihood options and that further investigation of donor and policy responses is needed to determine the level of public funding these projects should receive and how to best encourage private sector involvement. The complexity of these projects is demonstrated with examples from a range of on-going projects. The workshop and this synthesis provide a valuable opportunity to share the lessons learned from community-based projects in different regulatory and institutional frameworks.

<http://www.cifor.cgiar.org/Publications/Detail?pid=1757>

Murdiyarso, D., & Skutsch, M. (2006). *Community forest management as a carbon mitigation option: Case studies*. Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Livelihood, Implementation

The collection of case studies presented in this document attempts to explore opportunities to promote the participation of local communities in various countries with a range of socio-economic settings and institutional challenges.

http://www.cifor.cgiar.org/publications/pdf_files/Books/BMurdiyarso0602.pdf

Parker, C., Mitchell, A., Trivedi, M., & Mardas, N. (2009). *The little REDD book* (2 ed.). Oxford: Global Canopy Programme.

REDD

The Little REDD Book is a guide to Reducing Emissions from Deforestation and Degradation in Developing Countries (REDD) within the UNFCCC process. It includes a comparative analysis of 33 key country and NGO/Scientific proposals. It aims to help the broad audience of forest stakeholders participating in or observing the UNFCCC process, including people who live and work in tropical forests, Parties to the UNFCCC, NGOs, the scientific community and the media.

<http://www.globalcanopy.org/main.php?m=117&sm=176&t=1>

Smith, J., & Scherr, S. J. (2002). **Forest carbon and local livelihoods: Assessment of opportunities and policy recommendations** (pp. 45p.). Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Livelihood, CDM

Projects implemented as part of the Clean Development Mechanism (CDM) of the Kyoto Protocol will have the dual mandate of mitigating greenhouse gas emissions and contributing to sustainable development. Basic agreement on core elements was reached in 2001, including the decision to allow afforestation and reforestation projects. However, it is not yet clear what rules will address social concerns. Many types of projects could potentially contribute to local livelihoods and ecosystem restoration, as well as to carbon emission offsets, including those using natural forest regeneration, agroforests, improved forest fallows and agroforestry. Averted deforestation projects with multiple-use forestry, though not eligible in the first CDM period, could be reconsidered in the future. Such projects can be designed to rigorously meet CDM criteria for carbon impact, additionality, leakage and duration. If suitably targeted, they can be cost-effective for investors in terms of production costs. Some, however, may have higher transaction costs. Proactive efforts are needed to enable community-based CDM forestry projects and local land uses to compete effectively in carbon trading markets with projects managed by large-scale operators. The CDM should require mandatory social impact assessments, harmonise the CDM with social principles of other global conventions, promote measures to reduce transaction costs and explicitly include assisted natural regeneration and forest rehabilitation in the definition of afforestation and reforestation. Most developing countries will require policy action to establish the enabling conditions for forest carbon projects to contribute on a large scale to local livelihoods, integrate CDM projects within national development frameworks, attract investors, establish social criteria, secure local rights and promote support services for local people. Cost-effective project design requires attention to local participation, transparency, suitable compensation mechanisms, strategies to reduce transaction costs and risks and extend the scale of projects, and to enhance profitability of land uses.

<http://www.cifor.cgiar.org/Publications/Detail?pid=1086>

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Livelihood, Governance

This paper examines poverty and deforestation in developing countries as linked problems and focuses on policies that can favour poverty alleviation in forested regions. The paper encompasses two elements: analysis of the spatial coincidence between poverty and forests, and proposed policy options for reducing poverty in forested areas. It is assumed that three key frames of reference must be borne in mind in order to produce the best possible policies: (1) the location of the rural poor and types and levels of poverty in relation to forest resources; (2) variations in the density of forest cover in relation to distance from urban areas (the von Thünen scale); and (3) variations in forest cover over time (high, low, then partial restoration) in relation to a country's forest transition experience. There are three main conclusions linked to these frames of reference. (1) Although relatively few people live in areas of high forest cover, they tend to be characterised by high rates of poverty and they are among the 'poorest of the poor'; (2) Four policy approaches are recommended for lifting people out of poverty: transfer of ownership of forest lands from governments to forest dwellers; facilitation of access to forest product markets; promotion of commercial-scale community forestry and company–community partnerships; and establishment of payments for forest environmental services that are pro-poor. Implementation of these four strategies must take into account the implications of the four von Thünen zones

(periurban, agricultural mosaic, forest frontier, and relatively undisturbed forests). (3) One cannot place blind faith in economic growth and laissez-faire for reducing poverty in forested areas. Strategic policy interventions are necessary to assist the process of livelihood improvement.
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REDD, Equity, Governance, Indigenous peoples

This discussion paper is a contribution to the debate about policies and incentives to reduce emissions from deforestation and forest degradation (REDD). It focuses on the potential of governance of forests by indigenous peoples and local communities, and discusses implications of envisaged REDD regimes for local rights. The note discusses why equity and community engagement should be a paramount consideration of REDD regime and highlights opportunities as well as potential complications and pitfalls. It argues that crucial links need to be drawn between effective REDD regimes, biodiversity conservation and human rights instruments like the UN Declaration on the Rights of Indigenous Peoples.

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Governance, Implementation, CDM

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Equity, Governance

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REDD, Governance

As new mechanisms for 'reducing emissions from deforestation and forest degradation' (REDD) are being negotiated in international climate change talks, resource tenure must be given greater attention. Tenure over land and trees – the systems of rights, rules, institutions and processes regulating their access and use – will affect the extent to which REDD and related strategies will benefit, or marginalise, forest communities.

This report aims to promote debate on the issue. Drawing on experience from seven rainforest countries (Brazil, Cameroon, Democratic Republic of Congo, Guyana, Indonesia, Malaysia and Papua New Guinea), the report develops a typology of tenure regimes across countries, explores tenure issues in each country, and identifies key challenges to be addressed if REDD is to have equitable and sustainable impact.

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REDD, Indigenous peoples, Governance

"It is widely understood that for reducing emissions from deforestation and forest degradation (REDD) to succeed, Indigenous Peoples and Civil Society Organisations (CSOs) must be heard, especially at the local level where land and other natural resource management decisions are made." <http://www.iisd.ca/mea-1/meabulletin70.pdf> or <http://www.iisd.ca/mea-1/guestarticle70.html>

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This paper has two objectives. First, it analyzes the past research on deforestation and summarizes the findings of that research, in terms of its relevance to the development of future REDD regimes.

Second, it highlights areas where future research and methodological development are needed to support national and international processes on avoided deforestation and degradation. It is also available in Japanese and Spanish

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Adaptation

The most prominent international responses to climate change focus on mitigation (reducing the accumulation of greenhouse gases) rather than adaptation (reducing the vulnerability of society and ecosystems). However, with climate change now inevitable, adaptation is gaining importance in the policy arena, and is an integral part of ongoing negotiations towards an international framework. This report presents the case for adaptation for tropical forests (reducing the impacts of climate change on forests and their ecosystem services) and tropical forests for adaptation (using forests to help local people and society in general to adapt to inevitable changes). Policies in the forest, climate change and other sectors need to address these issues and be integrated with each other—such a cross-sectoral approach is essential if the benefits derived in one area are not to be lost or counteracted in another. Moreover, the institutions involved in policy development and implementation need themselves to be flexible and able to learn in the context of dynamic human and environmental systems. And all this needs to be done at all levels from the local community to the national government and international institutions. The report includes an appendix covering climate scenarios, concepts, and international policies and funds.

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Governance, Impact on the poor

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Adaptation, Forest management, Livelihood, Governance

The report is the first product of the Global Forest Expert Panels of the Collaborative Partnership on Forests (CPF) and presents the state-of-knowledge about the impacts of climate change on forests and people and options for adaptation. One of the key messages that emerged from this assessment is that the carbon-regulating services of forests are at risk of being lost entirely unless current carbon emissions are reduced substantially; this would result in the release of huge quantities of carbon to the atmosphere, exacerbating climate change.

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Impact on the poor, Governance, Adaptation

Climate change is upon us and its physical effects have started to unfold. That is the broad scientific consensus expressed in the Fourth Assessment Review of the Inter-governmental Panel on Climate Change. This report takes this finding as its starting point and looks at the social and human consequences that are likely to ensue – particularly the risks of conflict and instability.

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Sunderlin, W. D., Dewi, S., & Puntodewo, A. (2007). ***Poverty and forests: Multi-country analysis of spatial association and proposed policy solutions***. Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Livelihood, Governance

This paper examines poverty and deforestation in developing countries as linked problems and focuses on policies that can favour poverty alleviation in forested regions. The paper encompasses two elements: analysis of the spatial coincidence between poverty and forests, and proposed policy options for reducing poverty in forested areas. It is assumed that three key frames of reference must be borne in mind in order to produce the best possible policies: (1) the location of the rural poor and types and levels of poverty in relation to forest resources; (2) variations in the density of forest cover in relation to distance from urban areas (the von Thünen scale); and (3) variations in forest cover over time (high, low, then partial restoration) in relation to a country's forest transition experience. There are three main conclusions linked to these frames of reference. (1) Although relatively few people live in areas of high forest cover, they tend to be characterised by high rates of poverty and they are among the 'poorest of the poor'. (2) Four policy approaches are recommended for lifting people out of poverty: transfer of ownership of forest lands from governments to forest dwellers; facilitation of access to forest product markets; promotion of commercial-scale community forestry and company-community partnerships; and establishment of payments for forest environmental services that are pro-poor. Implementation of these four strategies must take into account the implications of the four von Thünen zones (periurban, agricultural mosaic, forest frontier, and relatively undisturbed forests). (3) One cannot place blind faith in economic growth and laissez-faire for reducing poverty in forested areas. Strategic policy interventions are necessary to assist the process of livelihood improvement.

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REDD, Equity, Governance, Indigenous peoples

This discussion paper is a contribution to the debate about policies and incentives to reduce emissions from deforestation and forest degradation (REDD). It focuses on the potential of governance of forests by indigenous peoples and local communities, and discusses implications of envisaged REDD regimes for local rights. The note discusses why equity and community engagement should be a paramount consideration of REDD regime and highlights opportunities as well as potential complications and pitfalls. It argues that crucial links need to be drawn between effective REDD regimes, biodiversity conservation and human rights instruments like the UN Declaration on the Rights of Indigenous Peoples.

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REDD, Governance, Equity

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Implementation, Governance, CDM

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Indigenous peoples

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Indigenous peoples, REDD

Given that indigenous peoples are the traditional owners of a large percentage of the world's remaining forests, this article raises the issue of the extent to which the various proposals for Reduced Emissions from Deforestation and Forest Degradation (REDD) or Avoided Deforestation (AD) must account for and respect indigenous peoples' rights.

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Equity, Indigenous peoples

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Indigenous peoples, Implementation, CDM

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REDD, Indigenous peoples, governance

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REDD, Indigenous peoples

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As Donors Rush to Conserve Tropical Forests to Slow Climate Change, Indigenous Leaders Predict 'Devastation' from Carbon Grabs in Name of Conservation: Citing History of Good Stewardship, Forest Dwellers Demand Role in REDD; Call for Secure Land Rights, Relief from Forces of Conservation, Industry. Unpublished press release.

REDD, Indigenous peoples

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Indigenous peoples

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Indigenous peoples, Livelihood

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REDD, Indigenous peoples

From executive summary: This review highlights that while there is a growing recognition among many governments that indigenous peoples and local communities need to be consulted and rights addressed, existing intergovernmental proposals on decisions on REDD contain no clear

commitments to address rights and equity issues. It is also noted that although new international forest and climate funds like the UN REDD Programme have pledged to uphold the UN Declaration on the Rights of Indigenous Peoples and to apply a rights-based approach, they seem reluctant to condition REDD funds on rights recognition and they lack effective oversight and accountability mechanisms. Scrutiny of the World Bank's Forest Carbon Partnership Facility finds that its own rules that require prior consultation with forest peoples have not been applied in its early operations as governments developing REDD plans for the Bank have so far failed to properly involve forest peoples.

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REDD, Indigenous peoples, Governance

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REDD, Indigenous peoples

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REDD, Equity, Governance, Indigenous peoples

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Indigenous peoples

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Indigenous peoples, Livelihood, Governance

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Implementation

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REDD, Indigenous peoples

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Indigenous peoples

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Policy, Indigenous peoples

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Indigenous peoples, Implementation, CDM

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REDD, Indigenous peoples, Equity

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Indigenous peoples, Equity

This issue of Philosophical Transactions has 20 articles covering various topics on carbon trading and climate change mitigation.

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Indigenous peoples

Each report provides an up to date survey of the current use of Indigenous Knowledge for building resilience to environmental change and an assessment of whether some of these strategies might be transferable by bringing together key stakeholders from different regions to share their experiences and management approaches for the region indicated. <http://sharingknowledge.net.au/>
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Task Force on REDD and Communities. (n.d.). ***The hottest REDD issues: Rights, Equity, Development, Deforestation and Governance by Indigenous Peoples and Local Communities***. IUCN Commission on Environmental, Economic and Social Policy and the Global Forest Coalition.

REDD, Equity, Governance, Indigenous peoples

This discussion paper is a contribution to the debate about policies and incentives to reduce emissions from deforestation and forest degradation (REDD). It focuses on the potential of governance of forests by indigenous peoples and local communities, and discusses implications of envisaged REDD regimes for local rights. The note discusses why equity and community engagement should be a paramount consideration of REDD regime and highlights opportunities as well as potential complications and pitfalls. It argues that crucial links need to be drawn between effective REDD regimes, biodiversity conservation and human rights instruments like the UN Declaration on the Rights of Indigenous Peoples.

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REDD, Indigenous peoples

Press statement of Victoria Tauli-Corpuz on Human Rights Day

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Indigenous peoples, Livelihoods

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Indigenous peoples

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Adaptation

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Governance, Impact on the poor

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REDD, Governance, Implementation

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Borner, J., & Wunder, S. (2008). **Paying for avoided deforestation in the Brazilian Amazon: from cost assessment to scheme design.** *International Forestry Review*, 10(3), 496-511.

REDD

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Governance, Implementation, CDM

Corbera, E., Brown, K., & Adger, W. N. (2007). **The Equity and Legitimacy of Markets for Ecosystem Services.** *Development & Change*, 38(4), 587-613.

Equity

Corbera, E., Kosoy, N., & Martinez Tuna, M. (2007). **Equity implications of marketing ecosystem services in protected areas and rural communities: Case studies from Meso-America.** *Global Environmental Change Part A: Human & Policy Dimensions*, 17(3/4), 365-380.

Equity, Governance

Corbera, E., Soberanis, C. G., & Brown, K. (2009). **Institutional dimensions of Payments for Ecosystem Services: An analysis of Mexico's carbon forestry programme.** *Ecological Economics*, 68(3), 743-761.

Policy, Implementation

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Implementation

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Eliasch, J. (2008). *The Eliasch Review - Climate Change: Financing Global Forests*. U.K.: Office of Climate Change.

REDD, Implementation, Impact on the poor

This Review was commissioned by the Prime Minister. The Review is an independent report to government, prepared by Johan Eliasch with the support of the Office of Climate Change. It aims to provide a comprehensive analysis of international financing to reduce forest loss and its associated impacts on climate change. It does so with particular reference to the international efforts to achieve a new global climate change agreement in Copenhagen at the end of 2009.

The Review focuses on the scale of finance required to produce significant reductions in forest carbon emissions, and the mechanisms that, if designed well, can achieve this effectively to help meet a global climate stabilisation target. It also examines how mechanisms to address forest loss can contribute to poverty reduction, as well as the importance of preserving other ecosystem services such as biodiversity and water services.

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Indigenous peoples, Livelihood

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Impact on the poor, Livelihood

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REDD, Indigenous peoples, Governance, Impact on the poor

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Livelihood

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REDD, Implementation

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Equity, Impact on the poor

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Policy

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Governance, Livelihood

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Adaptation

The most prominent international responses to climate change focus on mitigation (reducing the accumulation of greenhouse gases) rather than adaptation (reducing the vulnerability of society and ecosystems). However, with climate change now inevitable, adaptation is gaining importance in the policy arena, and is an integral part of ongoing negotiations towards an international framework. This report presents the case for adaptation for tropical forests (reducing the impacts of climate change on forests and their ecosystem services) and tropical forests for adaptation (using forests to help local people and society in general to adapt to inevitable changes). Policies in the forest, climate change and other sectors need to address these issues and be integrated with each other—such a cross-sectoral approach is essential if the benefits derived in one area are not to be lost or counteracted in another. Moreover, the institutions involved in policy development and implementation need themselves to be flexible and able to learn in the context of dynamic human and environmental systems. And all this needs to be done at all levels from the local community to the national government and international institutions. The report includes an appendix covering climate scenarios, concepts, and international policies and funds.

<http://www.cifor.cgiar.org/Publications/Detail?pid=2600>

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Livelihood, Impact on the poor

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Governance

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Implementation

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Policy, Governance, REDD

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Governance, Payments for ecosystem services

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Forest management

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CDM, Implementation

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Livelihood, Governance

This paper examines poverty and deforestation in developing countries as linked problems and focuses on policies that can favour poverty alleviation in forested regions. The paper encompasses two elements: analysis of the spatial coincidence between poverty and forests, and proposed policy options for reducing poverty in forested areas. It is assumed that three key frames of reference must be borne in mind in order to produce the best possible policies: (1) the location of the rural poor and types and levels of poverty in relation to forest resources; (2) variations in the density of forest cover in relation to distance from urban areas (the von Thünen scale); and (3) variations in forest cover over time (high, low, then partial restoration) in relation to a country's forest transition experience. There are three main conclusions linked to these frames of reference. (1) Although relatively few people live in areas of high forest cover, they tend to be characterised by high rates of poverty and they are among the 'poorest of the poor'. (2) Four policy approaches are recommended for lifting people out of poverty: transfer of ownership of forest lands from governments to forest dwellers; facilitation of access to forest product markets; promotion of commercial-scale community forestry and company-community partnerships; and establishment of payments for forest environmental services that are pro-poor. Implementation of these four strategies must take into account the implications of the four von Thünen zones (periurban, agricultural mosaic, forest frontier, and relatively undisturbed forests). (3) One cannot place blind faith in economic growth and laissez-faire for reducing poverty in forested areas. Strategic policy interventions are necessary to assist the process of livelihood improvement. <http://www.cifor.cgiar.org/Publications/Detail?pid=2294>

Swallow, B., & Meinzen-Dick, R. (2009). **Payment for Environmental Services: Interactions with Property Rights and Collective Action.** In V. Beckmann & M. Padmanabhan (Eds.), *Institutions and Sustainability: Political Economy of Agriculture and the Environment - Essays in Honour of Konrad Hagedorn* (pp. 243-265). Netherlands: Springer.

Governance

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Tschakert, P. (2007). **Environmental services and poverty reduction: Options for smallholders in the Sahel.** *Agricultural Systems*, 94(1), 75-86.

Livelihood

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REDD

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Implementation, Policy

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Implementation

Pagos de Servicios Ambientales (PSA) (Payments for Environmental Services)

VI. Policy ([return to top](#))

Aldy, J. E., Barrett, S., & Stavins, R. N. (2003). **Thirteen plus one: a comparison of global climate policy architectures.** *Climate Policy*, 3(4), 373-397.

Governance, Equity

Ali, M., & Rafiqul Hoque, A. (2009). **Shifting regime shifted policy: Interplay of interests in sustainability discourses of forest land use.** *Mitigation and Adaptation Strategies for Global Change*, 14(2).

Equity, Indigenous peoples

Includes examples where traditional interests of people were disregarded. As a result, peoples' participation in forestry was discouraged and the sustainability of forest land use was impeded.

Angelsen, A. (2008). **REDD models and baselines.** *International Forestry Review*, 10(3), 465-475.

REDD, Policy

Angelsen, A., Brown, S., Loisel, C., Peskett, L., Streck, C., & Zarin, D. (2009). **Reducing Emissions from Deforestation and Forest Degradation (REDD): An Options Assessment Report.** *Prepared for the Government of Norway by the Meridian Institute.*

REDD

The REDD Options Assessment Report suggests a flexible, three-phase approach to policy measures and positive incentives in order to accommodate (i) the diverse capabilities and circumstances of REDD countries; (ii) an expanded scope of REDD to include conservation, sustainable management of forests, and enhancement of forest carbon stocks; and (iii) the near-term constraints of the current global financial crisis.

Website includes supplementary reports and presentations

<http://www.redd-oar.org>

Anger, N., & Sathaye, J. (2008). **Reducing Deforestation and Trading Emissions: Economic Implications for the Post-Kyoto Carbon Market.** *SSRN eLibrary - Centre for European Economic Research Discussion Paper* 08(016).

Policy, REDD

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Policy

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Including land use, land-use change, and forestry in future climate change, agreements: thinking outside the box. *Environmental Science & Policy*, 10(4), 283-294.

Policy

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Policy

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Boerner, J., Mendoza, A., & Vosti, S. A. (2007). **Ecosystem services, agriculture, and rural poverty in the Eastern Brazilian Amazon: Interrelationships and policy prescriptions.**

Ecological Economics, 64(2), 356-373.

Governance, Impact on the poor

Bosetti, V., Carraro, C., Sgobbi, A., & Tavoni, M. (2008). ***Modeling Economic Impacts of Alternative International Climate Policy Architectures: A Quantitative and Comparative Assessment of Architectures for Agreement: Discussion paper 2008-20.*** Cambridge, MA: Harvard Project on International Climate Agreements, Belfer Center for Science and International Affairs.

Policy, REDD

Paper assessing the economic efficiency, environmental effectiveness, distributional implications, and political acceptability of various architectures for a new international climate agreement. Among the conclusions of this study: "The inclusion of credits for avoided deforestation also improves equity because most forest-related abatement opportunities are located in developing countries."

<http://belfercenter.ksg.harvard.edu/publication/18679>

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Implementation, Forest management

Boyd, E., Corbera, E., & Estrada, M. (2008). **UNFCCC negotiations (pre-Kyoto to COP-9): What the process says about the politics of CDM-sinks.** *International Environmental Agreements-Politics Law and Economics*, 8(2), 95-112.

Policy, CDM

Boyd, E., Gutierrez, M., & Chang, M. (2007). **Small-scale forest carbon projects: Adapting CDM to low-income communities.** *Global Environmental Change Part A: Human & Policy Dimensions*, 17(2), 250-259.

Policy, Governance, CDM

Brown, K., & Corbera, E. (2003). **Exploring equity and sustainable development in the new carbon economy.** *Climate Policy (Elsevier)*, 3.

Equity

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REDD, Policy, Implementation

Article on the development of the Open Source Impacts of REDD Incentives Spreadsheet (OSIRIS), which is used to compare REDD design options

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REDD, Policy

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REDD, Policy

Corbera, E., Kosoy, N., & Martinez Tuna, M. (2007). **Equity implications of marketing ecosystem services in protected areas and rural communities: Case studies from Meso-America.** *Global Environmental Change Part A: Human & Policy Dimensions*, 17(3/4), 365-380.

Equity, Governance

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Policy, Implementation

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Implementation, Deforestation

Dornburg, V., & Marland, G. (2008). **Temporary storage of carbon in the biosphere does have value for climate change mitigation: a response to the paper by Miko Kirschbaum.** *Mitigation and Adaptation Strategies for Global Change*, 13(3), 211-217.

Policy

Edenhofer, O., Luderer, G., Flachsland, C., Fussel, H. M., Popp, A., Feulner, G., et al. (2008). **A Global Contract on Climate Change:** Potsdam Institute for Climate Impact Research.

Policy

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http://global-contract.eu/content/file/GlobalContract_Backgroundpaper.pdf or http://www.pik-potsdam.de/~fuessel/download/globalcontract08_final.pdfEngel, S., & Palmer, C. (2008). **"Painting the forest REDD?" Prospects for mitigating climate change through reducing emissions from deforestation and degradation:** Institute for Environmental Decisions.

REDD, Policy

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Forner, C., Blaser, J., Jotzo, F., & Robledo, C. (2006). **Keeping the forest for the climate's sake: Avoiding deforestation in developing countries under the UNFCCC**. [Article]. *Climate Policy*, 6(3), 275-294.

REDD, Policy

Gullison, R. E., Frumhoff, P. C., Canadell, J. G., Field, C. B., Nepstad, D. C., Hayhoe, K., et al. (2007). **ENVIRONMENT: Tropical Forests and Climate Policy**. *Science*, 316(5827), 985-986.

REDD, Policy

Gullison, R. E., Frumhoff, P. C., Canadell, J. G., Field, C. B., Nepstad, D. C., Hayhoe, K., et al. (2007). **Tropical forests and climate policy**. *Science*, 316(5827), 985-986.

Policy

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Policy

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Hohne, N., Wartmann, S., Herold, A., & Freibauer, A. (2007). **The rules for land use, land use change and forestry under the Kyoto Protocol: lessons learned for the future climate negotiations**. *Environmental Science & Policy*, 10(4), 353-369.

Policy

Humphreys, S. (Ed.). (Not yet published - available from December 2009). **Human Rights and Climate Change**. Geneva: The International Council on Human Rights Policy.

Equity

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Hunt, C., & Baum, S. (2009). **The 'hidden' social costs of forestry offsets**. *Mitigation and adaptation strategies for global change*, 14(2), 107-120.

Policy

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Policy

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This CD-ROM contains all the publications in the IIED Policies that Work series, including case studies from Costa Rica (Spanish and English), Grenada, India, Ghana, Malawi, Pakistan, Papua New Guinea, and Zimbabwe, and theme papers on climate change and forest policy processes and the Overview report. Website includes instructions to obtain a free copy.

<http://www.iied.org/pubs/display.php?o=13500IIED>

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Governance, Policy

<http://www.iiedgfpconsultation.org/>

IPCC. (2007). **Summary for Policymakers**. In S. Solomon, D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor & H. L. Miller (Eds.), *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, U.K.: Cambridge University Press.

Policy

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Policy, Livelihood, Implementation, Forest management

http://cmsdata.iucn.org/downloads/policy_matters_16.pdf

Karsenty, A. (2008). **The architecture of proposed REDD schemes after Bali: facing critical choices**. *International Forestry Review*, 10(3), 443-457.

REDD, Policy, CDM

Karsenty, A., Guéneau, S., Capistrano, D., Singer, B., & Peyron, J.-L. (2008). *Summary of the Proceedings of the International Workshop on “The International Regime, Avoided Deforestation and the Evolution of Public and Private Policies towards Forests in Developing Countries” held in Paris, 21-23rd November 2007*. CIRAD, IDDRI, CIFOR and GIP ECOFOR.

REDD, Policy

http://www.cirad.fr/ur/ressources_forestieres/content/download/1068/6065/file/Paris%20Workshop%20forest%20regime%20report-1.doc

(The presentations and agenda of the workshop are available:

http://www.cirad.fr/ur/index.php/ressources_forestieres/actualites/colloques_et_seminaires/international_regime_avoided_deforestation)

Kerr, J., Foley, C., Chung, K., & Jindal, R. (2006). **Reconciling Environment and Development in the Clean Development Mechanism**. *Journal of Sustainable Forestry*, 23(1), 1-18.

Impact on the poor, Policy, CDM

Kirschbaum, M. (2006). **Temporary Carbon Sequestration Cannot Prevent Climate Change**. *Mitigation and Adaptation Strategies for Global Change*, 11(5), 1151-1164.

Policy

Klooster, D., & Masera, O. (2000). **Community forest management in Mexico: carbon mitigation and biodiversity conservation through rural development**. *Global Environmental Change-Human and Policy Dimensions*, 10(4), 259-272.

Implementation, CDM

Larson, A. M., & Ribot, J. C. (2007). **The poverty of forestry policy: double standards on an uneven playing field**. *Sustainability Science*, 2(2), 189-204.

Equity, Policy, Impact on the poor

Laurance, W. F. (2007). **A new initiative to use carbon trading for tropical forest conservation.** *Biotropica*, 39(1), 20-24.

Policy

Laurance, W. F. (2008). **Can carbon trading save vanishing forests?** *Bioscience*, 58(4), 286-287.

Policy

Levin, K., McDermott, C., & Cashore, B. (2008). **The climate regime as global forest governance: Can Reduced Emissions from Deforestation and Forest Degradation (REDD) initiatives pass a 'dual effectiveness' test?** *International Forestry Review*, 10(3), 538-549.

REDD, Governance, Policy

Lichtenfels, M., Burtis, P., Hovani, A., Kuppalli, R., Lichtenfeld, M., & Miyata, Y. (2007). **Improving Markets for Ecosystem Services.** *Journal of Sustainable Forestry*, 25(3/4), 337-364.

Policy

Locatelli, B., Kanninen, M., Brockhaus, M., Colfer, C. J. P., Murdiyarso, D., & Santoso, H. (2008). **Facing an uncertain future: How forest and people can adapt to climate change** (pp. 86p.).

Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Adaptation

The most prominent international responses to climate change focus on mitigation (reducing the accumulation of greenhouse gases) rather than adaptation (reducing the vulnerability of society and ecosystems). However, with climate change now inevitable, adaptation is gaining importance in the policy arena, and is an integral part of ongoing negotiations towards an international framework. This report presents the case for adaptation for tropical forests (reducing the impacts of climate change on forests and their ecosystem services) and tropical forests for adaptation (using forests to help local people and society in general to adapt to inevitable changes). Policies in the forest, climate change and other sectors need to address these issues and be integrated with each other—such a cross-sectoral approach is essential if the benefits derived in one area are not to be lost or counteracted in another. Moreover, the institutions involved in policy development and implementation need themselves to be flexible and able to learn in the context of dynamic human and environmental systems. And all this needs to be done at all levels from the local community to the national government and international institutions. The report includes an appendix covering climate scenarios, concepts, and international policies and funds.

<http://www.cifor.cgiar.org/Publications/Detail?pid=2600>

Locatelli, B., Rojas, V., & Salinas, Z. (2008). **Impacts of payments for environmental services on local development in northern Costa Rica: A fuzzy multi-criteria analysis.** *Forest Policy and Economics*, 10(5), 275-285.

Livelihood, Impact on the poor

Luttrell, C., Schreckenber, K., & Peskett, L. (2007). **The implications of carbon financing for pro-poor community forestry.** *Forest Policy and Environment Programme, Overseas Development Institute, Forestry Briefing 14.*

REDD, Impact on the poor

"REDD has the potential to act as a pro-poor influence in the regulation and distribution of benefits associated with community forestry"

<http://www.odi.org.uk/resources/download/438.pdf>

<http://www.odi.org.uk/resources/details.asp?id=438&title=implications-carbon-financing-pro-poor-community-forestry>

MacDicken, K., & Smith, J. (2000). **Capturing the value of forest carbon for local livelihoods: Opportunities under the clean development mechanisms of the Kyoto protocol** (pp. 16p.).

Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Livelihood, CDM

Projects implemented as part of the Clean Development Mechanism (CDM) of the Kyoto Protocol will have the dual mandate of reducing greenhouse gas emissions and contributing to sustainable development. It is not yet clear what, if any, forestry activities will be eligible for CDM. Nor is it known what rules will guide the implementation of CDM projects. These decisions have important implications for poor people who live in and around forests in developing countries. Suitably designed CDM forestry projects can significantly benefit local communities by supplementing and diversifying income, increasing access to forest goods and services, improving land productivity, developing the local knowledge base and local institutions and increasing the energy efficiency of using forest products. In some cases there will be trade-offs between the amount of greenhouse gas reductions sought and direct benefits to local livelihoods. Without adequate safeguards, some CDM activities could have negative effects on local people, such as denying them access to resources they depend on for their livelihood. Pro-active efforts will be needed in some cases to ensure that community-based CDM forestry projects and local land uses can compete effectively in carbon trading markets with projects managed by large-scale operators. As this policy brief describes, however, CDM guidelines can be designed to not only minimize the likelihood of negative effects on local communities but to directly improve their livelihoods while achieving net greenhouse gas emissions reductions. Proposed measures include: explicitly including forest management and agroforestry in the CDM; implementing social impact assessments for all CDM projects; providing incentives for projects with multiple benefits; approving tonne-year carbon accounting; reducing transactions costs of community-based projects; and building capacity at local, national and international levels.

<http://www.cifor.cgiar.org/Publications/Detail?pid=732>

Masters, G., & Swisher, J. (1992). **A mechanism to reconcile equity and efficiency in global climate protection: International carbon emission offsets.** *AMBIO - A Journal of the Human Environment*, 21(2), 154.

Equity, Policy

Minang, P. A., Bressers, H. T. A., Skutsch, M. M., & McCall, M. K. (2007). **National forest policy as a platform for biosphere carbon management: The case of community forestry in Cameroon.** *Environmental Science & Policy*, 10(3), 204-218.

Governance, Implementation, CDM

Mumma, A., & Hodas, D. (2008). **Designing a global post-Kyoto climate change protocol that advances human development.** *Georgetown International Environmental Law Review (GIELR)*, 20(4).

Policy, Equity

<http://ssrn.com/paper=1162770>

Murdiyarso, D., Herawati, H., & Iskandar, H. (2005). **Carbon sequestration and sustainable livelihoods: A workshop synthesis.** Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Livelihood, Implementation, CDM

Carbon sequestration projects conducted as part of community development strategies can offer considerable environmental and social benefits. Such initiatives do have some degree of compatibility with the dual objectives of the Kyoto Protocol's Clean Development Mechanism (CDM). The lessons learned from such initiatives in Mexico, Colombia, Costa Rica, Philippines, Indonesia, and Timor Leste generally demonstrate the importance of engaging strong local participation. Although most of these projects do not fully comply with the rigid guidelines governing the Kyoto Protocol's Clean Development Mechanism, this is partly because the current agreement only allows afforestation and reforestation project activities. Conservation of areas that store large amounts of carbon, such as in peat lands, is ineligible for funding under existing rules. This synthesis also looks at how strategic approaches might be addressed for including deforestation avoidance initiatives in the next round of negotiations and subsequent commitment period. To succeed, these projects employ a scientifically sound methodology in determining the baseline, monitoring additionality and leakage, and permanence. The workshop reviewed in this paper examined a range of possibilities, including mainstreaming gender equity, reviving traditional laws and implementing adaptation measures. Findings from the workshop suggest that climate change projects must include practical livelihood options and that further investigation of donor and policy responses is needed to determine the level of public funding these projects should receive and how to best encourage private sector involvement. The complexity of these projects is demonstrated with examples from a range of on-going projects. The workshop and this synthesis provide a valuable opportunity to share the lessons learned from community-based projects in different regulatory and institutional frameworks.

<http://www.cifor.cgiar.org/Publications/Detail?pid=1757>

Myers, E. C. (2007). ***Policies to Reduce Emissions from Deforestation and Degradation (REDD) in Tropical Forests: An examination of the issues facing the incorporation of REDD into market-based climate policies.*** Washington, D.C.: Resources for the Future - Discussion Paper.

REDD, Policy

<http://www.rff.org/rff/Documents/RFF-DP-07-50.pdf>

Neeff, T., & Ascui, F. (2009). **Lessons from carbon markets for designing an effective REDD architecture.** *Climate Policy*, 9(3), 306-315.

REDD, Implementation

Newton, J., Paci, C., & Ogden, A. (2005). **Climate change and natural hazards in northern Canada: Integrating indigenous perspectives with government policy.** *Mitigation and Adaptation Strategies for Global Change*, 10(3), 541-571.

Indigenous peoples

Nijnik, M., & Bizikova, L. (2008). **Responding to the Kyoto Protocol through forestry: A comparison of opportunities for several countries in Europe.** *Forest Policy & Economics*, 10(4), 257-269.

Governance, Implementation

Nussbaumer, P. (2009). **On the contribution of labelled Certified Emission Reductions to sustainable development: A multi-criteria evaluation of CDM projects.** *Energy Policy*, 37(1), 91-101.

Livelihood, Governance, CDM

O'Connor, D. (2008). **Governing the global commons: Linking carbon sequestration and biodiversity conservation in tropical forests.** *Global Environmental Change-Human and Policy Dimensions*, 18(3), 368-374.

Policy, Governance, REDD

Oestreicher, J. S., Benessaiah, K., Ruiz-Jaen, M. C., Sloan, S., Turner, K., Pelletier, J., et al. (2009). **Avoiding deforestation in Panamanian protected areas: An analysis of protection effectiveness and implications for reducing emissions from deforestation and forest degradation.** *Global Environmental Change-Human and Policy Dimensions*, 19(2), 279-291.

REDD, Implementation, Governance

Palmer, C., & Engel, S. (Eds.). (2009). ***Avoided Deforestation: Prospects for mitigating climate change.*** Abingdon, Oxon, UK: Routledge.

REDD

Explores the policy, scientific, and economic implications of avoided deforestation.

Parry, M. (2009). **Climate change is a development issue, and only sustainable development can confront the challenge.** *Climate & Development*, 1(1), 5-9.

Livelihood, Policy

Paulsson, E. (2009). **A review of the CDM literature: From fine-tuning to critical scrutiny?** [Review]. *International Environmental Agreements-Politics Law and Economics*, 9(1), 63-80.

CDM, Policy

Pedroni, L., Dutschke, M., Streck, C., & Porrua, M. E. (2009). **Creating incentives for avoiding further deforestation: the nested approach.** *Climate Policy*, 9(2), 207-220.

REDD, Implementation

Persson, U., & Azar, C. (2007). **Tropical deforestation in a future international climate policy regime: Lessons from the Brazilian Amazon.** *Mitigation and Adaptation Strategies for Global Change*, 12(7), 1277-1304.

Deforestation, Implementation

Peskett, L., & Harkin, Z. (2007). **Risk and responsibility in Reduced Emissions from Deforestation and Degradation.** *Forest Policy and Environment Programme, Overseas Development Institute, Forestry Briefing 15.*

REDD, Impact on the poor

Can risks for investors in REDD be reduced in a way that is in the interests of the poor?

<http://www.odi.org.uk/resources/download/426.pdf>

<http://www.odi.org.uk/resources/details.asp?id=426&title=risk-responsibility-reduced-emissions-deforestation-degradation>

Peskett, L., Huberman, D., Bowen-Jones, E., Edwards, G., & Brown, J. (2008). **Making REDD work for the Poor: Summary.** *Poverty Environment Partnership (PEP) Policy Brief.*

REDD, Impact on the poor

Based on the full report 'Making REDD Work for the Poor' (Peskett et al., 2008)

<http://www.odi.org.uk/resources/download/2581.pdf>

<http://www.odi.org.uk/resources/details.asp?id=2581&title=making-redd-work-poor>

Peskett, L., Luttrell, C., & Iwata, M. (2007). **Can standards for voluntary carbon offsets ensure development benefits?** *Forest Policy and Environment Programme, Overseas Development Institute, Forestry Briefing 13*.

Impact on the poor

"Forestry offsets: can standards help small producers benefit from carbon forestry?"

<http://www.odi.org.uk/resources/download/11.pdf>

<http://www.odi.org.uk/resources/details.asp?id=11&title=can-standards-voluntary-carbon-offsets-ensure-development-benefits>

Plantinga, A. J., & Richards, K. R. (2008). **International Forest Carbon Sequestration in a Post-Kyoto Agreement: Discussion paper 2008-11**. Cambridge, MA: The Harvard Project on International Climate Agreements.

Policy

This paper considers alternative structures to Kyoto-style forest management, concluding that a "national inventory" approach, in which nations receive credits or debits for changes in forest carbon inventories relative to a measured baseline, would reduce global CO₂ emissions more effectively than the current Kyoto Protocol system.

<http://belfercenter.ksg.harvard.edu/publication/18634>

Policy brief. (2008). **Foundations for Effectiveness: A framework for ensuring effective climate change mitigation and adaptation in forest areas while ensuring human rights and development**. Washington DC: Rights and Resources Initiative.

Policy, Indigenous peoples

http://www.rightsandresources.org/publication_details.php?publicationID=898

Potvin, C., Guay, B., & Pedroni, L. (2008). **Is reducing emissions from deforestation financially feasible? A Panamanian case study**. *Climate Policy*, 8(1), 23-40.

REDD, Implementation

Robledo, C., & Blaser, J. (2008). **Key Issues on Land Use, Land Use Change and Forestry (LULUCF) with an Emphasis on Developing Country Perspectives**. Bern, Switzerland: Intercooperation, UNDP.

Implementation, Policy

http://www.rightsandresources.org/publication_details.php?publicationID=861

Sampaio, R. S. (2007). **Seeing the Forest for the Treaties: Evolving Debates on CDM Forest and Forestry Project Activities 10 Years After the Kyoto Protocol**. *SSRN eLibrary*.

Policy, CDM

<http://ssrn.com/paper=1011187>

Santilli, M., Moutinho, P., Schwartzman, S., Nepstad, D., Curran, L., & Nobre, C. (2005). **Tropical Deforestation and the Kyoto Protocol**. *Climatic Change*, 71(3), 267-276.

REDD, Policy

Article arguing for compensated reduction of deforestation in post-Kyoto policy.

Satake, A., Rudel, T. K., & Onuma, A. (2008). **Scale mismatches and their ecological and economic effects on landscapes: A spatially explicit model.** *Global Environmental Change-Human and Policy Dimensions*, 18(4), 768-775.

Governance, Payments for ecosystem services

Schlamadinger, B., Bird, N., Johns, T., Brown, S., Canadell, J., Ciccicarese, L., et al. (2007). **A synopsis of land use, land-use change and forestry (LULUCF) under the Kyoto Protocol and Marrakech Accords.** *Environmental Science & Policy*, 10(4), 271-282.

Policy

Schlamadinger, B., Johns, T., Ciccicarese, L., Braun, M., Sato, A., Senyaz, A., et al. (2007). **Options for including land use in a climate agreement post-2012: Improving the Kyoto Protocol approach.** *Environmental Science & Policy*, 10(4), 295-305.

Policy, CDM

Schwartzman, S., Nepstad, D., & Moutinho, P. (2008). **Getting REDD right: Reducing Emissions from Deforestation and Forest Degradation (REDD) in the United Nations Framework Convention on Climate Change (UNFCCC).** Environmental Defense, The Woods Hole Research Center, and Instituto de Pesquisa Ambiental da Amazônia (IPAM).

REDD, Policy

<http://www.whrc.org/policy/BaliReports/assets/GettingREDDRight.pdf>

Sedjo, R. A., & Amano, M. (2006). **The role of forest sinks in a post-Kyoto world.** *Resources*(162), 19-22.

Policy

Seppälä, R., Buck, A., & Katila, P. (Eds.). (2009). **Adaptation of Forests and People to Climate Change: A Global Assessment Report.** International Union of Forest Research Organizations (IUFRO), Global Forest Expert Panels of the Collaborative Partnership on Forests (CPF).

Adaptation, Forest management, Livelihood, Governance

The report is the first product of the Global Forest Expert Panels of the Collaborative Partnership on Forests (CPF) and presents the state-of-knowledge about the impacts of climate change on forests and people and options for adaptation. One of the key messages that emerged from this assessment is that the carbon-regulating services of forests are at risk of being lost entirely unless current carbon emissions are reduced substantially; this would result in the release of huge quantities of carbon to the atmosphere, exacerbating climate change.

The report as well as a policy brief (available in all UN languages) can be downloaded at:

<http://www.iufro.org/science/gfep/>

Skutsch, M., Bird, N., Trines, E., Dutschke, M., Frumhoff, P., de Jong, B. H. J., et al. (2007). **Clearing the way for reducing emissions from tropical deforestation.** *Environmental Science & Policy*, 10(4), 322-334.

REDD, Policy

Smith, J., & Applegate, G. (2004). **Could payments for forest carbon contribute to improved tropical forest management?** *Forest Policy & Economics*, 6(2), 153.

Forest management

Smith, J., & Scherr, S. J. (2002). **Forest carbon and local livelihoods: Assessment of opportunities and policy recommendations** (pp. 45p.). Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Livelihood, CDM

Projects implemented as part of the Clean Development Mechanism (CDM) of the Kyoto Protocol will have the dual mandate of mitigating greenhouse gas emissions and contributing to sustainable development. Basic agreement on core elements was reached in 2001, including the decision to allow afforestation and reforestation projects. However, it is not yet clear what rules will address social concerns. Many types of projects could potentially contribute to local livelihoods and ecosystem restoration, as well as to carbon emission offsets, including those using natural forest regeneration, agroforests, improved forest fallows and agroforestry. Averted deforestation projects with multiple-use forestry, though not eligible in the first CDM period, could be reconsidered in the future. Such projects can be designed to rigorously meet CDM criteria for carbon impact, additionality, leakage and duration. If suitably targeted, they can be cost-effective for investors in terms of production costs. Some, however, may have higher transaction costs. Proactive efforts are needed to enable community-based CDM forestry projects and local land uses to compete effectively in carbon trading markets with projects managed by large-scale operators. The CDM should require mandatory social impact assessments, harmonise the CDM with social principles of other global conventions, promote measures to reduce transaction costs and explicitly include assisted natural regeneration and forest rehabilitation in the definition of afforestation and reforestation. Most developing countries will require policy action to establish the enabling conditions for forest carbon projects to contribute on a large scale to local livelihoods, integrate CDM projects within national development frameworks, attract investors, establish social criteria, secure local rights and promote support services for local people. Cost-effective project design requires attention to local participation, transparency, suitable compensation mechanisms, strategies to reduce transaction costs and risks and extend the scale of projects, and to enhance profitability of land uses.

<http://www.cifor.cgiar.org/Publications/Detail?pid=1086>

Streck, C., O'sullivan, R., Janson-smith, T., & Tarasofsky, R. (Eds.). (2008). ***Climate change and forests: emerging policy and market opportunities***. Washington, D.C.: Brookings Institution Press.

Policy

Streck, C., & Scholz, S. M. (2006). **The role of forests in global climate change: Whence we come and where we go**. *International Affairs*, 82(5), 861.

Policy

Member's pick suggested by: Ken Brown, University of Vermont

Article with a good discussion of the issues preventing effective inclusion of forestry in the Kyoto Protocol, and some suggestions for how to address them. A book edited by one of the authors (Climate Change and Forests: Emerging Policy and Market Opportunities, Streck et al. 2008) goes into more detail.

Streimikiene, D., & Girdzijauskas, S. (2009). **Assessment of post-Kyoto climate change mitigation regimes impact on sustainable development**. *Renewable & Sustainable Energy Reviews*, 13(1), 129-141.

Policy, Livelihood

Sunderlin, W. D., Dewi, S., & Puntodewo, A. (2007). ***Poverty and forests: Multi-country analysis of spatial association and proposed policy solutions***. Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Livelihood, Governance

This paper examines poverty and deforestation in developing countries as linked problems and focuses on policies that can favour poverty alleviation in forested regions. The paper encompasses two elements: analysis of the spatial coincidence between poverty and forests, and proposed policy options for reducing poverty in forested areas. It is assumed that three key frames of reference must be borne in mind in order to produce the best possible policies: (1) the location of the rural poor and types and levels of poverty in relation to forest resources; (2) variations in the density of forest cover in relation to distance from urban areas (the von Thünen scale); and (3) variations in forest cover over time (high, low, then partial restoration) in relation to a country's forest transition experience. There are three main conclusions linked to these frames of reference. (1) Although relatively few people live in areas of high forest cover, they tend to be characterised by high rates of poverty and they are among the 'poorest of the poor'. (2) Four policy approaches are recommended for lifting people out of poverty: transfer of ownership of forest lands from governments to forest dwellers; facilitation of access to forest product markets; promotion of commercial-scale community forestry and company–community partnerships; and establishment of payments for forest environmental services that are pro-poor. Implementation of these four strategies must take into account the implications of the four von Thünen zones (periurban, agricultural mosaic, forest frontier, and relatively undisturbed forests). (3) One cannot place blind faith in economic growth and laissez-faire for reducing poverty in forested areas. Strategic policy interventions are necessary to assist the process of livelihood improvement. <http://www.cifor.cgiar.org/Publications/Detail?pid=2294>

Tacconi, L. (2007). **Decentralization, forests and livelihoods: Theory and narrative**. *Global Environmental Change-Human and Policy Dimensions*, 17(3-4), 338-348.

Governance

Task Force on REDD and Communities. (n.d.). ***The hottest REDD issues: Rights, Equity, Development, Deforestation and Governance by Indigenous Peoples and Local Communities***. IUCN Commission on Environmental, Economic and Social Policy and the Global Forest Coalition.

REDD, Equity, Governance, Indigenous peoples

This discussion paper is a contribution to the debate about policies and incentives to reduce emissions from deforestation and forest degradation (REDD). It focuses on the potential of governance of forests by indigenous peoples and local communities, and discusses implications of envisaged REDD regimes for local rights. The note discusses why equity and community engagement should be a paramount consideration of REDD regime and highlights opportunities as well as potential complications and pitfalls. It argues that crucial links need to be drawn between effective REDD regimes, biodiversity conservation and human rights instruments like the UN Declaration on the Rights of Indigenous Peoples.

http://unfccc.int/files/methods_science/redd/application/pdf/final_version_redd_and_communities_briefing.pdf

Terry, G. (2009). **No climate justice without gender justice: An overview of the issues**. *Gender & Development*, 17(1), 5-18.

Equity, Policy

Unruh, J. D. (2008). **Carbon sequestration in Africa: The land tenure problem.** *Global Environmental Change-Human and Policy Dimensions*, 18(4), 700-707.

Implementation, Governance, CDM

Vöhringer, F. (2004). **Forest conservation and the Clean development mechanism: Lessons from the Costa Rican protected areas project.** *Mitigation and Adaptation Strategies for Global Change*, 9(3), 217-240.

CDM, REDD, Policy

Warkentin, I. G., & Sodhi, N. S. (2008). **Financing tropical forest preservation.** *Science*, 320(5878), 874-874.

Policy

Letter calling for transitioning focus on forest conservation from tropical to boreal forests because of potential for easier and faster implementation

Wunder, S. (2007). **The efficiency of payments for environmental services in tropical conservation.** *Conservation Biology*, 21(1), 48-58.

Implementation, Policy

VII. Poor/Rural/Livelihoods [\(return to top\)](#)

REDD-Net Programme: Building Southern Civil Society Capacity to champion the interests of the poor in Reduced Emissions from Deforestation and Degradation. (n.d.).

REDD, Impact on the poor

REDD-Net aims to build capacity of southern civil society to champion the interests of the poor in the area of REDD ('Reduced emissions from deforestation and forest degradation'). It will build this capacity through the development of a REDD practitioner network, facilitating the two-way transfer of knowledge within the practitioner community through the sharing of field experiences and pilot activities, and the development of tools to help shape REDD policies and projects on a global scale. REDD-Net is supported by the Norwegian Forest Initiative.

http://2cfc.editme.com/files/NewResources/REDD%20Net%20Programme%20-%20leaflet%20with%20activities_format2.doc

Asquith, N. M., Vargas Rios, M. T., & Smith, J. (2002). **Can forest carbon projects improve rural livelihoods?: Analysis of the Noel Kempff Mercado Climate Action Project, Bolivia.** *Mitigation and Adaptation Strategies for Global Change*, 7.

Livelihood

<http://www.cifor.cgiar.org/Publications/Detail?pid=1273>

Bass, S., Dubois, O., Costa, P. M., Pinard, M., Tipper, R., & Wilson, C. (2000). **Rural Livelihoods and Carbon Management.** *International Institute for Environment and Development: Natural Resources Issues*.

Livelihood

<http://www.iied.org/pubs/pdfs/7558IIED.pdf>

<http://www.iied.org/pubs/display.php?o=7558IIED>

Boerner, J., Mendoza, A., & Vosti, S. A. (2007). **Ecosystem services, agriculture, and rural poverty in the Eastern Brazilian Amazon: Interrelationships and policy prescriptions.** *Ecological Economics*, 64(2), 356-373.

Governance, Impact on the poor

Boyd, E., Gutierrez, M., & Chang, M. (2007). **Small-scale forest carbon projects: Adapting CDM to low-income communities.** *Global Environmental Change Part A: Human & Policy Dimensions*, 17(2), 250-259.

Policy, Governance, CDM

Charnley, S. (2005). **Industrial plantation forestry: Do local communities benefit?** *Journal of Sustainable Forestry*, 21(4), 35-57.

Livelihood, Equity

Coomes, O. T., Grimard, F., Potvin, C., & Sima, P. (2008). **The fate of the tropical forest: Carbon or cattle?** *Ecological Economics*, 65(2), 207-212.

Indigenous peoples, Implementation, CDM

Corbera, E., Brown, K., & Adger, W. N. (2007). **The Equity and Legitimacy of Markets for Ecosystem Services.** *Development & Change*, 38(4), 587-613.

Equity

Corbera, E., Kosoy, N., & Martinez Tuna, M. (2007). **Equity implications of marketing ecosystem services in protected areas and rural communities: Case studies from Meso-America.** *Global Environmental Change Part A: Human & Policy Dimensions*, 17(3/4), 365-380.

Equity, Governance

Eliasch, J. (2008). ***The Eliasch Review - Climate Change: Financing Global Forests.*** U.K.: Office of Climate Change.

REDD, Implementation, Impact on the poor

This Review was commissioned by the Prime Minister. The Review is an independent report to government, prepared by Johan Eliasch with the support of the Office of Climate Change. It aims to provide a comprehensive analysis of international financing to reduce forest loss and its associated impacts on climate change. It does so with particular reference to the international efforts to achieve a new global climate change agreement in Copenhagen at the end of 2009.

The Review focuses on the scale of finance required to produce significant reductions in forest carbon emissions, and the mechanisms that, if designed well, can achieve this effectively to help meet a global climate stabilisation target. It also examines how mechanisms to address forest loss can contribute to poverty reduction, as well as the importance of preserving other ecosystem services such as biodiversity and water services.

<http://www.occ.gov.uk/activities/eliasch.htm>

Funk, J., & Kerr, S. (2007). **Restoring forests through carbon farming on Māori land in New Zealand/Aotearoa.** *Mountain Research & Development*, 27(3), 202-205.

Indigenous peoples, Livelihood

Gireesan, K., & Chathukulam, J. (2008). **Governance of National Afforestation Program in Kerala: A Micro Level Analysis.** *The Icfai University Journal of Rural Management*, 1(1).

Governance, Livelihood

<http://ssrn.com/paper=1304468>

Grieg-Gran, M. (2008). **Community-based forest carbon project in Mozambique.** [Project webpage]. *International Institute for Environment and Development*.

Livelihood, Implementation

Brief project description.

<http://www.iied.org/natural-resources/key-issues/forestry/community-based-forest-carbon-project-mozambique#about>

Grieg-Gran, M., Porras, I., & Wunder, S. (2005). **How can market mechanisms for forest environmental services help the poor? Preliminary lessons from Latin America.** *World Development*, 33(9), 1511-1527.

Impact on the poor, Livelihood

Hall, A. (2008). **Better RED than dead: paying the people for environmental services in Amazonia.** *Philosophical Transactions of the Royal Society B-Biological Sciences*, 363(1498), 1925-1932.

REDD, Indigenous peoples, Governance, Impact on the poor

International Alert. **Climate change and violent conflict.** [website].

Impact on the poor

Website with links to publications and other information.

The impact of climate change will make the poorest communities across the world poorer. Many of them are already affected by conflict and instability and thus face a dual risk. International Alert's new research finds that the consequences of climate change will fuel violent conflict, which itself hinders the ability of governments and local communities to adapt to the pressures of climate change.

http://www.international-alert.org/climate_change/index.php

IUCN Commission on Environmental Economic and Social Policy. (2008). **Climate change, energy change and conservation**. *Policy Matters*(16), 256.

Policy, Livelihood, Implementation, Forest management

http://cmsdata.iucn.org/downloads/policy_matters_16.pdf

Janetos, G., & Henman, J. (2007). **Conservation and community benefits from the carbon market**. *Ecos - A Review of Conservation*, 28(3/4), 64-70.

Livelihood

Jindal, R., Swallow, B., & Kerr, J. (2008). **Forestry-based carbon sequestration projects in Africa: Potential benefits and challenges**. *Natural Resources Forum*, 32(2), 116-130.

Implementation, Livelihood, Governance, CDM

Kaimowitz, D. (2003). **Carbon markets for the poor**. *Forestry Chronicle*, 79(1), 24.

Livelihood, Impact on the poor, CDM

Kerr, J., Foley, C., Chung, K., & Jindal, R. (2006). **Reconciling Environment and Development in the Clean Development Mechanism**. *Journal of Sustainable Forestry*, 23(1), 1-18.

Impact on the poor, Policy, CDM

Klooster, D., & Masera, O. (2000). **Community forest management in Mexico: carbon mitigation and biodiversity conservation through rural development**. *Global Environmental Change-Human and Policy Dimensions*, 10(4), 259-272.

Implementation, CDM

Knutsson, P., & Ostwald, M. (2006). **A Process-Oriented Sustainable Livelihoods Approach: A Tool For Increased Understanding of Vulnerability, Adaptation and Resilience**. *Mitigation and Adaptation Strategies for Global Change*.

Livelihood, Governance

Landell-Mills, N. (2002). **Developing markets for forest environmental services: An opportunity for promoting equity while securing efficiency?** *Philosophical Transactions A: Mathematical, Physical and Engineering Sciences*, 360(1797), 1817-1825.

Equity, Impact on the poor

Larson, A. M., & Ribot, J. C. (2007). **The poverty of forestry policy: double standards on an uneven playing field**. *Sustainability Science*, 2(2), 189-204.

Equity, Policy, Impact on the poor

Larson, A. M., & Soto, F. (2008). **Decentralization of Natural Resource Governance Regimes.** *Annual Review of Environment & Resources*, 33(1), 213-239.

Governance, Impact on the poor

Lichtenfels, M., Burtis, P., Hovani, A., Kuppalli, R., Lichtenfeld, M., & Miyata, Y. (2007). **Improving Markets for Ecosystem Services.** *Journal of Sustainable Forestry*, 25(3/4), 337-364.
Policy

Liu, J. G., Li, S. X., Ouyang, Z. Y., Tam, C., & Chen, X. D. (2008). **Ecological and socioeconomic effects of China's policies for ecosystem services.** *Proceedings of the National Academy of Sciences of the United States of America*, 105(28), 9477-9482.

Governance, Livelihood

Locatelli, B., Rojas, V., & Salinas, Z. (2008). **Impacts of payments for environmental services on local development in northern Costa Rica: A fuzzy multi-criteria analysis.** *Forest Policy and Economics*, 10(5), 275-285.

Livelihood, Impact on the poor

Luttrell, C., Schreckenberger, K., & Peskett, L. (2007). **The implications of carbon financing for pro-poor community forestry.** *Forest Policy and Environment Programme, Overseas Development Institute, Forestry Briefing 14.*

REDD, Impact on the poor

"REDD has the potential to act as a pro-poor influence in the regulation and distribution of benefits associated with community forestry"

<http://www.odi.org.uk/resources/download/438.pdf>

<http://www.odi.org.uk/resources/details.asp?id=438&title=implications-carbon-financing-pro-poor-community-forestry>

MacDicken, K., & Smith, J. (2000). **Capturing the value of forest carbon for local livelihoods: Opportunities under the clean development mechanisms of the Kyoto protocol** (pp. 16p.). Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Livelihood, CDM

Projects implemented as part of the Clean Development Mechanism (CDM) of the Kyoto Protocol will have the dual mandate of reducing greenhouse gas emissions and contributing to sustainable development. It is not yet clear what, if any, forestry activities will be eligible for CDM. Nor is it known what rules will guide the implementation of CDM projects. These decisions have important implications for poor people who live in and around forests in developing countries. Suitably designed CDM forestry projects can significantly benefit local communities by supplementing and diversifying income, increasing access to forest goods and services, improving land productivity, developing the local knowledge base and local institutions and increasing the energy efficiency of using forest products. In some cases there will be trade-offs between the amount of greenhouse gas reductions sought and direct benefits to local livelihoods. Without adequate safeguards, some CDM activities could have negative effects on local people, such as denying them access to resources they depend on for their livelihood. Pro-active efforts will be needed in some cases to ensure that community-based CDM forestry projects and local land uses can compete effectively in carbon trading markets with projects managed by large-scale operators. As this policy brief describes, however, CDM guidelines can be designed to not only minimize the likelihood of negative effects on local communities but to directly improve their livelihoods while achieving net greenhouse gas

emissions reductions. Proposed measures include: explicitly including forest management and agroforestry in the CDM; implementing social impact assessments for all CDM projects; providing incentives for projects with multiple benefits; approving tonne-year carbon accounting; reducing transactions costs of community-based projects; and building capacity at local, national and international levels.

<http://www.cifor.cgiar.org/Publications/Detail?pid=732>

McCaul, J. (2005). **The Planned cultural economy for Cape York.** *Ecos*(126), 21-23.
Indigenous peoples, Livelihood, Governance

Minang, P. A., McCall, M. K., & Bressers, H. T. A. (2007). **Community capacity for implementing Clean Development Mechanism projects within community forests in Cameroon.** *Environmental Management*, 39(5), 615-630.
Livelihood, Implementation, CDM

Murdiyarso, D., & Herawati, H. (2005). ***Carbon forestry: Who will benefit?: Proceedings of workshop on carbon sequestration and sustainable livelihoods, held in Bogor on 16-17 February 2005.*** Bogor, Indonesia: Center for International Forestry Research (CIFOR).
Livelihood, Implementation, CDM

Carbon sequestration projects through land use, land-use change and forestry (LULUCF) activities could demonstrate a win-win situation from the point of view of climate change and sustainable development. Under the current rules of the Clean Development Mechanism (CDM) of the Kyoto Protocol the activities are limited to afforestation and reforestation. Properly designed, these projects conserve and/or increase carbon stock and at the same time improve rural livelihoods. Such projects have been developed and implemented in a number of countries with different ecosystems and social settings. They do not necessarily comply with the current legally binding carbon market under CDM but demonstrate the participation of the low-income rural communities in sustainable forestry, agroforestry and other natural resource management activities. This publication is a collection of the lessons learned from a number of case studies ranging from small to large scale projects, from community-based to corporate operations, and from development to conservation activities. Although most projects are still in their infancy stage and many more lessons to be learned it was realized that bundling climate change and community development projects is a practical approach to support sustainable livelihoods. At the same time the strategic approaches to influence the next rounds of climate negotiation were also addressed. These are dealing with issues, such as, avoiding deforestation and adaptation measures for vulnerable ecosystems and communities, who have relatively low adaptive capacity. Emerging markets for carbon in the context of rural development and organization were identified. This transition has had implications for the development of its institutional arrangements at project management and community levels, which in turn have affected the project's legitimacy and its ability to promote equitable outcomes. It has been demonstrated that purely carbon management-oriented activities are able to convince rural communities and investors to participate. Broader carbon forestry activities have the potentials to be integrated in the sustainable development agenda.

<http://www.cifor.cgiar.org/Publications/Detail?pid=1733>

Murdiyarso, D., Herawati, H., & Iskandar, H. (2005). ***Carbon sequestration and sustainable livelihoods: A workshop synthesis.*** Bogor, Indonesia: Center for International Forestry Research (CIFOR).
Livelihood, Implementation, CDM

Carbon sequestration projects conducted as part of community development strategies can offer considerable environmental and social benefits. Such initiatives do have some degree of compatibility with the dual objectives of the Kyoto Protocol's Clean Development Mechanism (CDM). The lessons learned from such initiatives in Mexico, Colombia, Costa Rica, Philippines, Indonesia, and Timor Leste generally demonstrate the importance of engaging strong local participation. Although most of these projects do not fully comply with the rigid guidelines governing the Kyoto Protocol's Clean Development Mechanism, this is partly because the current agreement only allows afforestation and reforestation project activities. Conservation of areas that store large amounts of carbon, such as in peat lands, is ineligible for funding under existing rules. This synthesis also looks at how strategic approaches might be addressed for including deforestation avoidance initiatives in the next round of negotiations and subsequent commitment period. To succeed, these projects employ a scientifically sound methodology in determining the baseline, monitoring additionality and leakage, and permanence. The workshop reviewed in this paper examined a range of possibilities, including mainstreaming gender equity, reviving traditional laws and implementing adaptation measures. Findings from the workshop suggest that climate change projects must include practical livelihood options and that further investigation of donor and policy responses is needed to determine the level of public funding these projects should receive and how to best encourage private sector involvement. The complexity of these projects is demonstrated with examples from a range of on-going projects. The workshop and this synthesis provide a valuable opportunity to share the lessons learned from community-based projects in different regulatory and institutional frameworks.

<http://www.cifor.cgiar.org/Publications/Detail?pid=1757>

Murdiyarso, D., & Skutsch, M. (2006). ***Community forest management as a carbon mitigation option: Case studies***. Bogor, Indonesia: Center for International Forestry Research (CIFOR). Livelihood, Implementation

The collection of case studies presented in this document attempts to explore opportunities to promote the participation of local communities in various countries with a range of socio-economic settings and institutional challenges.

http://www.cifor.cgiar.org/publications/pdf_files/Books/BMurdiyarso0602.pdf

Murdiyarso, D., van Noordwijk, M., Puntodewo, A., Widayati, A., & Lusiana, B. (2008). **District-scale prioritization for A/R CDM project activities in Indonesia in line with sustainable development objectives**. *Agriculture Ecosystems & Environment*, 126(1-2), 59-66. Livelihood, Governance, CDM

Nigel, M. A., María Teresa Vargas, R., & Joyotee, S. (2002). **Can Forest-protection carbon projects improve rural livelihoods? Analysis of the Noel Kempff Mercado climate action project, Bolivia**. *Mitigation & Adaptation Strategies for Global Change*, 7(4), 323-337. Livelihood, Implementation

Nussbaumer, P. (2009). **On the contribution of labelled Certified Emission Reductions to sustainable development: A multi-criteria evaluation of CDM projects**. *Energy Policy*, 37(1), 91-101. Livelihood, Governance, CDM

Parry, M. (2009). **Climate change is a development issue, and only sustainable development can confront the challenge**. *Climate & Development*, 1(1), 5-9.

Livelihood, Policy

Peskett, L., & Harkin, Z. (2007). **Risk and responsibility in Reduced Emissions from Deforestation and Degradation.** *Forest Policy and Environment Programme, Overseas Development Institute, Forestry Briefing 15.*

REDD, Impact on the poor

Can risks for investors in REDD be reduced in a way that is in the interests of the poor?

<http://www.odi.org.uk/resources/download/426.pdf>

<http://www.odi.org.uk/resources/details.asp?id=426&title=risk-responsibility-reduced-emissions-deforestation-degradation>

Peskett, L., Huberman, D., Bowen-Jones, E., Edwards, G., & Brown, J. (2008). **Making REDD work for the Poor.** Poverty Environment Partnership (PEP).

REDD, Impact on the poor

Making REDD Work for the Poor outlines how the design of REDD could influence its poverty implications and the key requirements for ensuring that REDD works for the poor.

<http://www.odi.org.uk/resources/download/2580.pdf>

<http://www.odi.org.uk/resources/details.asp?id=2580&title=making-redd-work-poor>

Peskett, L., Huberman, D., Bowen-Jones, E., Edwards, G., & Brown, J. (2008). **Making REDD work for the Poor: Summary.** *Poverty Environment Partnership (PEP) Policy Brief.*

REDD, Impact on the poor

Based on the full report 'Making REDD Work for the Poor' (Peskett et al., 2008)

<http://www.odi.org.uk/resources/download/2581.pdf>

<http://www.odi.org.uk/resources/details.asp?id=2581&title=making-redd-work-poor>

Peskett, L., Luttrell, C., & Iwata, M. (2007). **Can standards for voluntary carbon offsets ensure development benefits?** *Forest Policy and Environment Programme, Overseas Development Institute, Forestry Briefing 13.*

Impact on the poor

"Forestry offsets: can standards help small producers benefit from carbon forestry?"

<http://www.odi.org.uk/resources/download/11.pdf>

<http://www.odi.org.uk/resources/details.asp?id=11&title=can-standards-voluntary-carbon-offsets-ensure-development-benefits>

Ravindranath, N., Murthy, I., Chaturvedi, R., Andrasko, K., & Sathaye, J. (2007). **Carbon forestry economic mitigation potential in India, by land classification.** *Mitigation and Adaptation Strategies for Global Change*, 12(6), 1027-1050.

Livelihood, Implementation

Reyer, C., Guericke, M., & Ibsch, P. L. (2009). **Climate change mitigation via afforestation, reforestation and deforestation avoidance: and what about adaptation to environmental change?** *New Forests*, 38(1), 15-34.

Forest management, Adaptation, CDM, Livelihoods

Rights and Resources Initiative. (2008). **Seeing People Through the Trees: Scaling Up Efforts to Advance Rights and Address Poverty, Conflict and Climate Change.** Washington DC: Rights and Resources Initiative.

Governance, Impact on the poor

http://www.rightsandresources.org/documents/files/doc_737.pdf

http://www.rightsandresources.org/publication_details.php?publicationID=737

Roshetko, J., Lasco, R., & Angeles, M. (2007). **Smallholder agroforestry systems for carbon storage**. *Mitigation and Adaptation Strategies for Global Change*, 12(2), 219-242.

Implementation, CDM, Livelihood

Ross, D. P., & O'Brie, C. (2007). **Viva Sierra Gorda**. *Earth Island Journal*, 22-23.

Livelihood, Impact on the poor

Discussion of a 2006 carbon sale by Bosque Sustentable and the Sierra Gorda Biosphere Reserve.

Many of the reserve's 100,000 inhabitants live in poverty.

Seppälä, R., Buck, A., & Katila, P. (Eds.). (2009). **Adaptation of Forests and People to Climate Change: A Global Assessment Report**. International Union of Forest Research Organizations (IUFRO), Global Forest Expert Panels of the Collaborative Partnership on Forests (CPF).

Adaptation, Forest management, Livelihood, Governance

The report is the first product of the Global Forest Expert Panels of the Collaborative Partnership on Forests (CPF) and presents the state-of-knowledge about the impacts of climate change on forests and people and options for adaptation. One of the key messages that emerged from this assessment is that the carbon-regulating services of forests are at risk of being lost entirely unless current carbon emissions are reduced substantially; this would result in the release of huge quantities of carbon to the atmosphere, exacerbating climate change.

The report as well as a policy brief (available in all UN languages) can be downloaded at:

<http://www.iufro.org/science/gfep/>

Shahbaz, B., Ali, T., & Suleri, A. (2007). **A critical analysis of forest policies of Pakistan: Implications for sustainable livelihoods**. *Mitigation and Adaptation Strategies for Global Change*, 12(4), 441-453.

Livelihood, Governance

Smith, D., & Vivekananda, J. (2007). **A climate of conflict: The link between climate change, peace and war**. London: International Alert.

Impact on the poor, Governance, Adaptation

Climate change is upon us and its physical effects have started to unfold. That is the broad scientific consensus expressed in the Fourth Assessment Review of the Inter-governmental Panel on Climate Change. This report takes this finding as its starting point and looks at the social and human consequences that are likely to ensue – particularly the risks of conflict and instability.

<http://www.international-alert.org/publications/pub.php?p=322>

Smith, J., & Scherr, S. J. (2002). **Forest carbon and local livelihoods: Assessment of opportunities and policy recommendations** (pp. 45p.). Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Livelihood, CDM

Projects implemented as part of the Clean Development Mechanism (CDM) of the Kyoto Protocol will have the dual mandate of mitigating greenhouse gas emissions and contributing to sustainable development. Basic agreement on core elements was reached in 2001, including the decision to allow afforestation and reforestation projects. However, it is not yet clear what rules will address social

concerns. Many types of projects could potentially contribute to local livelihoods and ecosystem restoration, as well as to carbon emission offsets, including those using natural forest regeneration, agroforests, improved forest fallows and agroforestry. Averted deforestation projects with multiple-use forestry, though not eligible in the first CDM period, could be reconsidered in the future. Such projects can be designed to rigorously meet CDM criteria for carbon impact, additionality, leakage and duration. If suitably targeted, they can be cost-effective for investors in terms of production costs. Some, however, may have higher transaction costs. Proactive efforts are needed to enable community-based CDM forestry projects and local land uses to compete effectively in carbon trading markets with projects managed by large-scale operators. The CDM should require mandatory social impact assessments, harmonise the CDM with social principles of other global conventions, promote measures to reduce transaction costs and explicitly include assisted natural regeneration and forest rehabilitation in the definition of afforestation and reforestation. Most developing countries will require policy action to establish the enabling conditions for forest carbon projects to contribute on a large scale to local livelihoods, integrate CDM projects within national development frameworks, attract investors, establish social criteria, secure local rights and promote support services for local people. Cost-effective project design requires attention to local participation, transparency, suitable compensation mechanisms, strategies to reduce transaction costs and risks and extend the scale of projects, and to enhance profitability of land uses.

<http://www.cifor.cgiar.org/Publications/Detail?pid=1086>

Smith, J., & Scherr, S. J. (2003). **Capturing the value of forest carbon for local livelihoods.** *World Development*, 31(12), 2143.

Livelihood

Streimikiene, D., & Girdzijauskas, S. (2009). **Assessment of post-Kyoto climate change mitigation regimes impact on sustainable development.** *Renewable & Sustainable Energy Reviews*, 13(1), 129-141.

Policy, Livelihood

Sunderlin, W. D., Dewi, S., & Puntodewo, A. (2007). **Poverty and forests: Multi-country analysis of spatial association and proposed policy solutions.** Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Livelihood, Governance

This paper examines poverty and deforestation in developing countries as linked problems and focuses on policies that can favour poverty alleviation in forested regions. The paper encompasses two elements: analysis of the spatial coincidence between poverty and forests, and proposed policy options for reducing poverty in forested areas. It is assumed that three key frames of reference must be borne in mind in order to produce the best possible policies: (1) the location of the rural poor and types and levels of poverty in relation to forest resources; (2) variations in the density of forest cover in relation to distance from urban areas (the von Thünen scale); and (3) variations in forest cover over time (high, low, then partial restoration) in relation to a country's forest transition experience. There are three main conclusions linked to these frames of reference. (1) Although relatively few people live in areas of high forest cover, they tend to be characterised by high rates of poverty and they are among the 'poorest of the poor'. (2) Four policy approaches are recommended for lifting people out of poverty: transfer of ownership of forest lands from governments to forest dwellers; facilitation of access to forest product markets; promotion of commercial-scale community forestry and company-community partnerships; and establishment of payments for forest environmental services that are pro-poor. Implementation of

these four strategies must take into account the implications of the four von Thünen zones (periurban, agricultural mosaic, forest frontier, and relatively undisturbed forests). (3) One cannot place blind faith in economic growth and laissez-faire for reducing poverty in forested areas. Strategic policy interventions are necessary to assist the process of livelihood improvement.
<http://www.cifor.cgiar.org/Publications/Detail?pid=2294>

Sunderlin, W. D., Dewi, S., Puntodewo, A., Muller, D., Angelsen, A., & Epprecht, M. (2008). **Why forests are important for global poverty alleviation: A spatial explanation.** *Ecology and Society*, 13(2).

Livelihood

<http://www.cifor.cgiar.org/Publications/Detail?pid=2637>

Tacconi, L. (2007). **Decentralization, forests and livelihoods: Theory and narrative.** *Global Environmental Change-Human and Policy Dimensions*, 17(3-4), 338-348.

Governance

TFD. (n.d.). **Forests and Poverty Reduction.** [webpage]. *The Forests Dialogue*.

Impact on the poor, Livelihood

The Forests Dialogue priority issue. Includes information on meetings, including position papers.

<http://research.yale.edu/gisf/tfd/poverty.html>

Tschakert, P. (2007). **Environmental services and poverty reduction: Options for smallholders in the Sahel.** *Agricultural Systems*, 94(1), 75-86.

Livelihood

Tschakert, P., Coomes, O. T., & Potvin, C. (2007). **Indigenous livelihoods, slash-and-burn agriculture, and carbon stocks in Eastern Panama.** *Ecological Economics*, 60(4), 807-820.

Indigenous peoples, Livelihoods

van Noordwijk, M., Suyanto, D. A., Lusiana, B., Ekadinata, A., & Hairiah, K. (2008). **Facilitating agroforestation of landscapes for sustainable benefits: Tradeoffs between carbon stocks and local development benefits in Indonesia according to the FALLOW model.** *Agriculture Ecosystems & Environment*, 126(1-2), 98-112.

Livelihood, Implementation, CDM

VIII. REDD ([return to top](#))

The Costs of Reducing Carbon Emissions from Deforestation and Forest Degradation.

(2008). *World Bank's Workshop, May 27, 2008.*

REDD

This event was designed to advance the understanding of the economics of REDD by bringing together leading economists and scientists who have researched the topic and allowing them to present and discuss their methods and findings. The focus was on estimating the costs of REDD.
<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTCC/0,,contentMDK:21799130~pagePK:210058~piPK:210062~theSitePK:407864,00.html>

Global Indigenous Peoples Consultation on Reducing Emissions from Deforestation and Degradation (REDD) - Summary Report. (2008). Baguio City, Philippines: UNU-IAS, Tebtebba, Convention on Biological Diversity, UN-REDD Programme.

REDD

http://www.tebtebba.org/index.php?option=com_docman&task=doc_download&gid=289&Itemid=27%20-

Guiana Shield Resolution on Climate Change and REDD. (2009). [Resolution]. *Georgetown, April 17.*

Indigenous peoples

Indigenous peoples' statement on climate change and national/international climate change mitigation policies affecting indigenous territories in the Guiana Shield region.

http://www.forestpeoples.org/documents/forest_issues/guiana_shield_climate_chng_resolution_apr09_eng.pdf

Indigenous Peoples' Rights and REDD: The Case of the Saramaka People v. Suriname.

(2009). *Forest Peoples Programme.*

Indigenous peoples, REDD

Given that indigenous peoples are the traditional owners of a large percentage of the world's remaining forests, this article raises the issue of the extent to which the various proposals for Reduced Emissions from Deforestation and Forest Degradation (REDD) or Avoided Deforestation (AD) must account for and respect indigenous peoples' rights.

http://www.forestpeoples.org/documents/ifi_igo/suriname_saramaka_and_redd_judgment_mar09_eng.pdf

REDD - hot topic for climate change. (2009). [webpage]. *On the Frontlines of Climate Change.*

REDD

Lead article for open forum discussion of REDD. Webpage includes links to forum posts and background information.

<http://www.climatefrontlines.org/en-GB/node/169>

REDD-Net Programme: Building Southern Civil Society Capacity to champion the interests of the poor in Reduced Emissions from Deforestation and Degradation. (n.d.).

REDD, Impact on the poor

REDD-Net aims to build capacity of southern civil society to champion the interests of the poor in the area of REDD ('Reduced emissions from deforestation and forest degradation'). It will build

this capacity through the development of a REDD practitioner network, facilitating the two-way transfer of knowledge within the practitioner community through the sharing of field experiences and pilot activities, and the development of tools to help shape REDD policies and projects on a global scale. REDD-Net is supported by the Norwegian Forest Initiative.

http://2cfc.editme.com/files/NewResources/REDD%20Net%20Programme%20-%20leaflet%20with%20activities_format2.doc

Reducing Emissions from Deforestation in Developing Countries: Approaches to stimulate action – A Quick Guide to the Agenda Item under the UNFCCC. (n.d.). [webpage]. *UNFCCC Secretariat*.

REDD

"The webpage includes a list of UNFCCC sessions relevant to reducing emissions from deforestation and forest degradation in developing countries (REDD) and associated meeting documents and links. The events are listed in a table and organized chronologically. The table uses the 11th session of the Conference of the Parties to the UNFCCC held in Montreal, Canada, in 2005, as its starting point, given that the REDD agenda item was first introduced then." -

<http://climate-l.org/2009/06/30/unfccc-secretariat-publishes-quick-guide-to-redd/>
http://unfccc.int/methods_science/redd/items/4615.php

Climate Change and Energy: Reducing Forest Emissions. (n.d.). [webpage]. *SciDev.net*.

REDD, Implementation, Policy

In the run-up to this year's climate talks in Copenhagen, governments the world over are proposing strategies for reducing emissions from deforestation and forest degradation (REDD). Will climate negotiators be able to agree on a global framework for reducing forest emissions and their role in climate change mitigation?

This spotlight provides a series of articles and commentaries written by international experts that: explore the role of science in informing REDD; examine what research is needed to implement it; consider key issues facing policymakers such as how to marry environmental and livelihood goals; and highlight the options for different regions of the developing world.

<http://www.scidev.net/en/climate-change-and-energy/reducing-forest-emissions>

Achard, F., Brown, S., Braatz, B., Csiszar, I., DeFries, R., Frederici, S., et al. (Eds.). (2008).

Reducing greenhouse gas emissions from deforestation and degradation in developing countries: A sourcebook of methods and procedures for monitoring measuring and reporting. Natural Resources Canada, Alberta: GOFC-GOLD Project Office.

REDD, Implementation

<http://www.gofc-gold.uni-jena.de/redd/index.php>

Achard, F., DeFries, R., Eva, H., Hansen, M., Mayaux, P., & Stibig, H. J. (2007). **Pan-tropical monitoring of deforestation.** *Environmental Research Letters*, 2(4), 045022.

REDD, Implementation

Part of Focus on Tropical Deforestation and Greenhouse Gas Emissions

(<http://www.iop.org/EJ/abstract/1748-9326/2/4/045021>)

<http://stacks.iop.org/1748-9326/2/045022>

Angelsen, A. (2008). ***Moving ahead with REDD: Issues, options and implications.*** Bogor, Indonesia: Center for International Forestry Research (CIFOR).

REDD, Implementation

Member's pick suggested by: Ken Brown, University of Vermont

Summary by CIFOR:

REDD (reducing emissions from deforestation and forest degradation) is based on a simple idea: pay developing countries to reduce CO₂ emissions from the forest sector. Nevertheless, design and implementation of a REDD system raise many hard questions: How are emissions reductions monitored, reported and verified? How should REDD be financed? Should payments be directed to countries, projects, or both? How should reference levels be set? How are non-permanence and leakage accounted? How to achieve REDD co-benefits and avoid doing harm?

Moving Ahead with REDD: Issues, Options and Implications does not attempt to give definite answers.

Instead, the book presents design options for a global REDD architecture and reviews their implications on the 3E criteria – effectiveness in reducing emissions, cost efficiency and equity.

Anyone involved in the REDD debate and negotiations can benefit from this clear and concise presentation of key REDD issues.

<http://www.cifor.cgiar.org/Publications/Detail?pid=2601>

Angelsen, A. (2008). **REDD models and baselines**. *International Forestry Review*, 10(3), 465-475.
REDD, Policy

Angelsen, A., Brown, S., Loisel, C., Peskett, L., Streck, C., & Zarin, D. (2009). **Reducing Emissions from Deforestation and Forest Degradation (REDD): An Options Assessment Report**. *Prepared for the Government of Norway by the Meridian Institute*.
REDD

The REDD Options Assessment Report suggests a flexible, three-phase approach to policy measures and positive incentives in order to accommodate (i) the diverse capabilities and circumstances of REDD countries; (ii) an expanded scope of REDD to include conservation, sustainable management of forests, and enhancement of forest carbon stocks; and (iii) the near-term constraints of the current global financial crisis.

Website includes supplementary reports and presentations

<http://www.redd-oar.org>

Anger, N., & Sathaye, J. (2008). **Reducing Deforestation and Trading Emissions: Economic Implications for the Post-Kyoto Carbon Market**. *SSRN eLibrary - Centre for European Economic Research Discussion Paper* 08(016).

Policy, REDD

<http://ssrn.com/paper=1114044>

Anke, H., Zeri, G. C., Dietz, J., Freibauer, A., Hüttner, M., Jung, M., et al. (2008). **Emissions and removals from land-use, land use change and forestry activities in a post-Kyoto regime: quantitative analysis of a framework for reducing deforestation**. Berlin: Öko-Institut e.V.

REDD, Implementation

The final report of a German research project on REDD discusses data availability and methodological questions, especially for six countries (Brazil, Peru, Congo (Brazzaville), Madagascar, Indonesia, Papua New Guinea). (Report in English with 20 page German summary)

http://unfccc.int/methods_science/redd/country_specific_information/items/4537.php#germany
or:

http://unfccc.int/files/methods_science/redd/methodologies/other/application/pdf/redd_uba_final_report_final_040908_cor.pdf

Baccini, A., Laporte, N., Goetz, S. J., Sun, M., & Dong, H. (2008). **A first map of tropical Africa's above-ground biomass derived from satellite imagery.** *Environmental Research Letters*, 3(4), 045011.

REDD, Implementation

Part of Focus on Tropical Deforestation and Greenhouse Gas Emissions

(<http://www.iop.org/EJ/abstract/1748-9326/2/4/045021>)

<http://stacks.iop.org/1748-9326/3/045011>

Barnsley, I. (2008). ***Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD): A Guide for Indigenous Peoples***. Yokohama: United Nations University: Institute of Advanced Studies (UNU-IAS).

REDD, Indigenous peoples

A guide for Indigenous communities to climate change and to the current international debate surrounding REDD. Includes 5 chapters: The World's Forests, Climate Change, The International Response to Climate Change, International Activity on REDD, and Opportunities and Risks.

http://www.ias.unu.edu/sub_page.aspx?catID=732&ddlID=731

http://www.ias.unu.edu/resource_centre/REDDPocketGuide_web.pdf

Bellassen, V., & Gitz, V. (2008). **Reducing Emissions from Deforestation and Degradation in Cameroon - Assessing costs and benefits.** *Ecological Economics*, 68(1-2), 336-344.

REDD, Implementation

Bond, I., Grieg-Gran, M., Wertz-Kanounnikoff, S., Hazlewood, P., Wunder, S., & Angelsen, A. (2009). ***Incentives to sustain forest ecosystem services: A review and lessons for REDD*** (Vol. Natural Resource Issues No. 16.). London: International Institute for Environment and Development with CIFOR, Bogor, Indonesia, and World Resources Institute, Washington D.C., USA.

REDD, Governance, Implementation

<http://www.iied.org/pubs/pdfs/13555IIED.pdf>

summary/press release posted at IIED.org:

<http://www.iied.org/climate-change/media/good-governance-key-success-payments-tackle-deforestation-and-climate-change>

Borner, J., & Wunder, S. (2008). **Paying for avoided deforestation in the Brazilian Amazon: from cost assessment to scheme design.** *International Forestry Review*, 10(3), 496-511.

REDD

Bosetti, V., Carraro, C., Sgobbi, A., & Tavoni, M. (2008). ***Modeling Economic Impacts of Alternative International Climate Policy Architectures: A Quantitative and Comparative Assessment of Architectures for Agreement: Discussion paper 2008-20***. Cambridge, MA: Harvard Project on International Climate Agreements, Belfer Center for Science and International Affairs.

Policy, REDD

Paper assessing the economic efficiency, environmental effectiveness, distributional implications, and political acceptability of various architectures for a new international climate agreement. Among the conclusions of this study: "The inclusion of credits for avoided deforestation also improves equity because most forest-related abatement opportunities are located in developing countries."

<http://belfercenter.ksg.harvard.edu/publication/18679>

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REDD

'Efforts to address deforestation should be informed by an understanding of what it is that drives land use change'

<http://www.odi.org.uk/resources/download/2584.pdf>

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REDD

<http://www.forestcarbonportal.com/article.php?item=29>

Busch, J., Strassburg, B., Cattaneo, A., Lubowski, R., Boltz, F., Ashton, R., et al. (2009). **Comparing REDD mechanism design options with an open source economic model.** *Submitted for review Feb. 2009*.

REDD, Policy, Implementation

Article on the development of the Open Source Impacts of REDD Incentives Spreadsheet (OSIRIS), which is used to compare REDD design options

http://unfccc.int/files/methods_science/redd/application/pdf/comparing_redd_design_options_with_an_open_source_economic_model.pdf

Butler, R. A., Koh, L. P., & Ghazoul, J. (2009). **REDD in the red: palm oil could undermine carbon payment schemes.** *Conservation Letters*, 9999(999A).

REDD, Biofuel

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Cadman, S. (2008). **Defining Forest Degradation for an Effective Mechanism to Reduce Emissions from Deforestation and Forest Degradation (REDD):** UNFCCC.

REDD, Policy

Proposed definitions of terms.

http://unfccc.int/files/methods_science/redd/application/pdf/seancadman2_11nov08.pdf

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REDD, Policy

Proposed definitions of terms.

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Collaborative Modeling Initiative. (n.d.). **OSIRIS and the Collaborative Modeling Initiative on REDD Economics.** [webpage]. *Conservation International*.

REDD, Implementation

"Designing a mechanism for Reducing Emissions from Deforestation and Forest Degradation (REDD) that is effective, efficient, and equitable requires quantitative economic analysis. The Open Source Impacts of REDD Incentives Spreadsheet (OSIRIS) is a free, transparent, accessible and open source decision support tool designed by the Collaborative Modeling Initiative on REDD Economics to support UNFCCC negotiations on REDD. OSIRIS enables a click-of-a-button

comparison of global, regional, and country-by-country emissions reduction, deforestation, and revenue impacts of alternative approaches to providing positive economic incentives for REDD." <http://www.conservation.org/osiris/pages/overview.aspx>

Combes Motel, P., Pirard, R., & Combes, J. L. (2009). **A methodology to estimate impacts of domestic policies on deforestation: Compensated Successful Efforts for "avoided deforestation" (REDD)**. *Ecological Economics*, 68(3), 680-691.
REDD, Policy

Cotula, L., & Mayers, J. (2009). *Tenure in REDD: Start-point or afterthought?* (Vol. Natural Resource Issues No.15). London: International Institute for Environment and Development.
REDD, Governance

As new mechanisms for 'reducing emissions from deforestation and forest degradation' (REDD) are being negotiated in international climate change talks, resource tenure must be given greater attention. Tenure over land and trees – the systems of rights, rules, institutions and processes regulating their access and use – will affect the extent to which REDD and related strategies will benefit, or marginalise, forest communities.

This report aims to promote debate on the issue. Drawing on experience from seven rainforest countries (Brazil, Cameroon, Democratic Republic of Congo, Guyana, Indonesia, Malaysia and Papua New Guinea), the report develops a typology of tenure regimes across countries, explores tenure issues in each country, and identifies key challenges to be addressed if REDD is to have equitable and sustainable impact.

<http://www.ied.org/pubs/display.php?o=13554IIED>

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REDD, Deforestation

Dooley, K., Griffiths, T., Leake, H., & Ozinga, S. (2008). **Cutting Corners: World Bank's forest and carbon fund fails forests and peoples**. FERN and Forest Peoples Programme.
REDD, Indigenous peoples, governance
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Dutschke, M., & Pistorius, T. (2008). **Will the future be REDD? Consistent carbon accounting for land use**. *International Forestry Review*, 10(3), 476-484.
REDD

Dutschke, M., & Wolf, R. (2007). **Reducing Emissions from Deforestation in Developing Countries: The way forward**. Eschborn, Germany: GTZ, Climate Protection Programme.
REDD, Implementation
Includes discussion of several pilot projects, sources of finance, and methodologies.
<http://www.gtz.de/de/dokumente/en-climate-reducing-emissions.pdf>

Ebeling, J., & Fehse, J. (2009). ***Challenges for a business case for high-biodiversity REDD projects and schemes: A report prepared for the Secretariat of the Convention for Biological Diversity (SCBD)***. Oxford: EcoSecurities.

Implementation

<http://www.cbd.int/forest/doc/other/ecosecurities-report-2009-02-en.pdf>

Ebeling, J., & Yasue, M. (2008). **Generating carbon finance through avoided deforestation and its potential to create climatic, conservation and human development benefits**. *Philosophical Transactions of the Royal Society B-Biological Sciences*, 363(1498), 1917-1924.

REDD, Governance

Ecosystem Marketplace (Ed.). (2009). ***Forests: Taking root in the Voluntary Carbon Markets*** (Second ed.): Katoomba Group.

REDD, Implementation

"While the role of REDD in both the international and emerging US regulated systems is being hammered out, the voluntary carbon markets are serving not only as a testing ground for the development of REDD carbon credits, but also building up expertise and generating immediate action. This publication is designed to introduce practitioners to the carbon markets, in particular the voluntary markets, and the current climate for reforestation, afforestation and REDD projects generating carbon credits. It is a collection of articles and one book chapter commissioned by the Ecosystem Marketplace ([www.ecosystemmarketplace.com](http://ecosystemmarketplace.com))."

http://ecosystemmarketplace.com/documents/acrobat/ECM%20Forests%20II_eng.pdf

Eliasch, J. (2008). ***The Eliasch Review - Climate Change: Financing Global Forests***. U.K.: Office of Climate Change.

REDD, Implementation, Impact on the poor

This Review was commissioned by the Prime Minister. The Review is an independent report to government, prepared by Johan Eliasch with the support of the Office of Climate Change. It aims to provide a comprehensive analysis of international financing to reduce forest loss and its associated impacts on climate change. It does so with particular reference to the international efforts to achieve a new global climate change agreement in Copenhagen at the end of 2009.

The Review focuses on the scale of finance required to produce significant reductions in forest carbon emissions, and the mechanisms that, if designed well, can achieve this effectively to help meet a global climate stabilisation target. It also examines how mechanisms to address forest loss can contribute to poverty reduction, as well as the importance of preserving other ecosystem services such as biodiversity and water services.

<http://www.occ.gov.uk/activities/eliasch.htm>

Engel, S., & Palmer, C. (2008). ***"Painting the forest REDD?" Prospects for mitigating climate change through reducing emissions from deforestation and degradation***. Institute for Environmental Decisions.

REDD, Policy

http://unfccc.int/files/methods_science/redd/application/pdf/ied_wp03_engel_palmer.pdf

FAS. (2008). *The Juma Sustainable Development Reserve Project: Reducing Greenhouse Gas Emissions from Deforestation in the State of Amazonas, Brazil*. Amazonas Sustainable Foundation (FAS).

REDD, Implementation

Project Design Document For validation at: Climate, Community, & Biodiversity Alliance

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Fatheuer, T., & Siakor, S. K. A. (2007). *More haste – Less speed: How to make forests work for the climate and the people*. Berlin: Heinrich Böll Foundation.

REDD

<http://www.boell.de/downloads/Forest.pdf>

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REDD

<http://www.forestcarbonportal.com/article.php?item=581>

FCP. (2009). **UN-REDD Programme: Engagement of Indigenous Peoples and Civil Society**.

REDD, Indigenous peoples

<http://www.forestcarbonportal.com/article.php?item=519>

FCP. (2009). **World Agroforestry Center Launches REDD-Alert Project**. *Forest Carbon Portal*.

REDD

<http://www.forestcarbonportal.com/article.php?item=627>

FCP, & Schalatek, L. (2009). **Strategies and Examples of Designing Gender Aware REDD Projects**. *Forest Carbon Portal*.

REDD

Excerpt from Gender and Climate Finance: Double Mainstreaming for Sustainable Development

(http://www.boell.org/docs/DoubleMainstreaming_Final.pdf)

<http://www.forestcarbonportal.com/article.php?item=538>

FOEI. (2008). **REDD myths: A critical review of proposed mechanisms to reduce emissions from deforestation and degradation in developing countries**. *Friends of the Earth International*(24).

REDD, Governance

<http://www.foei.org/en/publications/pdfs/redd-myths/view>

<http://www.foei.org/en/media/archive/2008/forest-carbon-trading-exposed>

Forest Peoples Programme, The Amazon Alliance, & The Rights and Resources Initiative. (2008). **As Donors Rush to Conserve Tropical Forests to Slow Climate Change, Indigenous Leaders Predict ‘Devastation’ from Carbon Grabs in Name of Conservation: Citing History of Good Stewardship, Forest Dwellers Demand Role in REDD; Call for Secure Land Rights, Relief from Forces of Conservation, Industry**. Unpublished press release.

REDD, Indigenous peoples

Press release on indigenous perspectives on climate change and conservation issues presented at the World Conservation Congress in Barcelona.

http://www.rightsandresources.org/publication_details.php?publicationID=851

Förner, C., Blaser, J., Jotzo, F., & Robledo, C. (2006). **Keeping the forest for the climate's sake: Avoiding deforestation in developing countries under the UNFCCC.** [Article]. *Climate Policy*, 6(3), 275-294.

REDD, Policy

Fry, I. (2008). **Reducing Emissions from Deforestation and Forest Degradation: Opportunities and Pitfalls in Developing a New Legal Regime.** *Review of European Community & International Environmental Law (RECIEL)*, 17(2).

REDD

http://www.fern.org/media/documents/document_4263_4264.PDF

<http://www3.interscience.wiley.com/journal/121376026/issue>

Gibbs, H. K., Brown, S., Niles, J. O., & Foley, J. A. (2007). **Monitoring and estimating tropical forest carbon stocks: making REDD a reality.** *Environmental Research Letters*, 2(4), 045023.

REDD, Implementation

Part of Focus on Tropical Deforestation and Greenhouse Gas Emissions

(<http://www.iop.org/EJ/abstract/1748-9326/2/4/045021>)

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Gibbs, H. K., & Herold, M. (2007). **Tropical deforestation and greenhouse gas emissions.** *Environmental Research Letters*, 2(4), 045021.

REDD, Implementation

Member's pick suggested by: Ken Brown, University of Vermont

Introduction article for a series of letters on tropical deforestation and greenhouse gas emissions.

The series addresses many of the technical issues and methods for the implementation of a REDD program.

<http://stacks.iop.org/1748-9326/2/045021>

Grassi, G., Monni, S., Federici, S., Achard, F., & Mollicone, D. (2008). **Applying the conservativeness principle to REDD to deal with the uncertainties of the estimates.**

Environmental Research Letters, 3(3), 035005.

REDD, Implementation

Part of Focus on Tropical Deforestation and Greenhouse Gas Emissions

(<http://www.iop.org/EJ/abstract/1748-9326/2/4/045021>)

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Grieg-Gran, M. (2006). **The cost of avoiding deforestation.** London: International Institute for Environment and Development.

Implementation, REDD

This report supported the work of the Stern Review on avoided deforestation.

<http://www.iied.org/pubs/pdfs/G02290.pdf>

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REDD

<http://www.iied.org/pubs/pdfs/11058IIED.pdf>

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Grieg-Gran, M. (2008). ***The costs of avoiding deforestation. Update of the report prepared for the Stern Review of the Economics of Climate Change.*** London: International Institute for Environment and Development.
Implementation, REDD

This report updates the estimates of opportunity costs produced for the Stern Review in October 2006 to take account of upward trends in commodity prices.

<http://www.iied.org/pubs/pdfs/G02489.pdf>

<http://www.iied.org/pubs/display.php?o=G02489>

Grieg-Gran, M. (2009). **The cost of avoiding deforestation.** [project webpage]. *International Institute for Environment and Development*.

Deforestation, REDD, Implementation

Project description and links to resources.

<http://www.iied.org/sustainable-markets/key-issues/environmental-economics/the-cost-avoiding-deforestation#about>

Griffiths, T. (2008). ***Seeing 'REDD'? Forests, climate change mitigation and the rights of indigenous peoples and local communities*** (Update for Poznan (UNFCCC COP 14) ed.). England: Forest Peoples Programme.

REDD, Indigenous peoples

From executive summary: This review highlights that while there is a growing recognition among many governments that indigenous peoples and local communities need to be consulted and rights addressed, existing intergovernmental proposals on decisions on REDD contain no clear commitments to address rights and equity issues. It is also noted that although new international forest and climate funds like the UN REDD Programme have pledged to uphold the UN Declaration on the Rights of Indigenous Peoples and to apply a rights-based approach, they seem reluctant to condition REDD funds on rights recognition and they lack effective oversight and accountability mechanisms. Scrutiny of the World Bank's Forest Carbon Partnership Facility finds that its own rules that require prior consultation with forest peoples have not been applied in its early operations as governments developing REDD plans for the Bank have so far failed to properly involve forest peoples.

http://www.forestpeoples.org/documents/ifi_igo/seeing_redd_update_draft_3dec08_eng.pdf

Griscom, B., Shoch, D., Stanley, B., Cortez, R., & Virgilio, N. **Implications of REDD baseline methods for different country circumstances during an initial performance period.** *The Nature Conservancy*.

REDD, Implementation

Compares outcomes of seven proposed baseline approaches.

http://unfccc.int/files/methods_science/redd/application/pdf/redd_baselines_03_06_09.pdf

<http://www.tnrf.org/files/E-INFO->

[TNC_Implications_of_REDD_baseline_methods_for_different_country_circumstances_during_an_initial_performance_period_2009.pdf](http://www.tnrf.org/files/E-INFO-TNC_Implications_of_REDD_baseline_methods_for_different_country_circumstances_during_an_initial_performance_period_2009.pdf)

Gullison, R. E., Frumhoff, P. C., Canadell, J. G., Field, C. B., Nepstad, D. C., Hayhoe, K., et al. (2007). **ENVIRONMENT: Tropical Forests and Climate Policy.** *Science*, 316(5827), 985-986.
REDD, Policy

Haas, J. (2008). ***Saving the Amazon Rainforest by Sacrificing the Greenland Ice Sheet?*** Berlin: Heinrich Böll Foundation.

REDD

Why funding forest protection through the carbon market might mean the death blow to efforts to keep global warming below 2°C

<http://www.boell.de/ecology/climate/climate-energy-2015.html>

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Hall, A. (2008). **Better RED than dead: paying the people for environmental services in Amazonia.** *Philosophical Transactions of the Royal Society B-Biological Sciences*, 363(1498), 1925-1932.
REDD, Indigenous peoples, Governance, Impact on the poor

Halverson, E. (2009). **UN-REDD programme: Engagement of indigenous peoples and civil society.** *MEA Bulletin, International Institute for Sustainable Development*, 70.

REDD, Indigenous peoples, Governance

"It is widely understood that for reducing emissions from deforestation and forest degradation (REDD) to succeed, Indigenous Peoples and Civil Society Organisations (CSOs) must be heard, especially at the local level where land and other natural resource management decisions are made."
<http://www.iisd.ca/mea-l/meabulletin70.pdf> or <http://www.iisd.ca/mea-l/guestarticle70.html>

Harris, N. L., Petrova, S., Stolle, F., & Brown, S. (2008). **Identifying optimal areas for REDD intervention: East Kalimantan, Indonesia as a case study.** *Environmental Research Letters*, 3(3).

REDD, Implementation

<http://www.iop.org/EJ/volume/1748-9326/3> or <http://www.iop.org/EJ/abstract/1748-9326/3/3/035006>

Herold, M., & Johns, T. (2007). **Linking requirements with capabilities for deforestation monitoring in the context of the UNFCCC-REDD process.** *Environmental Research Letters*, 2(4), 045025.

REDD, Implementation

Part of Focus on Tropical Deforestation and Greenhouse Gas Emissions

(<http://www.iop.org/EJ/abstract/1748-9326/2/4/045021>)

<http://stacks.iop.org/1748-9326/2/045025>

IIED. (2009). **Financing REDD: How government funds can work with the carbon market.** [briefing]. *International Institute for Environment and Development*.

REDD, Governance

<http://www.iied.org/pubs/pdfs/17053IIED.pdf>

<http://www.iied.org/natural-resources/media/how-protect-forests-improve-lives-and-tackle-climate-change>

IIED. (2009). **Financing REDD: Meshing markets with government funds.** [briefing]. *International Institute for Environment and Development*.

REDD

<http://www.iied.org/pubs/pdfs/17053IIED.pdf>

IUCN. (2009). **Voting on REDD: Why and how should we invest in forest governance?**

www.iucn.org.

REDD, Governance

Discussion of results from a live 'cast your vote' workshop held at the World Conservation Congress in Barcelona, October 2008, in which participants were asked questions on the topic: What does it take to make REDD a viable proposition? The case for investing in forest governance.

http://cmsdata.iucn.org/downloads/voting_on_redd.pdf

Johannes, E., & Mai, Y. (2008). **Generating carbon finance through avoided deforestation and its potential to create climatic, conservation and human development benefits.** *Philosophical Transactions B: Biological Sciences*, 363(1498), 1917-1924.

REDD

Governance

Johns, T., Merry, F., Stickler, C., Nepstad, D., Laporte, N., & Goetz, S. (2008). **A three-fund approach to incorporating government, public and private forest stewards into a REDD funding mechanism.** *International Forestry Review*, 10(3), 458-464.

REDD, Indigenous peoples

Kaimowitz, D. (2008). **The prospects for Reduced Emissions from Deforestation and Degradation (REDD) in Mesoamerica.** *International Forestry Review*, 10(3), 485-495.

REDD

Kanninen, M., Murdiyarso, D., Seymour, F., Angelsen, A., Wunder, S., & German, L. (2007). **Do trees grow on money?: The implications of deforestation research for policies to promote REDD** (pp. 61p.). Bogor, Indonesia: Center for International Forestry Research (CIFOR).

REDD, Deforestation, Implementation

This paper has two objectives. First, it analyzes the past research on deforestation and summarizes the findings of that research, in terms of its relevance to the development of future REDD regimes. Second, it highlights areas where future research and methodological development are needed to support national and international processes on avoided deforestation and degradation. It is also available in Japanese and Spanish

<http://www.cifor.cgiar.org/Publications/Detail?pid=2347>

Karousakis, K. (2006). **Initial Review of Policies and Incentives to Reduce GHG Emissions from Deforestation.** Organisation for Economic Co-operation and Development (OECD).

REDD

http://unfccc.int/files/methods_science/redd/application/pdf/initial_review_of_policies_and_incentives_to_reduce_ghg_emissions_from_deforestation.pdf

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REDD, Implementation

http://unfccc.int/files/methods_science/redd/application/pdf/incentives_to_reduce_ghg_emissions_from_deforestation_lesson_learned_from_costa_rica_and_mexico.pdf

Karousakis, K., & Corfee-Morlot, J. (2007). ***Financing Mechanisms to Reduce Emissions from Deforestation: Issues in design and implementation***. Organisation for Economic Co-operation and Development (OECD).

REDD, Implementation

http://unfccc.int/files/methods_science/redd/application/pdf/financing_mechanisms_to_reduce_emissions_from_deforestation.pdf

Karsenty, A. (2008). **The architecture of proposed REDD schemes after Bali: facing critical choices**. *International Forestry Review*, 10(3), 443-457.

REDD, Policy, CDM

Karsenty, A., Guéneau, S., Capistrano, D., Singer, B., & Peyron, J.-L. (2008). ***Summary of the Proceedings of the International Workshop on "The International Regime, Avoided Deforestation and the Evolution of Public and Private Policies towards Forests in Developing Countries" held in Paris, 21-23rd November 2007***. CIRAD, IDDRI, CIFOR and GIP ECOFOR.

REDD, Policy

http://www.cirad.fr/ur/ressources_forestieres/content/download/1068/6065/file/Paris%20Workshop%20forest%20regime%20report-1.doc

(The presentations and agenda of the workshop are available:

http://www.cirad.fr/ur/index.php/ressources_forestieres/actualites/colloques_et_seminaires/international_regime_avoided_deforestation)

Kindermann, G., Obersteiner, M., Sohngen, B., Sathaye, J., Andrasko, K., Rametsteiner, E., et al. (2008). **Global cost estimates of reducing carbon emissions through avoided deforestation**. *Proceedings of the National Academy of Sciences of the United States of America*, 105(30), 10302-10307.

REDD, Implementation

Lamb, D., Erskine, P. D., & Parrotta, J. A. (2005). **Restoration of degraded tropical forest landscapes**. *Science*, 310(5754), 1628-1632.

REDD

Levin, K., McDermott, C., & Cashore, B. (2008). **The climate regime as global forest governance: Can Reduced Emissions from Deforestation and Forest Degradation (REDD) initiatives pass a 'dual effectiveness' test?** *International Forestry Review*, 10(3), 538-549.

REDD, Governance, Policy

Lovera, S. (2008). **The hottest REDD issues: Rights, Equity, Development, Deforestation and Governance by Indigenous Peoples and Local Communities**. Commission on Environmental, Economic and Social Policies, IUCN.

REDD, Equity, Governance, Indigenous peoples

http://www.rightsandresources.org/publication_details.php?publicationID=904

Luttrell, C., Schreckenber, K., & Peskett, L. (2007). **The implications of carbon financing for pro-poor community forestry.** *Forest Policy and Environment Programme, Overseas Development Institute, Forestry Briefing 14.*

REDD, Impact on the poor

"REDD has the potential to act as a pro-poor influence in the regulation and distribution of benefits associated with community forestry"

<http://www.odi.org.uk/resources/download/438.pdf>

<http://www.odi.org.uk/resources/details.asp?id=438&title=implications-carbon-financing-pro-poor-community-forestry>

Miles, L., & Kapos, V. (2008). **Reducing greenhouse gas emissions from deforestation and forest degradation: Global land-use implications.** *Science*, 320(5882), 1454-1455.

REDD, Implementation

Mollicone, D., Achard, F., Federici, S., Eva, H. D., Grassi, G., Belward, A., et al. (2007). **An incentive mechanism for reducing emissions from conversion of intact and non-intact forests.** *Climatic Change*, 83(4), 477-493.

REDD, Implementation

Baseline determination

Mollicone, D., Freibauer, A., Schulze, E. D., Braatz, S., Grassi, G., & Federici, S. (2007). **Elements for the expected mechanisms on "reduced emissions from deforestation and degradation, REDD" under UNFCCC.** *Environmental Research Letters*(4), 045024.

REDD, Implementation

Part of Focus on Tropical Deforestation and Greenhouse Gas Emissions

(<http://www.iop.org/EJ/abstract/1748-9326/2/4/045021>)

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Motel, P. C., Pirard, R., & Combes, J. L. (2009). **A methodology to estimate impacts of domestic policies on deforestation: Compensated successful efforts for "avoided deforestation" (REDD).** *Ecological Economics*, 68(3), 680-691.

REDD, Governance

Myers, E. (2008). **Climate Change and Forestry: a REDD Primer.** *Forest Carbon Portal.*

REDD

This article has been adapted from "Policies to Reduce Emissions from Deforestation and Degradation (REDD) in Tropical Forests" (<http://www.rff.org/rff/Documents/RFF-DP-07-50.pdf>).

<http://www.forestcarbonportal.com/article.php?item=20>

Myers, E. C. (2007). **Policies to Reduce Emissions from Deforestation and Degradation (REDD) in Tropical Forests: An examination of the issues facing the incorporation of REDD into market-based climate policies.** Washington, D.C.: Resources for the Future - Discussion Paper.

REDD, Policy

<http://www.rff.org/rff/Documents/RFF-DP-07-50.pdf>

Neeff, T., & Ascui, F. (2009). **Lessons from carbon markets for designing an effective REDD architecture.** *Climate Policy*, 9(3), 306-315.

REDD, Implementation

Nengo, E. (2008). **Dialogue Between the World Bank and Indigenous Peoples in Central and East Africa on the Forest Carbon Partnership Facility (FCFP): Consultations on activities aiming at reducing emissions due to deforestation and land degradation.** [Workshop Report]. UNIPROBA, IPACC, World Bank, Bujumbura, Burundi - March 13 and 14, 2008.

REDD, Indigenous peoples

http://ipacc.org.za/uploads/docs/World_Bank_Redd_Report_English.pdf

Oestreicher, J. S., Benessaiah, K., Ruiz-Jaen, M. C., Sloan, S., Turner, K., Pelletier, J., et al. (2009). **Avoiding deforestation in Panamanian protected areas: An analysis of protection effectiveness and implications for reducing emissions from deforestation and forest degradation.** *Global Environmental Change-Human and Policy Dimensions*, 19(2), 279-291.

REDD, Implementation, Governance

Olander, L. P., Gibbs, H. K., Steininger, M., Swenson, J. J., & Murray, B. C. (2008). **Reference scenarios for deforestation and forest degradation in support of REDD: a review of data and methods.** *Environmental Research Letters*, 3(2), 025011.

REDD, Implementation

Part of Focus on Tropical Deforestation and Greenhouse Gas Emissions

(<http://www.iop.org/EJ/abstract/1748-9326/2/4/045021>)

<http://stacks.iop.org/1748-9326/3/025011>

Palmer, C., & Engel, S. (Eds.). (2009). **Avoided Deforestation: Prospects for mitigating climate change.** Abingdon, Oxon, UK: Routledge.

REDD

Explores the policy, scientific, and economic implications of avoided deforestation.

Parker, C., Mitchell, A., Trivedi, M., & Mardas, N. (2009). **The little REDD book** (2 ed.). Oxford: Global Canopy Programme.

REDD

The Little REDD Book is a guide to Reducing Emissions from Deforestation and Degradation in Developing Countries (REDD) within the UNFCCC process. It includes a comparative analysis of 33 key country and NGO/Scientific proposals. It aims to help the broad audience of forest stakeholders participating in or observing the UNFCCC process, including people who live and work in tropical forests, Parties to the UNFCCC, NGOs, the scientific community and the media. <http://www.globalcanopy.org/main.php?m=117&sm=176&t=1>

Pedroni, L., Dutschke, M., Streck, C., & Porrua, M. E. (2009). **Creating incentives for avoiding further deforestation: the nested approach.** *Climate Policy*, 9(2), 207-220.

REDD, Implementation

Peskett, L., & Harkin, Z. (2007). **Risk and responsibility in Reduced Emissions from Deforestation and Degradation.** *Forest Policy and Environment Programme, Overseas Development Institute, Forestry Briefing 15.*

REDD, Impact on the poor

Can risks for investors in REDD be reduced in a way that is in the interests of the poor?

<http://www.odi.org.uk/resources/download/426.pdf>

<http://www.odi.org.uk/resources/details.asp?id=426&title=risk-responsibility-reduced-emissions-deforestation-degradation>

Peskett, L., Huberman, D., Bowen-Jones, E., Edwards, G., & Brown, J. (2008). ***Making REDD work for the Poor***. Poverty Environment Partnership (PEP).

REDD, Impact on the poor

Making REDD Work for the Poor outlines how the design of REDD could influence its poverty implications and the key requirements for ensuring that REDD works for the poor.

<http://www.odi.org.uk/resources/download/2580.pdf>

<http://www.odi.org.uk/resources/details.asp?id=2580&title=making-redd-work-poor>

Peskett, L., Huberman, D., Bowen-Jones, E., Edwards, G., & Brown, J. (2008). ***Making REDD work for the Poor: Summary***. *Poverty Environment Partnership (PEP) Policy Brief*.

REDD, Impact on the poor

Based on the full report 'Making REDD Work for the Poor' (Peskett et al., 2008)

<http://www.odi.org.uk/resources/download/2581.pdf>

<http://www.odi.org.uk/resources/details.asp?id=2581&title=making-redd-work-poor>

Potvin, C., Guay, B., & Pedroni, L. (2008). ***Is reducing emissions from deforestation financially feasible? A Panamanian case study***. *Climate Policy*, 8(1), 23-40.

REDD, Implementation

Rai, M. (2009). ***REDD and the rights of Indigenous Peoples: Ensuring equity and participation in World Bank funds***. *Bretton Woods Project: At Issue*(Update 65).

REDD, Indigenous peoples, Equity

Opening paragraph: "One of the most contentious issues under discussion in current climate change debates is how to reduce emissions from deforestation and degradation (REDD) by ensuring protection of the world's rainforests. Mrinalini Rai of the International Indigenous Peoples Forum on Climate Change argues that this initiative, heavily backed by the World Bank among others, raises questions about how to ensure fair compensation to those developing countries that undertake a commitment to such reductions."

<http://www.brettonwoodsproject.org/art.shtml?x=564322>

Richardson, K., Steffen, W., Schellnhuber, H. J., Alcamo, J., Barker, T., Kammen, D. M., et al. (2009). ***Synthesis Report: Climate Change Global Risks, Challenges, and Decisions: Copenhagen 2009, 10-12 March***. University of Copenhagen.

REDD, General

Key Message 5 "Inaction is inexcusable" Includes discussion of REDD, and figure (14) analyzing emissions from deforestation under seven REDD design options.

<http://climatecongress.ku.dk/pdf/synthesisreport>

<http://www.climatecongress.ku.dk>

Robledo, C., & Ma, H. O. (2008). ***Great expectations Why there are so few forestry projects under the Clean Development Mechanism***. *Tropical Forest Update*, 18(3).

CDM, REDD

<http://www.itto.int/en/tfu/id=1877>

http://www.itto.int/direct/topics/topics_pdf_download/topics_id=1879&no=0
also at (<http://www.forestcarbonportal.com/article.php?item=285>)

Rose, T. (2009). **Picking up the REDD Tab: Who will pay to fight deforestation and how?** *Forest Carbon Portal*.

REDD

<http://www.forestcarbonportal.com/article.php?item=233>

Santilli, M., Moutinho, P., Schwartzman, S., Nepstad, D., Curran, L., & Nobre, C. (2005). **Tropical Deforestation and the Kyoto Protocol.** *Climatic Change*, 71(3), 267-276.

REDD, Policy

Article arguing for compensated reduction of deforestation in post-Kyoto policy.

Sasaki, N., & Putz, F. E. (2008). **Do Definitions of Forest and Forest Degradation Matter in the REDD Agreement?** *SSRN eLibrary*.

REDD

<http://ssrn.com/paper=1306431>

Schwartzman, S., Nepstad, D., & Moutinho, P. (2008). **Getting REDD right: Reducing Emissions from Deforestation and Forest Degradation (REDD) in the United Nations Framework Convention on Climate Change (UNFCCC)**. Environmental Defense, The Woods Hole Research Center, and Instituto de Pesquisa Ambiental da Amazônia (IPAM).

REDD, Policy

<http://www.whrc.org/policy/BaliReports/assets/GettingREDDRight.pdf>

Skutsch, M., Bird, N., Trines, E., Dutschke, M., Frumhoff, P., de Jong, B. H. J., et al. (2007). **Clearing the way for reducing emissions from tropical deforestation.** *Environmental Science & Policy*, 10(4), 322-334.

REDD, Policy

Sohngen, B., Beach, R. H., & Andrasko, K. (2008). **Avoided deforestation as a greenhouse gas mitigation tool: Economic issues.** *Journal of Environmental Quality*, 37(4), 1368-1375.

REDD, Implementation

Task Force on REDD and Communities. (n.d.). **The hottest REDD issues: Rights, Equity, Development, Deforestation and Governance by Indigenous Peoples and Local Communities.** IUCN Commission on Environmental, Economic and Social Policy and the Global Forest Coalition.

REDD, Equity, Governance, Indigenous peoples

This discussion paper is a contribution to the debate about policies and incentives to reduce emissions from deforestation and forest degradation (REDD). It focuses on the potential of governance of forests by indigenous peoples and local communities, and discusses implications of envisaged REDD regimes for local rights. The note discusses why equity and community engagement should be a paramount consideration of REDD regime and highlights opportunities as well as potential complications and pitfalls. It argues that crucial links need to be drawn between effective REDD regimes, biodiversity conservation and human rights instruments like the UN Declaration on the Rights of Indigenous Peoples.

http://unfccc.int/files/methods_science/redd/application/pdf/final_version_redd_and_communities_briefing.pdf

Tauli-Corpuz, V. (2008). **Statement of the United Nations Permanent Forum on Indigenous Issues (UNPFII). Agenda Item 2: Reducing emissions from deforestation and forest degradation in developing countries (REDD): approaches to stimulate action, Subsidiary Body for Scientific and Technological Advice (SBSTA), 2nd Meeting, 2 December, Poznan, Poland.**

REDD, Indigenous peoples

Press statement of Victoria Tauli-Corpuz on Human Rights Day

http://www.tebtebba.org/index.php?option=com_docman&task=doc_view&gid=297&tmpl=component&format=raw&Itemid=27

Tavurvur. (2009). **Rainforest Politics & the Carbon-Credit Trade in Papua New Guinea: An Essential Introduction.** [website/blog]. *Tubuans & Dukduks: A Blog about current issues and other topics impacting Papua New Guinea.*

REDD

<http://garamut.wordpress.com/2009/02/06/rainforest-politics-the-carbon-credit-trade-in-png-an-essential-introduction/>

TFD. (n.d.). **Forests and Climate.** [webpage]. *The Forests Dialogue.*

General, REDD

The Forests Dialogue priority issue. Includes information on meetings, including position papers.

<http://research.yale.edu/gisf/tfd/climate.html>

The Forests Dialogue (TFD). (2008). **Beyond REDD: The Role of Forests in Climate Change.** *FCC Initiative Statement*(no. 3).

REDD, Governance, Equity

The Forests Dialogue's consensus-based Statement on Forests and Climate Change, produced after 4 international multi-stakeholder dialogues involving more than 250 leaders from around the world. Includes Recommended Actions and issue-specific Briefing Notes.

http://unfccc.int/files/methods_science/redd/application/pdf/tfd_forests_and_climate_statement_w_briefing_notes.pdf

<http://research.yale.edu/gisf/tfd/pdf/fcc/TFD%20Forests%20and%20Climate%20Statement%20w%20Briefing%20Notes.pdf>

[also available in French, Spanish, and Portuguese from:

<http://research.yale.edu/gisf/tfd/climate.html>]

UNEP. (2008). **REDD Letter Day for Forests: UN and Norway unite to combat climate change from deforestation.** *United Nations Environment Program, New York, Nov. 28.*

REDD

Comment/Press release on the announcement of the UN-REDD Programme.

<http://www.unep.org/Documents.Multilingual/Default.Print.asp?DocumentID=545&ArticleID=5930&cl=fr>

Upadhyay, T. P., Sankhayan, P. L., & Solberg, B. (2005). **A review of carbon sequestration dynamics in the Himalayan region as a function of land-use change and forest/soil degradation with special reference to Nepal.** *Agriculture, Ecosystems & Environment*, 105(3), 449-465.

REDD

Van Oosterzee, R., & Garnett, S. T. (2008). **Seeing REDD: Issues, principles and possible opportunities in northern Australia.** *Public Administration and Development*, 28(5), 386-392.
REDD

Viana, V. M. (2009). **Seeing REDD in the Amazon: a win for people, trees and climate.** [Opinion]. *International Institute for Environment and Development*.
REDD

<http://www.iied.org/pubs/pdfs/17052IIED.pdf>

<http://www.iied.org/natural-resources/media/how-protect-forests-improve-lives-and-tackle-climate-change>

Vöhringer, F. (2004). **Forest conservation and the Clean development mechanism: Lessons from the Costa Rican protected areas project.** *Mitigation and Adaptation Strategies for Global Change*, 9(3), 217-240.
CDM, REDD, Policy

Walker, C. (2008). **Dorjee Sun: Rockin' for REDD!** *Forest Carbon Portal*.
REDD
<http://www.forestcarbonportal.com/article.php?item=22>

Wells, Z. **REDD Ready with a Gender Perspective: Is Africa prepared for the arrival of funds to slow deforestation?** *Forest Carbon Portal*.
REDD, Governance, Equity
<http://www.forestcarbonportal.com/article.php?item=393>

Zwick, S. (2007). **REDD Hot in Bali – and Very Confusing.** *Forest Carbon Portal*.
REDD

"Most people attending the Climate Change Conference in Bali agree: avoided deforestation, often referred to as REDD (Reduced Emissions from Deforestation and Degradation), will play a role in whatever regime replaces the Kyoto Protocol once it expires in 2012. But as the Ecosystem Marketplace finds out, the devil – and debate – is in the details."
<http://www.forestcarbonportal.com/article.php?item=21>

Zwick, S. (2008). **Painting the Town REDD: Merrill Lynch Inks Massive Voluntary Forest Deal.** *Forest Carbon Portal*.
REDD

"In a major demonstration of confidence in the viability of voluntary carbon offsets as a strategic investment, Merrill Lynch is raising equity for a 100-million-ton, for-profit avoided deforestation project in Aceh, Indonesia. Tellingly for the future of the forestry market, the decision to take the plunge had more to do with the cultural and biodiversity benefits than with the carbon itself. The Ecosystem Marketplace examines the deal and its significance."
<http://www.forestcarbonportal.com/article.php?item=43>

Zwick, S. (2009). **Brazilian Stakeholders Urge Feds to go REDD.** *Forest Carbon Portal*.
REDD
<http://www.forestcarbonportal.com/article.php?item=401>

Zwick, S. (2009). **New Survey: Credit Buyers see REDD.** *Forest Carbon Portal*.
REDD
<http://www.forestcarbonportal.com/article.php?item=422>

Zwick, S. (2009). **REDD Turns Amber in Bonn and Brazil.** *Forest Carbon Portal*.
REDD
<http://www.forestcarbonportal.com/article.php?item=378>

IX. Websites and Journals ([return to top](#))

Cimate change: Global risks, challenges and decisions. (2009). *IOP Conference Series: Earth & Environment Science*, 6(1-58).

General

Hundreds of one-page summaries, divided into 58 topical sessions, from the International Scientific Congress *Climate Change: Global Risks, Challenges & Decisions*, Copenhagen, 2009.

<http://www.iop.org/EJ/volume/1755-1315/6>

REDD - hot topic for climate change. (2009). [webpage]. *On the Fronlines of Climate Change*.

REDD

Lead article for open forum discussion of REDD. Webpage includes links to forum posts and background information.

<http://www.climatefrontlines.org/en-GB/node/169>

Carbon Balance and Management. (n.d.). [journal].

general

Carbon Balance and Management is an open access, peer-reviewed online journal that encompasses all aspects of research aimed at developing a comprehensive, policy relevant to understanding of the global carbon cycle.

<http://www.cbmjournal.com/>

Center for International Forestry Research (CIFOR). (n.d.). [website].

General, Livelihood, Governance

CIFOR is an international research and global knowledge institution committed to conserving forests and improving the livelihoods of people in the tropics.

Website includes an extensive database of publications (from CIFOR and other publishers), as well as information on research, events, and projects.

<http://www.cifor.cgiar.org/>

Civil Society Advisory Group on Forests Livelihoods and Climate Change. (n.d.). [website].

Rights and Resources Initiative and the Rainforest Foundation Norway.

Livelihood, Indigenous peoples

Website initiated based on the International Conference Rights, Forests and Climate Change, held October 15-17 , 2008 in Oslo, Norway. Rightsandclimate.org now serves as the website for the Civil Society Advisory Group on Forests Livelihoods and Climate Change (CSAG). Site includes news posts, and a tagged database of press releases and resources. <http://rightsandclimate.org/>

(more info on the CSAG at: [http://www.un-](http://www.un-redd.org/Portals/15/documents/events/Montreux/UN-REDD_PB2_Independent_Civil_Society_Advisory_Group_Terms_of_Reference.pdf)

[redd.org/Portals/15/documents/events/Montreux/UN-](http://www.un-redd.org/Portals/15/documents/events/Montreux/UN-REDD_PB2_Independent_Civil_Society_Advisory_Group_Terms_of_Reference.pdf)

[REDD_PB2_Independent_Civil_Society_Advisory_Group_Terms_of_Reference.pdf](http://www.un-redd.org/Portals/15/documents/events/Montreux/UN-REDD_PB2_Independent_Civil_Society_Advisory_Group_Terms_of_Reference.pdf))

Climate Funds Update. (n.d.). [website].

General

Information on the growing number of international funding initiatives designed to help developing countries address the challenges of climate change. Lists funds and funded projects with links to background information.

<http://www.climatefundsupdate.org>

Climate Strategies. (n.d.). [website].

Policy

An organization which convenes international groups of experts to assess international climate change policy. Some products are published in the Key Projects and Reports tab at:

<http://www.climatestrategies.org>

Climatic Change. (n.d.). [journal].

General

"An Interdisciplinary, International Journal Devoted to the Description, Causes and Implications of Climatic Change"

<http://www.springer.com/earth+sciences/meteorology/journal/10584>

Coalition for Rainforest Nations. (n.d.). [website].

General, Policy

"The Rainforest Coalition functions as an intergovernmental organization, with a Secretariat at Columbia University in New York City, that operates as a forum that seeks to facilitate consensus within the participating Coalition Nations on issues related to domestic and international frameworks for rainforest management, biodiversity conservation and climate stability."

<http://www.rainforestcoalition.org/>

Collaborative Partnership on Forests. (n.d.). [website].

General

The Collaborative Partnership on Forests (CPF) is a voluntary arrangement among 14 international organizations and secretariats with substantial programmes on forests (CIFOR FAO ITTO IUFRO CBD GEF UNCCD UNFF UNFCCC UNDP UNEP ICRAF WB IUCN). The CPF's mission is to promote the management, conservation and sustainable development of all types of forest and strengthen long term political commitment to this end.

<http://www.fao.org/forestry/cpf>

(brochure with more details about CPF <http://www.fao.org/forestry/media/12448/1/0/>)

Environment and climate change. (n.d.). [website]. *Belfer Center for science and international affairs.*

General

Searchable database of publications (over 1500) relating to environment and climate change.

http://belfercenter.ksg.harvard.edu/topic/37/environment_and_climate_change.html

The Forest Carbon Partnership Facility. (n.d.). [website].

REDD

The Forest Carbon Partnership Facility (FCPF) assists developing countries in their efforts to reduce emissions from deforestation and forest degradation (REDD) by providing value to standing forests. It was announced at CoP13 in Bali in December 2007 and became operational in June 2008.

<http://www.forestcarbonpartnership.org>

Forest Carbon Portal. (n.d.). [website].

Forest management

"Launched at the December 2008 UN Climate Conference of the Parties in Poznan, Poland, this satellite site to the Ecosystem Marketplace exists to fill knowledge and 'market intelligence' gaps with the goal of stimulating progressive land-based carbon market offset projects policy in the

regulated markets, and successful pilot projects in the voluntary markets." Site includes a 'toolbox' of resources on forest carbon projects, including: introductory reports, project design methodologies, market analyses etc.
<http://www.forestcarbonportal.com>

Global Environment Facility. (n.d.). [website].

General

The financial mechanism of the UNFCCC, the Global Environment Facility runs projects in climate change which help developing countries and economies in transition to contribute to the overall objective of the United Nations Framework Convention on Climate Change (UNFCCC). Administers the Special Climate Change Fund, and the Least Developed Countries Fund.
<http://www.gefweb.org>

Human rights and climate change. (n.d.). [website]. *Office of the United Nations High Commissioner for Human Rights.*

Equity, General

<http://www2.ohchr.org/english/issues/climatechange/index.htm>

International Forest Carbon Initiative. (n.d.). [website]. *Australia, Department of Climate Change.*

REDD, Implementation

Australia's \$200 million International Forest Carbon Initiative is a key part of Australia's international leadership on REDD. The Initiative supports international efforts on REDD through the UNFCCC. It is jointly administered by the Australian Department of Climate Change and AusAID.

The Initiative aims to demonstrate that REDD can be part of an equitable and effective post-2012 global climate change agreement. A central element of the Initiative is taking practical action on REDD through collaborative Forest Carbon Partnerships with Indonesia and Papua New Guinea. These partnerships demonstrate how the technical and policy hurdles to REDD might be addressed and provide lessons learned for input to REDD negotiations under the UNFCCC.
<http://www.climatechange.gov.au/international/publications/fs-ifci.html>

International Union for Conservation of Nature. (n.d.). [website].

IUCN supports research, policies, and projects, and advises governments, the United Nations and companies, putting biodiversity at the center of climate change solutions.
<http://www.iucn.org/what/climate/>

Mitigation and adaptation strategies for global change. (n.d.). [Journal]. *Mitigation and adaptation strategies for global change.*

General

An international journal devoted to scientific, engineering, socio-economic and policy responses to environmental change.
 Available from Springer: <http://www.springer.com/earth+sciences/meteorology/journal/11027>

Monitoring Matters. (n.d.). [website]. *Monitoring Matters Network.*

Implementation, Governance

The Monitoring Matters Network is an international network of researchers and practitioners working with innovative approaches to monitoring of natural resources, livelihoods and governance.
<http://www.monitoringmatters.org/>

On the Frontlines of Climate Change. (n.d.). [website].

Indigenous peoples, Equity, REDD, Adaptation

An internet forum launched by UNESCO, in partnership with the Secretariat of the Convention on Biological Diversity (SCBD), the Secretariat of the UN Permanent Forum on Indigenous Issue (SPFII) and the Office of the High Commissioner on Human Rights (OHCHR).

The goals of the Frontlines forum are to:

- Draw international attention to the knowledge and experiences of indigenous communities and peoples living in small islands, the Arctic and other vulnerable environments;
- Seek community-level observations on climate change impacts, as well as local efforts to cope with and adapt to these changes;
- Provide an opportunity for communities to voice their observations, experiences and concerns, and to share and exchange them with other communities;
- Build up a global database of local observations, experiences, practices and coping strategies;
- Support community-based research and educational activities related to climate change;
- Heighten the profile and impact of indigenous peoples and their knowledge in international climate change debates.

<http://www.climatefrontlines.org>

The Prince's Rainforest Project. (n.d.). [website].

Deforestation

The Prince's Rainforests Project (PRP) was set up in 2007 by HRH The Prince of Wales. The PRP's work is focused on two aims: 1) raise awareness of the damaging effects of deforestation for everyone, and 2) identify appropriate incentives that will encourage rainforest nations to stop burning down vast areas of valuable forests. Includes a proposal for emergency funding to help protect rainforests and to use incentives to encourage rainforest nations to continue to develop without the need for deforestation.

<http://www.rainforestsos.org/>

REDD: Protecting climate, forests and livelihoods. (n.d.). [website]. *International Institute for Environment and Development: Natural Resources Issues.*

REDD

Brief overview of current issues with REDD. Includes links to relevant publications.

<http://www.iied.org/natural-resources/key-issues/forestry/redd-protecting-climate-forests-and-livelihoods>

REDD-Monitor. (n.d.). [website].

REDD

Analysis, opinions, news and views about Reduced Emissions from Deforestation and Forest Degradation

<http://www.redd-monitor.org/>

Rightsandclimate's Bookmarks. (n.d.). [website]. *Civil Society Advisory Group on Forests Livelihoods and Climate Change.*

Livelihood, Indigenous peoples

CSAG's list of related documents, briefs, and webpages that provide background information about rights, forests and climate change: <http://delicious.com/rightsandclimate>.

(documents can be suggested via <http://rightsandclimate.org/resources/>)

Social Sciences in Forestry. (n.d.). [database]. *University of Minnesota.*

Member's pick suggested by: Ken Brown, University of Vermont

Up to date, and covering a wider range of material than 2cfc, this database indexes publications in 41 subject areas relating the social sciences to forestry. Among them are: legislation, policy and planning, management, economic development, investment and finance. Many of the references include a web-link to the publication.

<http://forestry.lib.umn.edu/bib/SSiF.html>

Tebtebba. (n.d.). [website]. *Indigenous Peoples' International Centre for Policy Research and Education, Baguio City, Philippines.*

Indigenous peoples

Organization, and website of resources, to support better understanding of the world's indigenous peoples, their worldviews, their resources and concerns

<http://www.tebtebba.org>

UN REDD Programme. (n.d.). [website].

REDD

The UN-REDD Programme was launched as a collaborative initiative between the UN Environment Programme (UNEP), the UN Development Programme (UNDP) and the Food and Agriculture Organisation of the United Nations (FAO). The Programme's main aim is to contribute to the development of capacity for implementing REDD and to support the international dialogue for the inclusion of a REDD mechanism in a post-2012 climate regime. The UN-REDD Programme will initially run until March 2010.

<http://www.un-redd.org/>

UNFCCC REDD information sharing web platform. (n.d.). [website].

REDD, General

This web platform provides information submitted by parties, relevant organizations and stakeholders with the aim of sharing such information provided. The information can be found under the following areas: Technical assistance; Demonstration activities; Country specific information; and Methods and tools.

http://unfccc.int/methods_science/redd/items/4531.php

International Alert. Climate change and violent conflict. [website].

Impact on the poor

Website with links to publications and other information.

The impact of climate change will make the poorest communities across the world poorer. Many of them are already affected by conflict and instability and thus face a dual risk. International Alert's new research finds that the consequences of climate change will fuel violent conflict, which itself hinders the ability of governments and local communities to adapt to the pressures of climate change.

http://www.international-alert.org/climate_change/index.php

www.cifor.cgiar.org



Center for International Forestry Research

CIFOR advances human wellbeing, environmental conservation and equity by conducting research to inform policies and practices that affect forests in developing countries. CIFOR is one of 15 centres within the Consultative Group on International Agricultural Research (CGIAR). CIFOR's headquarters are in Bogor, Indonesia. It also has offices in Asia, Africa and South America.

