

**Policy Department  
Economic and Scientific Policy**

**International Forest Policy:  
Integrated climate and  
forestry policy options**

**The implications of carbon financing for pro-poor  
community forestry:**

**How do we design forest policy tools  
to jointly address climate change,  
environmental and development goals?**

This study was requested jointly by the CLIM, ENVI and DEVE committees of the European Parliament. (Ref . to contract IP/A/ENVI/IC/2008-058)

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## Executive Summary

The present report has been requested by the European Parliament Committee on Environment, Public Health and Food Safety, the Temporary Committee on Climate Change and the Committee on Development. The study addresses the integrated climate and forestry policy options in developing countries, focussing on the implications of carbon financing for pro-poor community forestry. Specifically, it considers the implications of carbon financing for pro-poor community forestry, and responds to the following question: "*How do we design forest policy tools to jointly address climate change, environmental and development goals?*"

The themes covered in the report are:

- (i) To provide an overview of carbon finance initiatives and proposals;
- (ii) To analyse carbon finance initiatives/proposals targeting forest issues from the perspectives of: *climate change mitigation, biodiversity and other environmental issues, and development*;
- (iii) To offer recommendations on steps forward to promote a pro-poor forest agenda for UNFCCC (United Nations Framework Convention on Climate Change) negotiations, the spending of revenues from EU-based green house gas emission mitigation efforts, and other pertinent processes.

The methodology used is the desk review, based on our own ongoing research in the discipline, and the growing corpus of policy statements and policy-relevant published materials on these themes.

The report consists of six chapters. After a brief introduction to the study (Chapter 1), Chapter 2 offers a broad overview of the study themes and provides the context for the analysis and the framework within which it was carried out. The three substantive sections (Chapters 3-5) provide an analysis of carbon finance initiatives and proposals targeting forest issues from the three required perspectives: climate change mitigation (Chapter 3); biodiversity and other environmental contextual issues (Chapter 4); and development, particularly the welfare of the poor (Chapter 5). The final chapter (Chapter 6) reviews the findings of Chapters 3-5, and offers recommendations as to how pro-poor forest objectives might be taken forward.

The focus is on tropical forests as these make the largest contribution to greenhouse gases (GHGs) and have most links with the 'pro-poor community forestry' agenda. The main thrust of the argument is on how to use forest carbon finance to promote development and secure the welfare of the poor, and the material relating to climate change mitigation and biodiversity is presented largely in support of this concern, in line with the social implications of a 'resource perspective'.

### ***Overview of the study and its findings***

Three main types of carbon finance initiative are available or proposed to promote forestry endeavours on an international scale, and these are reviewed in the study (*Chapters 2 and 3*):

- Afforestation/reforestation projects of the Clean Development Mechanism (CDM), one of three flexible mechanisms available under the Kyoto Protocol, by which Annex 1 countries are able to meet their emissions reduction targets in non-Annex 1 countries;
- Reduced emissions from deforestation and forest degradation (REDD) the terms of which are presently being negotiated under the UNFCCC, and which are likely to include a range of financing mechanisms (regulated project based and market based mechanisms, national and market based mechanisms, and fund-based mechanisms);

- Voluntary projects, predominantly for afforestation and reforestation, with a few for REDD.

A number of international finance facilities have been announced in recent months, to support the implementation of climate change mitigation and adaptation options in developing countries. Many of these support carbon forestry, chiefly REDD, and these provide a fourth dimension of the study.

Carbon forestry has potential as a *climate change mitigation* instrument. However, of the relevant compliance mechanisms, only the CDM is currently operational in relation to forestry in non-Annex 1 countries, and this has not proven attractive, with only one fully registered project to date. CDM projects in general have not demonstrated high equity in geographical terms, and most are concentrated in emerging economies, not in the more needy less developed countries. The reasons for the lack of uptake of the CDM in the forestry sector are considered, including the non-recognition of forestry credits in the EU ETS.

*Voluntary projects* are not subject to UN compliance rules, and have been much more interested in the forestry sector. They have also operated more equitably than the CDM in international terms, with about twice the percentage of projects in the Least Developed Countries (LDCs) in Africa; about 18% are forestry projects (compared to only 1% under the CDM).

The main focus of international attention at present is on *REDD*, and this is where the greatest potential lies, from the perspectives both of volume of finance and development impact. The delivery mechanisms for REDD, in a compliance framework, are still under review, but a number of options are on the table. REDD has considerable potential as a cost-effective mitigation mechanism, although it is knowledge-intensive and costly to implement, so that both technical support and financial resources will be required for REDD to succeed. Whilst market-linked REDD systems could have some impact on carbon market prices and possibly divert investments away from other technologies, this depends on the assumptions made about a possible post-2012 agreement, including its scope with regard to both deforestation and forest degradation. If REDD is implemented in combination with more stringent caps on Annex 1 emissions, it offers potential for increasing abatement without increasing costs.

The *wider environmental effects* of carbon forestry are considered in relation to three areas of concern: enhanced biodiversity and biodiversity protection; soil quality and protection; water availability and quality (*Chapter 4*). The paucity of CDM forestry projects limits the evidence from this mechanism, though AR projects in general, including voluntary projects, are of concern, as plantations are often favoured with high levels of standardisation in species and age-class terms, so that biodiversity levels are very much lower than in natural ecosystems. Management practices may also have impacts on biodiversity. Standards therefore need to be respected, both internationally and nationally, and there is often scope for improvement in both domains. In principle, REDD should have positive biodiversity impacts, because it aims to conserve tropical forests, particularly old growth forests. However, REDD investments are likely to be concentrated in areas of high emissions, which are not necessarily areas of highest biodiversity, and additionality criteria could also make the recognised biological hotspots ineligible for REDD if they are already protected. Both AR and REDD projects need to take account of soil and water quality and conservation issues. Groundwater pollution could be a problem with AR projects, for example, and afforestation can also have negative short-term effects on water supply as well as long-term, and probably more beneficial, ones. REDD should be positive in principle, to the extent that it helps maintain existing water regimes, although consideration needs also to be given to its potential activity-shifting leakage effects.



It is the *developmental implications*, including pro-poor impacts, which are the most challenging aspect of carbon finance and this justifies the strong focus on these issues in the report. *Chapter 5* sets out a framework for understanding the implications of forest carbon finance for development, particularly the welfare of the poor (both forest-dependent and the wider category). The benefits and risks to the poor as regards the three mechanisms and the financing facilities are considered in terms of three dimensions of poverty (income and growth; equity; voice and choice).

Being projectized and subject to high levels of international regulation, CDM projects are not a major concern, as yet. The main lessons concern obstacles and how to overcome them. Voluntary markets have been more favourably disposed to forestry activities than compliance markets, being much less affected by the higher level of perceived investor risk. Voluntary projects tend to have a corporate social responsibility (CSR), rather than compliance, rationale, and are often implemented or co-implemented by NGOs and community groups, so that they should, in principle, be more pro-poor in their operation. However, there are concerns about the stringency of some standards, and the CSR rationale can have negative as well as positive effects, subordinating activities to external donor narratives rather than to the real needs of the poor.

The study examines the various options for REDD architecture as a potential compliance mechanism, though some of the issues are common to voluntary REDD. Two main areas are investigated:

- International design options common to all policy interventions covered by the UNFCCC.
- The likely implementation strategies at the national level.

A range of design options is screened for their implications for the poor, including: the baseline/reference levels; definitions (deforestation only or deforestation/degradation); market mechanism or fund; voluntary or regulatory; liability arrangements; and questions of spatial scale. The various architectural arrangements for delivery are also considered (the relationship between national frameworks and projects, for example, and whether the latter are nested within a national framework of liability). The ways in which REDD funding might be translated into national low-carbon strategies is an under-researched area, and there are grounds for concern on at least four fronts:

- The cost and political feasibility of the enabling reforms required in many LDC contexts
- The questionable record to date of many of the implementation strategies proposed to relieve pressure on the forest, particularly ‘alternative income generating activities’.
- The plethora and complexity of the financing mechanisms presently on offer (or recently announced), to cover the various stages of REDD preparedness and implementation.
- The likely shortfall in the international funding available.

These themes are brought together in the concluding chapter (Chapter 6). Realistically, the likelihood is that REDD activities in most LDC environments will be heavily dependent on aid funding (official and/or voluntary), at least in the initial phase. Discretionary aid funding is not only likely to deliver much lower volumes of finance than a direct market mechanism, but may also suffer from fungibility with more traditional areas of development assistance, to the detriment of both. In the context of these constraints, the EU proposal to devote a portion of EU ETS auction revenues to the forest sector has much to recommend it, although the details of the delivery mechanism are yet to be clarified.

Such a levy-based arrangement would offer benefits in relation to volume, relative stability and regularity of delivery, and freedom from politicisation.

The study concludes with a set of policy recommendations for ways forward in supporting pro-poor carbon forestry targeted on five classes of stakeholder: the EU; UNFCCC; developing country policy makers; NGOs and civil society; and the private sector.

## CHAPTER 1: Introduction

Tropical forests have gained in prominence in international debates over the last few years largely due to their links to climate change. Such forests play a critical role in the climate system, acting as sinks which remove carbon dioxide from the air as they grow and as huge carbon stores in their woody biomass and soils, which when disturbed (e.g. through burning) release carbon dioxide into the atmosphere. Deforestation and degradation (DD) are thought to account for about 20 percent of anthropogenic carbon. There are potentially big opportunities for bringing forests into the climate change debate through efforts to slow DD rates or enhance carbon sinks. Using carbon markets to support such efforts by buying carbon environmental services from countries and projects is one way of achieving this. Some international mechanisms already exist for forest sinks projects under the Kyoto Protocol's flexible mechanisms and in the voluntary carbon markets but further international negotiations are underway about the design of possibly much larger mechanisms to reduce emissions from DD, often called 'Reduced Emissions from Deforestation and Degradation' (REDD) systems.

The study has been commissioned by the European Parliament in order to provide an overview and analysis of these systems from three perspectives: climate change mitigation; biodiversity, water and soil conservation and quality; and development. It is based on a desk review of policy statements, and academic and grey literature on carbon forestry.

Carbon forestry can be implemented in both temperate and tropical areas but the study focuses on tropical forests as these make the largest contribution to GHG emissions and have most links with the 'pro-poor community forestry' agenda. It focuses on carbon in 'forests' as defined under the UNFCCC and other standard definitions (e.g. FAO). It also makes some references to landscapes with trees that are sometimes not defined as forestland, as these are important in terms of relationships between carbon forestry and land degradation. However, it does not focus on wider debates about carbon markets and all land use sources/sinks (except where necessary to illustrate key debates).

The focus is on initiatives/proposals that have the specific objective to use finance to tackle carbon emissions or enhance carbon sinks related to forestry (i.e. it is not a broad review of all institutional fora to deal with AR and DD, such as the UNFF etc.). It does not cover debates about biofuels or about the role of forests in adaptation to climate change.

The body of this report is in three parts:

1. Part A: An overview of forest carbon finance and new international finance facilities for supporting links between forests and climate change (Chapter 2)
2. Part B: A review of the evidence about carbon forestry from three perspectives:
  - (a) Climate change mitigation (Chapter 3)
  - (b) Biodiversity and non-climate change related environmental issues (Chapter 4)
  - (c) Development and poverty reduction (Chapter 5)
3. Part C: Conclusions, including policy recommendations for ways forward in supporting pro-poor carbon forestry targeted on five classes of stakeholder: the EU; UNFCCC; developing country policy makers; NGOs and civil society; and the private sector (Chapter 6)

In accordance with the brief, the main focus of the report is on the development and pro-poor dimensions, for which a more in-depth and analytical framework is developed in chapter 5.

## PART A: OVERVIEW

### CHAPTER 2: Overview of carbon finance initiatives/proposals

#### Chapter 2 Summary

1. This chapter gives an overview of forest carbon markets and existing and proposed finance facilities to support forestry mitigation options.
2. There is a range of different international initiatives through which developed countries aim to engage with developing countries in mitigating climate change through forestry. These include carbon market mechanisms (where carbon is commoditised and traded in a competitive market) and fund-based mechanisms
3. *Forest carbon finance mechanisms* include:
  - i. internationally regulated CDM afforestation and reforestation (AR) projects;
  - ii. voluntary AR; and REDD projects;
  - iii. proposed internationally regulated REDD mechanisms, either linked to existing carbon markets; trading in parallel markets; or using international funds in a similar way to existing aid in the sector
4. *CDM AR projects*: Only afforestation and reforestation projects are currently allowed in the forestry category of the CDM ((16/CMP.1, Annex, paragraph 13; *see* Box 2.1). There are currently 5 afforestation and 18 reforestation projects in the CDM project pipeline and one registered CDM forestry project ('registered' means that the project has been fully approved and is eligible to trade). The volume of GHGs associated with these projects is around 39 million tonnes (CD4CDM 2008).
5. *Voluntary AR projects* are similar in practice to CDM AR projects, but there are some key differences. Two of the most important issues are the fact that CSR motivations appear to play a large role in driving demand for projects and that there is no central regulation of the market. These affect many of the other characteristics of the market, such as the overall scale of investment, geographic spread, the size of projects, the standards and procedures and project structuring. Estimates from recent surveys put the carbon volumes transacted in relation to voluntary forestry projects at around 6.3 million tonnes and the related financial scale at around \$26.5 million respectively. Some voluntary REDD projects already exist (e.g. Noel Kempff in Bolivia).
6. *Cross-cutting features of AR carbon projects*: There are a number of features of carbon forestry projects that vary between project types and are hard to distinguish between CDM and voluntary markets. These include:
  - i. Types of actors involved
  - ii. Types of transactions occurring
  - iii. Market risks and how they are dealt with
  - iv. Financing issues such as high transaction and implementation costs
7. *REDD*: Most REDD proposals are based on the simple theory that financial incentives are offered to developing countries to put in place initiatives to reduce emissions from deforestation or forest degradation. The size of emissions reductions is usually determined by comparing achieved DD rates against a reference scenario (commonly called a 'baseline'). There currently exist numerous different proposals which have arisen in order to overcome specific technical and political hurdles.

These can be classified into six main areas:

- i. Reference scenarios or levels: In most proposals for REDD, the magnitude of emission reductions is assessed by comparing actual deforestation and degradation rates against a reference scenario (commonly called a 'baseline') of what would have happened in the absence of the policy or measure. Other options include cap and trade approaches.
  - ii. Scope of accounting systems, which can be narrow (to only include deforestation emissions) or broader (e.g. including degradation or wider land use emissions)
  - iii. Framework: This relates to whether REDD is included within a future international climate regime under the UNFCCC, which is still far from certain
  - iv. Financial mechanisms: which could be delivered via international funds or through market mechanisms.
  - v. Liability instruments for dealing with investor risks such as permanence or leakage (see chapter 3). Various options have been proposed to deal with these risks, such as paying for credits only upon verification that emissions reductions have occurred, or holding reserves of credits as insurance against potential loss.
  - vi. Spatial scale. REDD objectives could either be met through developing projects, crediting national policies, or some combination of the two.
8. The design of REDD is likely to have huge implications from the three perspectives considered in this report.
9. *Forest finance facilities* cover a range of existing and proposed financing initiatives to support climate change mitigation through AR or REDD in developing countries. At least nine such initiatives have been launched in the last two years which fully or partially focus on forestry. They are all at different stages of design and implementation which makes comparison difficult, but they differ in a number of dimensions:
- i. *Aims and objectives*: Some facilities are more focussed on capacity building surrounding carbon markets, whilst others focus on 'pump' priming carbon markets.
  - ii. *Geographic spread* can vary, particularly between bilateral initiatives (e.g. Australia's funding focuses on Pacific forested nations)
  - iii. *Finance delivery mechanisms* which differ, for example, in whether grants or loans are offered or on how allocation is decided.
  - iv. *Financial sources* which could include carbon markets themselves or public funds collected through taxes and levies. One of the most promising options appears to be raising funds through the auction of emissions allowances in emissions trading schemes, as proposed by the EC amongst others. The EC indicates that if 3% to 5% of the total revenues were to be allocated to international forest mitigation, this could result in \$2.3 billion to \$3.9 billion per annum.
  - v. *Governance* of initiatives varies for example, in levels of Southern involvement in design and implementation processes, the speed of administrative processes etc.
10. All of the issues highlighted above for finance facilities will also have huge implications from the three perspectives considered in this report.

## 2.1 Introduction

This section provides an overview of the main forest carbon finance initiatives and proposals. Its objectives are to:

- Describe the current initiatives and proposals
- Classify these initiatives based on their main characteristics
- Explain why they have been developed and how they function (or are proposed to function).
- Provide a simplified typology of the different finance initiatives/proposals that can be used for reference in the rest of the document.

There are currently two main categories of forest carbon finance initiatives or proposals in international debates about climate change:

1. Forest carbon finance *mechanisms* for sequestering carbon, preserving stocks or reducing emissions; and
2. New *finance facilities* to support developing countries in forestry initiatives with mitigation objectives

These are highly interrelated, but in general finance facilities will be used to support the implementation of certain types of mechanisms. For example, the World Bank 'Forest Carbon Partnership Facility' (FCPF) is essentially a fund used to support the development of a certain type of international REDD mechanism.

The main characteristics of these two types of initiative are outlined in the following sections.

## 2.2 Forest carbon finance mechanisms

In the context of this report, '*forest carbon finance mechanisms*' are defined as:

'financial incentive mechanisms used to reward enhancement of carbon sinks in forests, preservation of carbon stocks in forests or reduction of emissions associated with deforestation and degradation'

There are essentially three theoretically distinct approaches for using forests to address climate change which correspond broadly with different parts of the forest transition curve (as shown in Figure 1):

1. Incentives for the *enhancement of carbon sinks* (sequestration), for example through afforestation and reforestation (AR) approaches which remove CO<sub>2</sub> from the atmosphere;
2. Incentives to *reduce emissions* by reducing rates of deforestation and degradation (REDD projects and programmes fall into this category). These approaches reduced emissions into the atmosphere;

- Incentives for the *preservation of carbon stocks*; there is no dedicated mechanism for providing incentives to maintain forest carbon stocks where they are not under threat, but some REDD proposals include such incentives, in that they promote forest conservation.

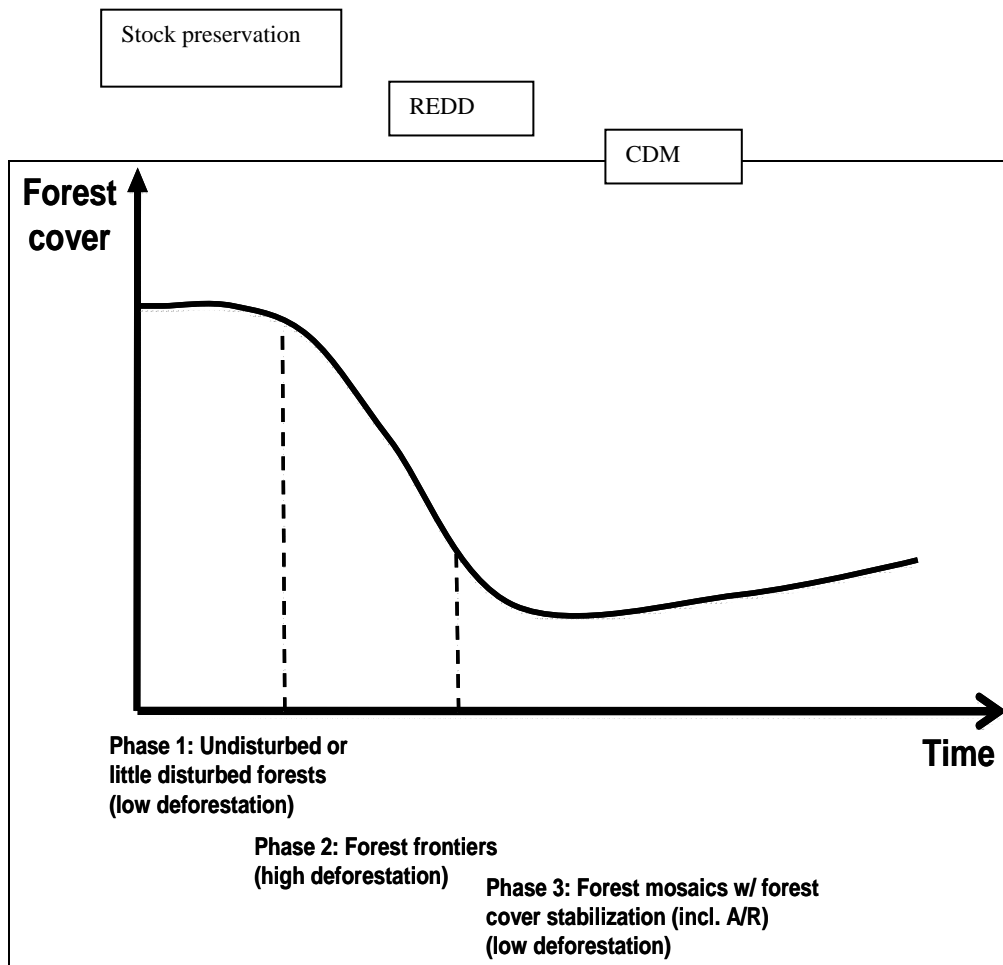


Figure 1: Illustration of how different forest carbon finance mechanisms address different phases of the forest transition curve

Those approaches exist both in regulated and voluntary carbon markets:

- The *regulated carbon market* is governed by rules established under the Kyoto Protocol. It includes the CDM, which currently only allows AR projects. Negotiations over the post-Kyoto deal in 2012 are discussing the possibility of introducing REDD into these regulated mechanisms;
- The *voluntary market* exists independently of internationally negotiated rules. All types of forestry projects are therefore possible and there are existing examples of both AR and REDD mechanisms in voluntary markets.

Table 1 gives an overview of the three main types of mechanisms that are currently being used or are proposed. Their main characteristics are described in detail in the following paragraph.

**Table 1: Types of carbon forestry projects by market type and theoretical impact on atmospheric GHG concentrations. Green = existing; orange = proposed**

	<i>Enhancing sinks</i>	<i>Preserving stocks</i>	<i>Reducing emissions</i>
<i>Regulated carbon markets</i>	<i>CDM AR projects</i>	<i>Some REDD proposals</i>	<i>Proposed REDD programmes or projects</i>
<i>Voluntary carbon markets</i>	<i>Voluntary AR projects</i>		<i>Voluntary REDD projects</i>

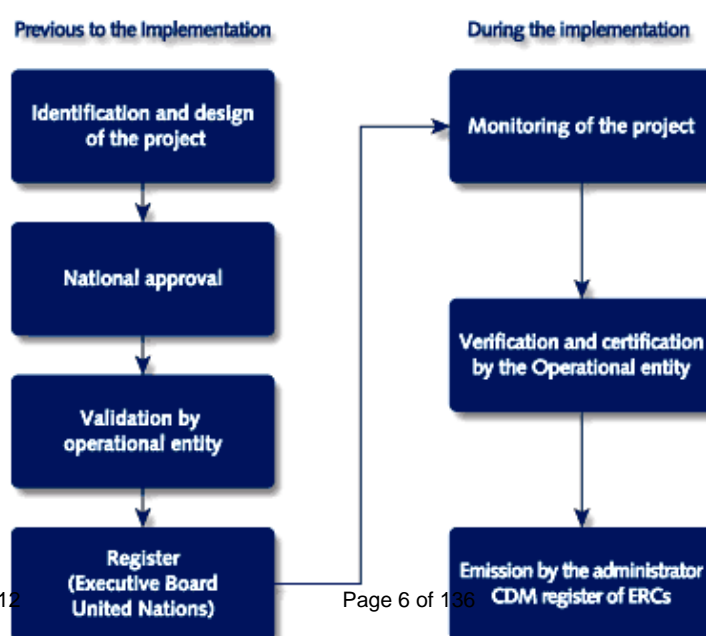
### 2.2.1 CDM AR projects

The CDM is one of a number of flexible market mechanisms regulated under the Kyoto Protocol, and allows Annex 1 (developed) countries to meet their emissions targets by implementing carbon sequestration, renewable energy or energy efficiency projects in non-Annex 1 (developing) countries. The main factor driving demand in this market is the binding emissions commitments that Annex 1 countries have made, as signatories to the Kyoto Protocol.

Only afforestation and reforestation projects are currently allowed in the forestry category of the CDM ((16/CMP.1, Annex, paragraph 13; *see* Box 2.1). There are currently 5 afforestation and 18 reforestation projects in the CDM project pipeline and one registered CDM forestry project ('registered' means that the project has been fully approved and is eligible to trade). The volume of GHGs associated with these projects is around 39 million tonnes (CD4CDM 2008).

The CDM has a standard seven-stage project cycle for all projects in order to ensure high standards and comparability of GHG removals or emission reductions between project types, and to reduce investment risks (see Figure 2). After the identification of a promising project activity and its detailed design according to an approved methodology, the activity needs to obtain host country approval from a designated government institution - the *Designated National Authority* (DNA). The approval letter together with the documentation of project design is validated by a third party, the *Designated Operational Entity* (DOE), before it can be registered with the UNFCCC. During the operational phase, emission reductions have to be periodically monitored, and the monitoring results are again verified by an independent third party. Only if this verification is positive and the project performs according to its design and projections can carbon credits be issued by the UN (Ebeling et al. 2007).

**Figure 2: The CDM project cycle. Source: Ebeling et al. 2007**





### **Box 1: AR Projects and the CDM**

Afforestation is defined as “the direct human-induced conversion of land that has not been forested for a period of at least 50 years to forested land through planting, seeding and/or the human-induced promotion of natural seed sources. Reforestation is defined as “the direct human-induced conversion of non-forested land to forested land through planting, seeding and/or the human-induced promotion of natural seed sources, on land that was forested but that has been converted to non-forested land.

The decision to limit forestry to AR projects only, under the CDM, was for a number of reasons, including:

- The possibility that forestry projects could divert attention from tackling fossil fuel usage which is the main cause of emissions.
- The view that LULUCF projects cannot physically deliver permanent emissions reductions.
- Concerns about the technical feasibility of establishing such projects; specifically, the inadequacy of mechanisms to deal with issues such as non-permanence of carbon storage; potential emissions 'leakage' problems.
- The risks that the temporary and reversible nature of such activities would pose in a company-based trading system.
- The liability risks that Member States would incur.
- The infeasibility and excessive cost of monitoring and reporting of such emissions, at a level comparable to the monitoring and reporting of emissions from installations currently covered by the system.
- The negative consequences of such inclusion as regards the simplicity, transparency and predictability of the ETS.
- The risk of flooding i.e. the risk that the high of quantity of potential credits entering the system could undermine the functioning of the carbon market; this could only be avoided if fungibility between the two were to be circumscribed, in which case the benefits of including LULUCF was felt to be limited.

The European Commission’s view is that global deforestation could be better addressed through other instruments, for example using part of the proceeds from auctioning allowances in the EU ETS to generate additional revenues which could be invested in LULUCF activities.

For the first commitment period, reforestation activities will be limited to reforestation occurring on those lands that did not contain forest on 31 December 1989” (16/CMP.1, Annex, paragraph 1).

See:

<http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/08/35&format=HTML&aged=0&language=EN&uiLanguage=en>

### 2.2.2 Voluntary AR projects

Voluntary AR projects are similar in practice to CDM AR projects, but there are some *key* differences which are summarised in Table 2. Two of the most important issues highlighted by this table are the fact that CSR motivations largely drive demand for projects (Boyd *et al.* 2007) and that there is no central regulation of the market. These affect many of the other characteristics of the market, such as the overall scale of investment, geographic spread, the size of projects, the standards and procedures and project structuring. They all have implications in terms of mitigation, wider environmental issues and development that will be discussed later in the report.

The diversity of project types in voluntary AR markets is greater than the CDM. The terms ‘afforestation’ and ‘reforestation’ are subject to interpretation in voluntary projects, so can effectively include any type of planting activity. However, most offset providers either have their own standards which define such terms or use voluntary independent standards such as the ‘Voluntary Carbon Standard’ (VCS) to establish rules and definitions. These standards are similar to those in the CDM, although there are some important differences (for example, in approval processes, as below). These are designed to avoid some of the difficulties in the CDM such as high administrative costs.

It is difficult to obtain accurate figures about the size of the voluntary AR forestry market because there is no central regulatory authority, unlike the UNFCCC. Estimates from recent surveys put the carbon volumes transacted in relation to these projects at 6.3 million tonnes and the related financial scale at around \$26.5 million respectively.

The project cycle for most voluntary carbon projects is also similar to the CDM in most cases, although it should be noted that standards are very variable so it is hard to define what a typical project looks like. All projects avoid the ‘host country approval’ and ‘registration by the Executive Board’ stages that are features of the CDM cycle. However, projects will need to seek approval from local regulatory authorities in order to be implemented.

It should be noted that voluntary carbon markets are very difficult to characterise because many different types of trading relationships exist.

**Table 2: Comparison between CDM and voluntary carbon forestry projects.**

	<b>CDM AR</b>	<b>Voluntary AR (and Avoided deforestation)</b>
<b>Scale in pipeline (tonnes of CO<sub>2</sub>e)</b>	10,146,000 by 2012 from existing A/R projects (23 projects under validation and 1 registered project)	No data
<b>Volume transacted in 2007 (tonnes of CO<sub>2</sub>e)</b>	0.551 million in 2007	Around 2.8 million (2% for plantations; 8% for AR mixed native) (Avoided deforestation = 1.4 million)
<b>Average project size (tonnes of CO<sub>2</sub>e)</b>	67,600 / year (average of 23 A/R projects under validation or registered)	Most projects are < 5,000/ year
<b>Total financial value for projects</b>	(Bio Carbon Fund: Indicative contract value is US\$ 19.5 million for 4.7 million tCO <sub>2</sub> e, ERPA signed volume)	Total market approximately \$265 million with AR forestry investments estimated to represent about 10% (avoided deforestation = 5%)  (Volume-weighted average price in 2007: US\$8.2/tCO <sub>2</sub> e for A/R plantation, US\$6.8/tCO <sub>2</sub> e for A/R mixed native)
<b>Geographic spread</b>	Hard to evaluate as only one project is registered but when projects in the pipeline are included there are 11 in Asia, 4 in Africa and 3 in South America (CD4CDM 2008)	40,000 tCO <sub>2</sub> e in EU, 1,000 in non-EU, 273,000 in Canada, 1,507,000 in US, 312,000 in Latin America, 501,000 in Asia and 196,000 in Africa
<b>Main drivers of demand</b>	Compliance with internationally agreed targets	CSR and possibility of future regulation
<b>Standards and procedures</b>	CDM project cycle including 3rd Party verification by DOEs	No mandatory standards although many projects use similar project cycle, 3rd party verification and some independent standards such as the 'Voluntary Carbon Standard' (VCS)

Sources: Capoor and Ambrosi 2008; Hamilton et al. 2007; CD4CDM 2008; World Bank Biocarbon fund annual report 2007; Harris 2007)

### 2.2.3 Cross-cutting features of AR carbon forestry projects

There are a number of features of carbon forestry projects that vary between project types and are hard to distinguish between CDM and voluntary markets. These include:

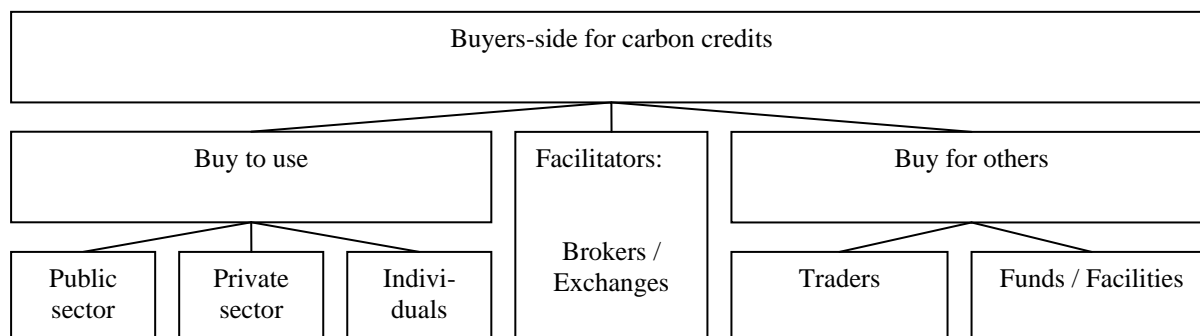
- Types of actors involved
- Types of transactions occurring
- Market risks and how they are dealt with
- Financing issues

There are **three main types of actors** in forest carbon markets:

- (1) End users that need credits to offset emissions for regulation or voluntary purposes;
- (2) Originators that generate and sell credits;
- (3) Intermediaries.

The intermediaries include carbon funds and facilities, traders, brokers, aggregators, and exchanges. These have evolved because project implementation requires specialist technical skills and familiarity with different country contexts. Buyers benefit from intermediaries bridging this gap and sellers of credits benefit from linkages to carbon markets and in many cases the provision of external support in project development.

Carbon credit buyers and intermediaries can therefore be categorized as shown in Figure 3 below, which reveals the large variety of relationships that is possible.



**Figure 3: Types of buyers for carbon-credit products.**

Source: Ebeling et al. 2007

Based on these different relationships between actors, **different types of transactions** are possible. These have an effect on the price paid for credits, volume and the timing of investments.

- Single project transactions or project blind transactions from a portfolio*, depending on whether buyers are interested in specific attributes of the investment. Carbon retailers interested in attaching environmental and social co-benefits to their sales may engage in single project transactions at higher prices but typically low volumes, whereas wholesale project blind transactions will trade at lower prices but higher volumes.

- *On the spot or forward transactions*, depending on whether the agreed date of credit delivery (and usually of payment) lies in the future or is shortly after signature. Forward transactions may help to meet future regulation at lower cost, but prices will depend on risks related to guaranteed delivery of credits.
- *Carbon exchange transactions or over the counter transactions*. Carbon credits from projects that have already been verified have no risk profile regarding project success and are therefore much more standardized than credits in forward transactions. They can use carbon exchanges rather than individually negotiated contracts. In forward transactions for projects transactions are usually over the counter.

A key issue relating to the types of transactions is the **risk profile** of different projects (see Box 2).

Of particular interest in this report is how such risks can be managed. Typically, this involves the application of best practice (according to specified standards and procedures, for example for dealing with leakage and permanence) in projects, complemented by third party verification. However, risks and liabilities are also managed in other ways, including:

- *Spreading liabilities* through the carbon market supply chain. For example, sellers are by default liable for risks to projects but these liabilities could be shared to different degrees with buyers, depending on the terms negotiated in the Emissions Reduction Purchase Agreement (ERPA). The ERPA also describes procedures when sellers default on delivery (e.g. requiring replacement credits or claiming damages) or buyers default on payment. Credit ratings therefore become a key issue, particularly for small sellers.
- *Payment on delivery of credits*. As outlined above, carbon credits from projects that have already been verified entail no risks, whereas forward purchased credits can entail high risks.
- *Temporary credits* have also been developed in the CDM specifically to deal with the risk of non-permanence.
- *Use of risk buffers*, where a proportion of credits is withheld from sale as insurance in the event that a project does not achieve the expected GHG removals

### Box 2: Risk Profile of Projects

Risk is particularly important in AR carbon forestry projects because of the potential of non-permanence (due to factors such as forest fires or illegal deforestation activities) and leakage (which may be harder to monitor in forestry projects). But other risks exist, relating for example to host country approval of projects, through ‘country political risks’ (which for example includes questions over land tenure) to the ‘post-Kyoto’ risk (i.e. the uncertainty in post-2012 climate regime). The figure below highlights how different types of risk can affect the price paid for CERs. In general investors will be attracted to low risk transactions or situations where they can easily assess the risks inherent in investments. This is because higher prices can be obtained for credits from projects with lower risk profiles.

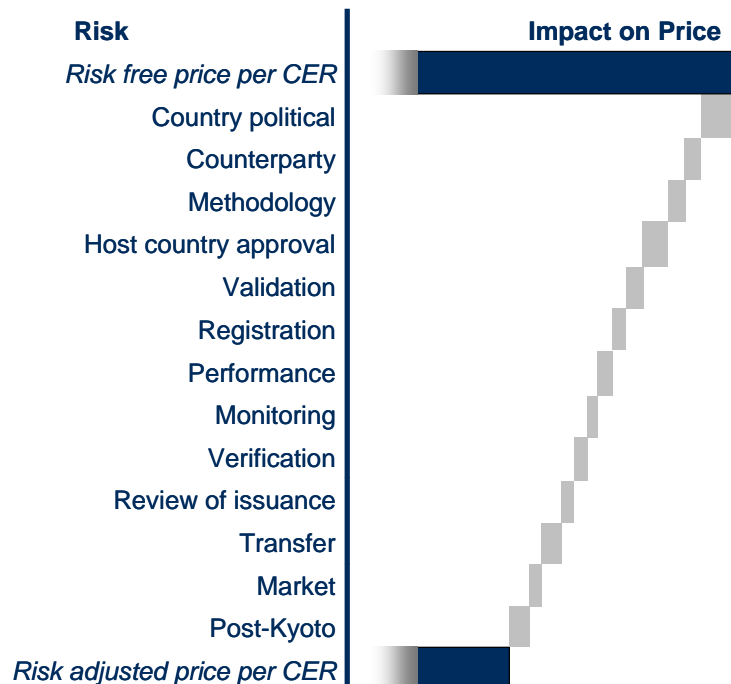


Figure 4: The effects of different risk categories on CER prices.

Source: Ebeling et al. 2007

**Financing issues** include transaction costs and implementation costs. *Transaction costs* are an important issue in project financing and include preparation, validation, registration and methodology development (if a new methodology has to be developed) which occur upfront. Costs typically run to \$100,000 or more in CDM projects, plus variable payments for registration and issuance, and on-going monitoring and verification, possibly \$200,000 (Neef and Henders 2007). Generally transaction costs are borne by the project developer, but it is common for ERPAs to include agreements for buyers to cover costs in return for lower prices. Economies of scale occur with transaction costs, meaning that larger projects tend to be more cost effective than smaller projects, although this may be to some extent balanced by the lower seed capital needed to finance smaller projects.

*Implementation costs* (planning, constructing and operating projects) also raise issues in relation to the volumes of finance generated and their timing. As noted above, higher prices are more likely to be achieved after verification of credits (payment on delivery), but this will delay income to the project.

The trade-offs between an early cash flow and low price or a delayed cash flow and higher price need to be carefully considered. If payment on delivery is chosen, then alternative sources of project finance may be needed depending on the frequency of verification (e.g. through government tenders that cover upfront costs; carbon funds such as the World Bank Biocarbon Fund; equity investment). In existing CDM forestry projects 5 yearly verification intervals are chosen, whereas in voluntary markets the intervals are variable – the choice of interval generally depends on the volume of credits (i.e. the size of the project) and the verification costs, which influence the costs involved

The issues listed above are exacerbated by the fact that carbon revenues rarely cover more than 10% of forestry project costs, meaning that projects have to accrue revenue from other sources (e.g. timber) in order to be profitable.

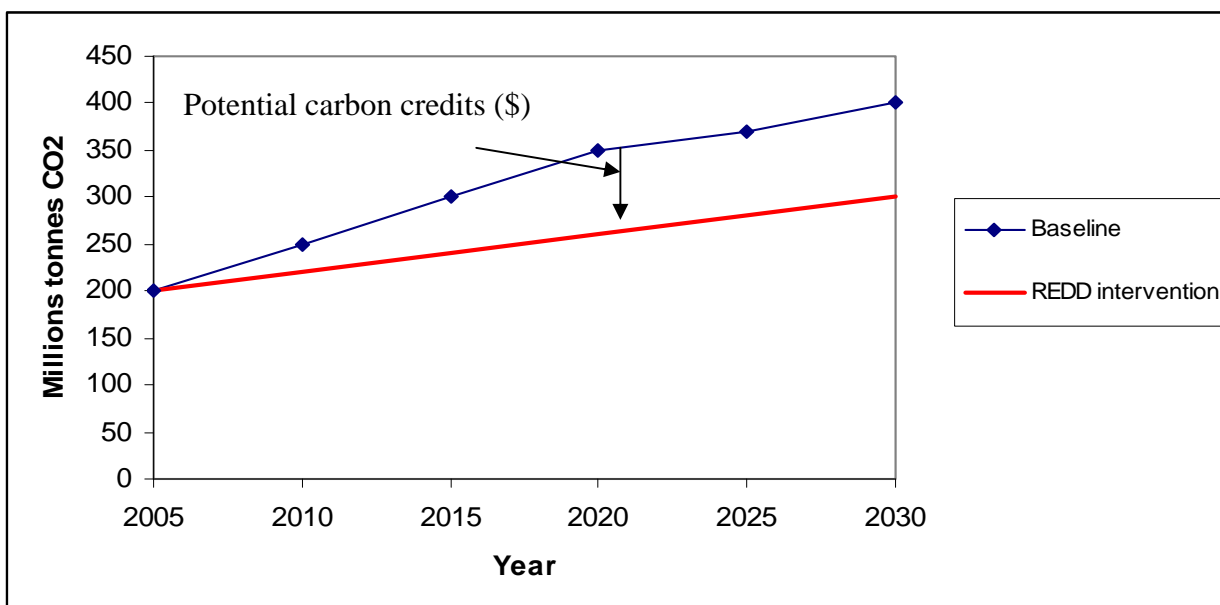
#### *2.2.4 REDD (Regulated and voluntary approaches)*

REDD (using the Compensated Reduction approach, which is probably the most developed and politically supported mechanism) is based on the simple theory that financial incentives are offered to developing countries to put in place new policies and measures to reduce emissions from deforestation or forest degradation. The size of emissions reductions is determined by comparing achieved DD rates against a reference scenario (commonly called a ‘baseline’) (See Figure 5). The reference scenario is a scenario of what would have happened in the absence of the policy or measure. This can be established in one of a number of ways, for example by:

1. Looking at historical trends in DD and extrapolating these into the future;
2. Modelling future trends using knowledge of drivers of DD;
3. A combination of these methods.

As time progresses, payments are made (likely to be ‘per tonne of emissions reduced’), usually once emissions reductions have been verified.

REDD projects already exist in the voluntary markets, accounting for about 5% of overall value. They could be significant contributors to the growth of the market (Hamilton et al. 2007). Regulated REDD mechanisms only exist as proposals at present, and modalities for their implementation are currently being discussed in international negotiations. Many proposals have been developed, with differences between them mainly arising due to technical and political hurdles that need to be overcome (these are summarised in Annex A). The main differences are summarised in Box 3.



**Figure 5: REDD baseline and credit theory.**

Source: Peskett et al. 2008

Estimates of the potential scale (in both carbon and financial terms) of REDD systems vary depending on the type of scheme proposed, assumptions made about their operation, assumptions about the future international climate regime (e.g. future Annex 1 targets, global emissions trends and the CDM performance) and assumptions about future carbon prices. Financial volumes range from \$3 to \$33 billion per year (Greig-Gran 2006; Stern 2008). The range of cost and emissions estimates is discussed more fully in Chapter 3.

### **Box 3: Main Design Issues for REDD**

**Reference scenarios or levels:** In most proposals for REDD, the magnitude of emission reductions is assessed by comparing actual deforestation and degradation rates against a reference scenario (commonly called a ‘baseline’) of what would have happened in the absence of the policy or measure. These scenarios could be applied at country and/or project level and may be based upon historical data only or include projections of expected future deforestation and degradation. The way baselines are established has a large bearing on the emissions reductions generate in REDD systems, making this a highly contested issue in the international negotiations. For example, if historical baselines are used, based on DD rates over the 1990-2005 period, then countries with low rates in this period would not benefit as much from REDD as those with high rates.

**Scope of accounting system:** This relates to what emissions sources and sinks are included in REDD and how these are defined. It includes questions over whether emissions from deforestation *and* degradation are included; forest definitions; and whether land use change in other ecosystems is included, such as peat lands which rank amongst the most important terrestrial carbon sinks.



**Framework:** This relates to whether REDD is included within a future international climate regime under the UNFCCC, which is still far from certain. There are proposals for REDD to be included within existing carbon market mechanisms under the Kyoto Protocol; under a separate Protocol (where trading of REDD credits would be isolated from other carbon markets); or as a separate fund or funds under the Convention. REDD already exists in voluntary carbon markets, operating outside the scope of the international climate change regime.

**Financial mechanism:** This is related to the choice of framework. Finance for REDD could be delivered via international funds or through market mechanisms, where carbon credits are traded between 'buyer' countries, or companies, and 'seller countries', or project implementers. Market mechanisms could be regulated under the UN system or via voluntary carbon markets using voluntary standards and verification procedures.

**Liability:** REDD programmes or projects could involve high financial risks, especially in relation to the possibility that emissions reductions are not permanent, due to fires, conflict, illegal activity etc. Various options have been proposed to deal with these risks, such as paying for credits only upon verification that emissions reductions have occurred, or holding reserves of credits as insurance against potential loss.

**Spatial scale:** In project-based approaches, REDD finance would be contingent on a reduction in forest loss within a given project or forest area, compared to some agreed reference scenario or level. Credits would be awarded to the project implementer (a private company, local government or community). In national approaches, a national reference scenario or level for reducing forest loss, linked to national accounting and monitoring systems, would be used. The latter approaches imply that payments would be made to national governments, which would determine how to use the funds in order to achieve the agreed emission reductions. A combination of these two approaches would be possible.

Given all of these different design variables for REDD, what might future schemes look like? *Five alternative models* are generally discussed, which bring the different elements outlined above together into feasible options for REDD (See Box 4). These different models are not always mutually exclusive and could exist in parallel. This is particularly the case for voluntary REDD projects, which are already established in some countries. These would need to be taken into account in the development of a national system, if they are not to raise the possibility of 'double counting' of emissions reductions (i.e. national governments claiming credits for emissions reductions over the whole forest estate and voluntary market sellers claiming credits for projects within this estate).

#### **Box 4: Alternative Models for REDD**

*Option 1: National crediting scheme under a UNFCCC agreement:* In this option a “baseline” or reference scenario of emissions from DD is set at a national level, most likely based on historical emission rates, such as average emissions during 1990-2005. Any verifiable reduction during the crediting period below this reference scenario would result in REDD carbon credits issued to the respective host country’s central government. Credits could either be fungible with credits generated from other abatement measures (e.g. the CDM), or separate markets could be established under the UNFCCC. Annex 1 countries could use REDD credits to meet mandatory emissions targets, but participation by developing countries would be voluntary. National governments would be credited in a similar way to sectoral crediting approaches being discussed in other sectors (Ward et al. 2008), though project-level crediting could also occur.

*Option 2: Project crediting scheme under a UNFCCC agreement:* This would function in a similar way to CDM projects, with project-level baselines and accounting and crediting occurring directly with projects rather than governments. Credits could either be fungible with credits generated from other abatement measures (e.g. the CDM), or separate markets could be established under the UNFCCC. Projects could include any sub-national entities such as individual companies, communities or local governments.

*Option 3: International fund with national-level incentives:* The main difference with this approach would be that incentive payments would come from international funds rather than carbon markets. These funds could be stocked by a range of actors (donors, NGOs or levies on other mechanisms – e.g. aviation taxes). The level of incentives could either be determined on the basis of emissions reductions (therefore against a reference scenario) or on other performance measures unrelated to emissions (e.g. the implementation of policies) Funds are probably most likely to be distributed to national governments (given that they will fund policy measures) but they could also fund projects (e.g. in a similar way to the GEF).

*Option 4: Voluntary markets only (without international agreement):* Voluntary markets for REDD already exist and are growing with the increasing interest in REDD. Given their underlying motivations and scale they are likely to be project-based. Voluntary REDD projects could exist alongside regulated systems as long as emissions reductions are not double-counted.

*Option 5: Hybrid approaches:* A hybrid approach could include a range of options, but two of the main ones proposed include (1) a project-based system operating within a national framework in which payments would be made to individual projects nested within a national baseline; governments would have to demonstrate reductions at least as large as the sum of all credits awarded to individual projects; and (2) a project approach is used at the outset and until a certain number of credits are generated, and then a national approach is implemented.

#### *2.2.5 Costs, actors and risks in REDD schemes*

One key difference between REDD and CDM/Voluntary AR projects is that the percentage of project costs that need to be covered by carbon revenues may be much higher than in CDM and voluntary projects. This is because less revenue may be available from the forest itself (e.g. timber or non timber forest products). However, this may also be offset by potentially lower costs of implementing REDD schemes, which would be less likely to require inputs such as seeds, planting and associated labour costs. These assumptions are obviously highly dependent on the types of policies and measures used to achieve REDD objectives.

For example, if plantations are established to reduce pressure on forests as part of a REDD strategy carbon income from the reduction in deforestation rate would need to be considered against the costs of establishing and running the plantation and associated revenue from timber sales. Alternatively, if law enforcement is increased to protect an area of forest, then carbon revenues would have to be considered against the costs of paying more forest guards.

Transaction costs (on a per-ton or per-hectare basis) for REDD may include the costs of quantifying carbon stocks, measuring and monitoring stock changes, third party verification, the preparation of project documentation and potential registration fees (if REDD is implemented in a similar way to the CDM). Costs may be lower than those in the CDM due to the larger scale of projects and the possibility that remote sensing data for monitoring and baseline establishment is available nationally (in national crediting systems). However, even in national schemes transaction costs could be high if, for example, governments implement many small-scale REDD projects (e.g. similar to the Costa Rica PES system) to achieve overall reductions in DD rates. As in CDM and voluntary projects a key issue is who bears the transaction costs, which may be agreed during the establishment of REDD contracts (whether with governments or projects). The locus of transaction costs could shift in some REDD schemes from being borne by project developers to being borne by national governments.

There is very little information on the possible transaction and implementation costs of different REDD approaches at international, national or sub-national levels, or on the ways in which carbon finance can or cannot help to meet these costs and therefore make REDD systems feasible.

The types of actors involved in REDD projects and the transactions occurring between them are likely to be similar to those in CDM and voluntary markets, especially in project-based schemes. However, in national REDD crediting schemes, sellers will be non-Annex 1 governments (as opposed to project developers) and buyers are likely to be Annex 1 governments or large corporations, with transactions occurring between these international buyers (Figure 6).

International actors could undertake transactions with national actors in one or both of two ways (*per* Figure 6):

1. Transactions take place with national governments which then redistribute sub-nationally;
2. Transactions take place directly with sub-national entities (either local governments or directly with projects).

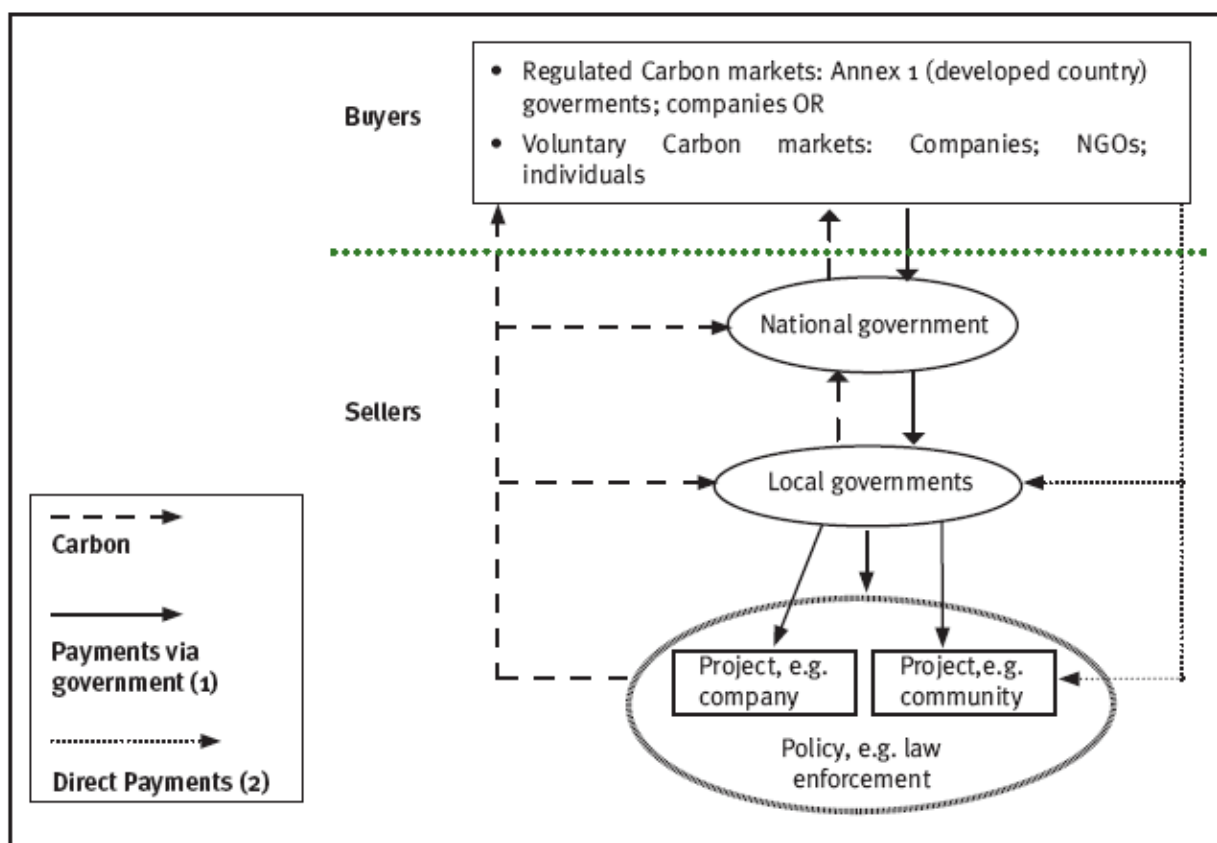
Payments could be used in a number of ways:

- i. to implement policies or infrastructure projects at a local level;
- ii. as incentives (e.g. to companies with concession licences to engage in more sustainable forest management);
- iii. as compensation (e.g. if forest is re-classified after concession licences have been issued).

In practice all of these options could be implemented in parallel within a given area. Carbon accounting could occur at the project, local and national level depending on the design of the system.

In international fund-based REDD schemes, *financers* would probably be Annex 1 governments, providing funds multilaterally or bilaterally. In market or fund-based national schemes, further redistribution of financing would then be likely and could occur through a range of mechanisms (for example, through national budgets or national forest funds). Such transfers could be made at a variety of levels – for example, to local governments to implement local policies, or alternatively, to individuals in a community ‘payment for environmental service’ (PES) schemes.

*Risks* in REDD schemes are also likely to be similar to CDM and voluntary AR projects, though there are some differences relating to permanence and leakage which are discussed in detail in chapter 3.



**Figure 6: Buyers and sellers in the National REDD Crediting Schemes**

Source: Peskett and Harkin 2007

### 2.3 Finance facilities

In this paper, *finance facilities* are defined as ‘financial initiatives to support the implementation of forestry projects or programmes that help to mitigate climate change’. At present, the main facilities are:

- (a) World Bank Forest Carbon Partnership Facility (FCPF)
- (b) World Bank Forest Investment Fund
- (c) Global Environment Facility (GEF) Tropical Forest Account
- (d) UN Collaborative Partnership on REDD
- (e) Global Initiative on Forests and Climate (Australia)

- (f) Global Climate Change Alliance, window on REDD (EU)
- (g) Norwegian Rainforest Fund
- (h) Japan Cool Earth Partnership
- (i) Congo Basin Forest Fund (UK and Norway)
- (j) World Bank Biocarbon Fund
- (k) NGO and philanthropic initiatives (e.g. Conservation International and the Nature Conservancy)
- (l) Existing bilateral and multilateral relationships and initiatives

Most of these facilities (except the Biocarbon Fund) have been announced only in the last year. Their total financial value is around \$14 billion. It is not yet possible to determine the percentage of this total that will be directed towards forests. Most of them are very new and exact arrangements for their operation are in the process of being worked out. However, there are already some differences in terms of the main objectives and how they will be managed and implemented. These are reviewed in the following sections, drawing on information contained in Annex A.

### *2.3.1 Aims and objectives*

All of the facilities listed above are intended to support carbon forestry initiatives, but they fall into two different categories:

1. **Funds to ‘pump prime’ carbon markets** by supporting the development of carbon forestry projects and piloting performance based incentive payments to these projects. The World Bank FCPF (which is not yet operational) and the World Bank Biocarbon Fund are examples of these types of facilities.
2. **Capacity building funds.** All the funds listed have some form of capacity building element. Some are focussed directly on supporting specific elements of carbon forestry mechanisms (e.g. ‘readiness’ activities such as establishing monitoring systems; providing upfront finance; and reducing investment risks which can be a barrier to projects). Others focus more generally on capacity building in the forest sector and supporting existing initiatives that could indirectly help in the implementation of carbon forestry projects (e.g. the Congo Basin Fund).

Cross-cutting both of these categories is the emphasis placed on relationships to the private sector. Many of the facilities emphasise the importance of mobilising private sector finance by creating an enabling environment for investment (e.g. by reducing investment risks), by providing up-front funding or promoting the use of public-private partnerships.

The various funds differ in relation to a number of variables, including geographical spread, delivery mechanism, financial source and governance.

### *2.3.2 Geographic spread of funding*

All of the facilities focus on tropical forest countries but they vary in their degree of regional targeting. This is generally based on existing donor relationships in the area (Australia and Japan target funds towards Asian countries). Funds such as the FCPF and GEF are global, although the exact spread of countries depends on their competitive fund allocation processes which are based on pre-agreed criteria and resource allocation frameworks. Some funds also specifically target the Least Developed Countries (e.g. the GCCA).

### 2.3.3 *Financial delivery mechanisms*

The way funds are delivered to countries or projects differs across the different facilities in five main dimensions:

- (i) Whether funding is delivered in the form of *grants or loans*. Whilst grant funding dominates most of the facilities, the difference is significant in the fact that loan-based finance contributes to country debt and may reduce the long term sustainability of programmes.
- (ii) Through national institutions or through independent financial mechanisms. Independent funding mechanisms may for example, include delivery to UN country offices (as proposed in the UN Collaborative Fund).
- (iii) Bilateral or multilateral processes. Most of the facilities are multilateral but the degree and type of multilateralism varies. For example, the Congo Basin Forest Fund is stocked by the UK and Norway, whilst the FCPF expects to have contributions from many different donors, including Annex 1 governments and NGOs, such as The Nature Conservancy. Mapping out exact relationships is difficult because many donors are putting finance into more than one initiative.
- (iv) Allocation systems: Some finance facilities promote market-based allocation systems, where allocation is decided purely on the basis of emissions reductions. Others use more traditional proposal and assessment processes based on standardised criteria.
- (v) Use of existing international initiatives. The recent EC Impact Assessment (SEC(2008) 2619/2) highlights a number of channels through which funding could be distributed and/or initiatives to be further supported (e.g. the FLEGT Action Plan; the ENTRP; the CBD).

### 2.3.4 *Financial sources*

There are a number of different financial sources that could be used to support carbon forestry activities. These include both 'traditional' and 'innovative' sources (Table 3). These sources have different characteristics, with some linked explicitly to spending mechanisms (e.g. carbon markets are both a source and spending mechanism) whilst others exist somewhat independently (e.g. tax or levy systems may be spent through a variety of channels). This poses some limits on the options for addressing the different needs of REDD systems (these are reviewed in chapter 3).

A large range of innovative financial sources has been proposed to support carbon forestry (these are reviewed extensively in e.g. World Bank 2008; UNFCCC 2008). However, three main sources dominate the debate:

1. Carbon market mechanisms
2. Use of auction revenues from emissions trading schemes
3. Taxes and levies

The pros and cons of the first option are reviewed extensively in this report. In general, it is estimated that large volumes of finance could be generated in fully fungible carbon markets, though this is a function of the depth of emission reduction commitments from industrialized countries, the fungibility of REDD credits on the carbon markets, and the details of the REDD rules and governance. In practice volumes are also likely to be limited both by technical constraints of such schemes and by Annex 1 countries imposing limits on the numbers of REDD credits allowed for trading to prevent market flooding.

Alternative proposals that prevent market flooding through a ‘Dual Markets’ approach or the ‘TDERM’ approach could also raise substantial funding, though it seems unlikely that such approaches would be favoured due to the added complexity they bring to an already complicated market.

The use of revenues from auctions in emissions trading schemes has become one of the favoured options for raising finance to support climate change initiatives. Such an approach has already been mandated by Germany and the EC has proposed that in the third phase of the EU ETS (2013-2017) a percentage of auction revenues is used to support forestry in developing countries. The Commission estimates that auction revenues could amount to \$80<sup>1</sup> billion annually by 2020 and the Parliament has called for 50% of these to be spent internationally. It also indicates that if 3% to 5% of the total revenues were to be allocated to forests, this would result in \$2.3 billion to \$3.9 billion per annum. It is not clear at present how this percentage figure for forests has been decided or what the final decision will be on allocation to forestry.

These figures are significant in terms of a new source of finance for supporting efforts to reduce deforestation and degradation. However, one of the fundamental problems would be in how to allocate revenues raised in an equitable way between countries and sectors. This might particularly be the case between spending on REDD versus spending on adaptation (which some would argue is more urgent for developing countries than the mitigation agenda, and less easily linked to high volume market-based financial mechanisms) or spending on domestic climate change initiatives as opposed to international initiatives.

Another issue is that the use of auction revenues in this way has implications in terms of the economic cost of the EU ETS on the EU’s domestic GDP, as the revenues are spent outside the EU economy. More research is required in order to establish whether such effects are significant.

Another option would be to place further levies or taxes on the carbon markets or on other markets. For example, it has been suggested that the 2% levy on the CDM that is currently used to stock the Kyoto Protocol Adaptation Fund, could be extended to cover other parts of the carbon market. Outside the carbon market, examples include an international air travel levy, a tobin tax, or an international tax on fossil fuels.

As with the use of auctioning revenues, whilst these could raise substantial funds that could be spent quite freely, all of these approaches suffer from an allocation problem. They may also be strongly opposed by industry, though some precedents do already exist (e.g. France’s Air Travel Solidarity Tax).

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<sup>1</sup> Exchange rate of 1 euro = \$1.56 (June 20 2008)

<b>Fund</b>	<b>Description / Objective</b>	<b>Amount [Million USD]</b>
<b>TRADITIONAL SOURCES</b>		
REDD funds established after Bali COP 2007. Converted to USD from Euro € = USD1.56 (Exchange rate June 20, 2008)		
<b>Bilateral Funds</b>		
Pledge by Norway	REDD actions over 5 years	2808
NORAD Rainforest Initiative (Norway)	Support conservation of rainforests by promoting large-scale forest protection and the development of forest-based carbon management. Likely to focus on the Congo Basin, the Amazon and southeast Asia	638.04
International Forest Carbon Initiative (IFCI) (Australia)	To facilitate global action to address emissions from deforestation through capacity building and pilot REDD projects (USD 9.36 million capacity building in Indonesia; USD 28 million Kalimantan Forests and Climate Partnership and USD 3 million research partnership with CIFOR). Includes Indonesia-Australia Forest Carbon Partnership which will promote including incentives for REDD in any future international agreement on climate change	200
Pre-assigned ODA (Denmark)	REDD projects in Madagascar, Cameroon, Laos and Bolivia	101.4
Pre-assigned part of the International Environmental Transformation Fund (UK)	Sustainable forestry in the Congo Basin	109.2
Pledge by France	Financing forestry projects in Gabon through debt cancellation	78
German Life Web Initiative (pledge by Germany)	Protected Areas support	780
The German International Climate Initiative	Earmarking of proceeds from EU allowance auctioning to international and national climate initiatives out of which USD 187.2 million should go to private sector project to leverage further financing.	93.6 (earmarked for biodiversity and forestry)
<b>Multilateral Funds</b>		
FCPF (contributors: France, Finland, Denmark, UK, Switzerland, Australia, Netherlands, Japan, TNC)	USD 101.4 million for capacity building, USD 202.8 million to generate VERs from pilot REDD programs in 5 countries	304.2
Earth Fund (GEF, IFC, others expected)	Environmental Innovation, including the forestry sector	202.8
The GEF Tropical Forest Account (TFA)	Financial incentive mechanism associated with the existing GEF SFM Program, aimed at motivating tropical forest countries to invest country resources in SFM. Target regions are Amazonia, the Congo Basin and Papua New Guinea/Indonesia.	49.92 in first round
UN REDD Collaborative Program	Capacity building at the national level and payments for REDD initiatives	TBD
National Pact for the Valorization of the Forest and for the End of the Amazon Deforestation (TBD)	REDD actions in Brazil	577.98



<b>Fund</b>	<b>Description / Objective</b>	<b>Amount [Million USD]</b>
The Prince's Rainforest Project (multiple corporate donors)	Work with the private sector to fight deforestation	TBD
Rainforest Fund (Norway, others to be confirmed)	National REDD program in Brazil	202.8
Congo Basin Forest Fund (Norway & UK)	Projects that avoid deforestation and contribute to poverty alleviation	197.73
World Bank Forest Investment Fund	Government efforts to reform the forestry sector or private action to protect major stands of forests	304-507
<b>Illustrative list of current public funds</b>		
ODA – forestry  In principle, ODA includes all funds listed below.	Channelled through loans and grants;	US\$1910 million (2005-07) which presents a 47.6% increase compared to \$1,294 million (2000-02)
IFC	Funding for private sector	USD 65 million per year
ITTO	Funding for forest management	USD 1.5 million (in 2006)
Global Environment Facility	Funding in forestry sector for (i) forest conservation, (ii) sustainable forest use and (iii) sustainable forestry management	USD 1.25 billion (since 1997); leveraged co-finance: USD 3.45 billion
NFP-Facility, FAO	NFP Facility has programmes in approximately 50 countries, each of which receives USD 300,00 over 3 years.	USD 17.3 million over 5 yrs (2002-2007), of which 12.5 is committed
<b>Private</b>		
Private funds from domestic investors		N/A
Foreign Direct Investment		N/A
Non-profit		N/A (maybe available in WB 2008 text)
<b>INNOVATIVE SOURCES</b>		
Carbon markets (AR)	CDM and voluntary AR projects	N/A
Carbon markets (REDD)	Market-based national REDD systems (as modelled in Eliasch Review)	\$7 billion per year in 2020
ETS auction revenues	Use of proceeds from auctioning ETS emissions allowances (assuming 3-5% used to fund forest carbon initiatives)	\$2.3-3.9 billion
International air travel levy	Per passenger charge on international and/or domestic flights	\$10-\$15 billion
Tobin tax	0.01% tax on wholesale currency transactions	\$15-\$20 billion
Extension of CDM levy to other carbon market transactions	Extend levy on CDM to international transfers of Emissions Reduction Units (ERUs), Assigned Amount Units (AAUs) and Removal Units (RMUs)	\$10-\$50 (depending on size of C market)

**Table 3: Potential ‘traditional’ and ‘innovative’ sources of finance for supporting carbon forestry.** Note: Some of these initiatives are not entirely dedicated to REDD (eg. Earth Fund) and some may overlap (eg. part of Norway’s pledge may end up in the FCPF and Brazil’s Rainforest Fund). Sources: Bellassen et al. 2008, Porter et al. 2008; Eliasch 2008; EC SEC(2008) 2619/2; UNFCCC 2008; World Bank 2008

### 2.3.5 *Fund governance*

The governance arrangements vary between facilities (and some have not been defined) although most of the multilateral facilities include some form of Steering Committee and democratic processes for selecting decision making panels etc. However, there have been some concerns raised over:

1. Some concerns have been raised over the lack of consultation in the development of these new facilities. For example, criticism expressed by indigenous groups in relation to the design of the FCPF.
2. The dominance of northern interests in the governance structures of some facilities, such as the potential for donors to exert greater influence over decisions based on the size of their financial contributions.
3. Concern over the dominance of World Bank funds and their interference with the multilateral UNFCCC process. This concern has mainly been raised in relation to the Adaptation Funds, leading to the introduction of a ‘sunset clause’ so that they terminate in 2012 in order to allow for the funds mandated under the UNFCCC (Adaptation Fund etc.) to become the principal means of support to developing countries.
4. Complicated and slow administrative procedures making it difficult for countries to access funding.

### 2.3.6 *Relationships between facilities*

There is clearly a large range of new and additional international financing targeting the forest sector in developing countries, which raises a question of how they relate to each other. Some of the bilateral funds are channelled through the multilateral facilities. For example, the Australian GIFC, Norwegian Rainforest Fund and UK Environmental Transformation Fund have indicated their intention of channelling at least some of their resources through the FCPF. But the multilateral facilities (particularly the FCPF, GEF, UNDP Collaborative fund and the GCCA) appear to be competing directly for the attention of donors.

There are differences in the objectives of funds and their geographic spread. For example, the FCPF is orientated towards developing a future market mechanism for REDD, whilst the GEF TFA focuses on regions with the highest carbon stocks and biodiversity, but does not intend to directly use carbon markets to influence deforestation and degradation rates.

There is also potential for duplication of aims. For example, the FCPF Readiness mechanism aims to help in “preparing selected countries to participate in a future large-scale system of payments for verifiable emissions reductions from deforestation and degradation”, and the UNDP Collaborative fund likewise aims at “assisting developing countries prepare and implement national REDD strategies and mechanisms”.

## PART B: ANALYSIS

### CHAPTER 3: Analysis of Carbon Finance Initiatives/Proposals Targeting Forest Issues from the Perspective of Climate Change Mitigation

- 1 This chapter addresses the first dimension of the Study Specification: the *climate change mitigation dimensions of carbon financing*.
- 2 The mitigation dimension is addressed in relation to *nine key technical requirements* for ensuring carbon forestry contributes to climate change mitigation. Unless these issues are properly addressed it is unlikely that carbon forestry can play a significant role in mitigating climate change. The nine issues are:
  - i. *Measurement and monitoring of greenhouse gas emissions and removals by forests*. Systems and methodologies have now been developed and extensively documented and tested, which can provide accurate GHG estimates for AR projects, if properly implemented. Similar guidelines and methodologies also exist for REDD, but there remain significant challenges, especially in measuring and monitoring emissions from forest degradation and in country capacities in terms of existing data, expertise and technology which will need to be addressed.
  - ii. *Baselines*. Accurate baselines are crucial for determining performance in emissions removals or reductions in carbon forestry. Robust baseline methodologies have been developed for both CDM AR and voluntary AR projects, though they can be difficult to construct. There exist a number of options for constructing baselines for REDD and debates are ongoing about which options should be used, as they have fundamental implications for the cost-benefit balance of REDD. In general, historic baselines pose problems for countries with a lack of historical deforestation/degradation data and the period over which they should be sampled. Projected baselines require a good understanding of future deforestation drivers.
  - iii. *Additionality* is a key requirement for all types of carbon offset project or programme and is challenging to prove in all cases. However, standard tools have been developed for assessing additionality within both CDM and voluntary projects that could be extended to REDD systems.
  - iv. *Leakage*. Leakage in carbon forestry projects is more difficult to assess than many forms of energy projects. National approaches to REDD in theory will reduce the risks of intra-national leakage, but international leakage could still be a major problem. Ensuring high levels of country participation in REDD systems and that opportunity costs are adequately compensated for by alternative development options will be crucial to leakage management.
  - v. *Permanence*. Permanence is a major issue for both AR projects and for REDD and needs to be managed in order to create credible mitigation options. However, various management options exist or have been proposed for both national and project-based schemes. None of these is ideal from an economic or political perspective, as they may make forest carbon schemes less efficient or affect the liabilities placed on different actors. The use of risk buffers (i.e. withholding a portion of credits from sale) as defined in the Voluntary Carbon Standard appears to be the most attractive option for permanence and leakage management.

- vi. *Costs and volumes of emissions reductions from REDD.* Costs for REDD are likely to accrue in two main areas: 1) upfront costs including the costs of building the ‘infrastructure’ for REDD and policy and institutional reform costs that help support an effective ‘enabling environment’; and 2) ongoing emissions reduction costs, including the income foregone from reduced deforestation (opportunity costs) and forest protection costs such as implementing policies to reduce forest emissions. None of these costs are well-known, and they are likely to vary both with context and with the design of REDD systems. Recent estimates put the costs of REDD at between \$17 and \$33 billion per year in order to reduce emissions from deforestation and degradation by 50% by 2030. Carbon market revenues are estimated at \$7 billion per year in 2020.
- vii. *Financing gaps in REDD.* There are two main gaps in finance for REDD: 1) absolute levels of finance provided through the carbon markets will be large (and possibly bigger than any other single source) but are likely to fall well below those needed for ambitious emissions reductions at scale; 2) matching finance sources, delivery mechanisms and country needs indicates that no single mechanism will meet all country needs, and some mechanisms fall well short in certain areas (e.g. policy and institutional reform). This implies that a range of mechanisms is required.
- viii. *Market flooding.* The potential for market flooding to occur is influenced by the likely supply and demand of forestry carbon credits in a future market system, which is in turn influenced by issues such as the stringency of future emissions caps, the degree of fungibility of REDD markets with mainstream carbon markets etc. Whilst there are still few rigorous studies on the risks, high transaction costs, low country participation in the next few years and the possibility of banking carbon credits, are likely to make the threat of market flooding less severe than is sometimes claimed. There are also various options available for preventing market flooding (e.g. Dual Markets approaches), which are attractive as options to protect existing carbon markets, but which may reduce the attractiveness of REDD systems due to increased complexities, higher costs and lower values. A more detailed cost benefit and political feasibility analysis of the different approaches is required.
- ix. *Inclusion of forestry credits in the EU ETS.* Uncertainties over future international decisions on emissions targets and forest carbon finance mechanisms justify the Commission’s caution over the introduction of forest credits. However, there is need for more robust analysis of the implications of bringing forestry credits into the system under different assumptions, the steps that the EU could take to prevent risks and the feasibility of different options. There is also a need for a more rigorous analysis of the technical issues facing carbon forestry (especially leakage, permanence and liability issues), which have been given by the Commission as reasons for not introducing forestry credits, but which have been strongly opposed by the private sector and some NGOs.

### 3.1 Introduction

This section reviews the evidence surrounding the effectiveness of carbon forestry projects and programmes as climate change mitigation instruments. It begins by describing the concepts underlying five key mitigation issues. These are:

- Monitoring and measurement of GHGs;
- Baseline setting;
- Additionality;
- Leakage;
- Permanence

It then considers how these influence the effectiveness of forestry mitigation for both AR and REDD, and the options for managing them. Finally, the evidence of the potential scale and cost of REDD and the possibly impacts of large-scale REDD initiatives on alternative abatement options outside the forest sector is assessed.

### 3.2 Measurement and monitoring of GHGs in forest carbon initiatives

Standardised and detailed measurement and monitoring methodologies are crucial for carbon offset projects because, if implemented properly, they govern the accuracy of emission reduction or removal estimates and allow for the creation of comparable and tradable emissions reduction units.

#### 3.2.1 *Measurement and monitoring in AR projects*

The IPCC Good Practice Guidance (GPG) on Land Use Land Use Change and Forestry (LULUCF) (Penman *et al.* 2003) set out most of the technical requirements for monitoring, measuring and reporting emissions in CDM AR projects, and the same guidelines are recommended by many of the voluntary project standards. At project scales, measurement and monitoring can be carried out through field based sampling surveys. Monitoring plans are developed that define the project boundaries, stratify the project area, establish sampling plots, define which carbon pools are being measured (e.g. live trees, dead organic matter, etc.) and the frequency of measurement (usually every 5 years for forests). In the CDM, these have to be included within the Project Design Document and designed in accordance with methodologies approved by the CDM Executive Board.

These systems have now been extensively documented and tested (e.g. Pearson *et al.* 2005) and can provide accurate GHG estimates for AR projects if properly implemented.

#### 3.2.2 *Measurement and Monitoring in REDD*

To estimate emissions reductions in REDD, it is necessary to know the area of forest cleared or degraded and the amount of carbon stored in those forests (Gibbs *et al.* 2007). The only practical way to accurately measure *deforestation rates* is to use remote sensing from satellites or aircraft, though this needs to be supported by ground-based observations (Defries *et al.* 2007). At national scales these methods will need to be applied in different ways, depending on the cost of data and technical capabilities, patterns of deforestation, forest type and the overall forest area (DeFries *et al.* 2007). No single approach will be suitable for all countries, though many of the methods can provide adequate results as long as they are implemented in an appropriate way. With high resolution imagery, accuracies of 80-95% can be achieved (DeFries *et al.* 2007). Such imagery exists at low or no cost and with almost complete global coverage for the early 1990s and 2000s, but there are problems with data continuity in the current decade and recent high resolution data costs can be high.

*Degradation rates* are more difficult to ascertain because the differences between forest and degraded forest are less easy to identify remotely. Indirect methods have been tested, such as inferring rates based on the proximity of forest to infrastructure (e.g. Asner *et al.* 2005; Mollicone *et al.* 2007). New developments in technology such as very high resolution imagery, radar imagery and laser soundings may also improve monitoring (Lefsky *et al.* 2005).

Product	Scale	Weaknesses	Degree of Uncertainty	Cost (1-3 low to high)
(1) Traditional forest inventories	National or regional	Many existing inventories are out of date and very few more recent ones exist, often focused on forests of commercial value	Depends on age of inventory and if updated - low to medium confidence based on date of inventory	3
(2) Forest inventory with additional data on canopy cover/type and related to high resolution Remote Sensing (RS) data; update biomass stocks with new high resolution RS data interpreted for change in canopy density (models relate canopy density to biomass)	National to regional	Often focused on forests with commercial value	High to medium confidence	Costly initially to get field inventory (3), reducing costs with updates (2-1)
(3) FAO data	National and subregion	Default data	Low confidence	1
(4) Compilation of "ecological" plots	Selected locations	Not sampled from population of interest	Low confidence	1

**Table 4: Trade-offs between different options for estimating biomass in forests.**

Source: DeFries *et al.* 2007

In order to estimate emissions from deforestation and degradation it is also necessary to know biomass loss from forests, as this is related to the level of carbon stocks in the forest. Biomass volume varies significantly with forest type and between different parts of the forest (e.g. wood, leaves, dead leaf litter and soils), requiring detailed and context-specific information. There are currently no standard practices for estimating biomass through remote sensing (DeFries *et al.* 2007), but emissions can be estimated from existing sources of information on tree biomass, though these have trade-offs in terms of completeness, accuracy and costs (Table 4). The IPCC Good Practice Guidance for estimating GHG emissions in the LULUCF sector at national and project scales (Penman *et al.* 2003; IPCC 2006) gives options for conservative estimates to be made at three tiers of quality, depending on country or project circumstances (Penman *et al.* 2003).

These guidelines, along with other existing global systems (e.g. earth observation systems such as the Global Observation of Forest and Land Cover Dynamics, GCOF-GOLD) provide a good basis on which to establish REDD systems (Herold *et al.* 2007). As long as accuracy levels can be quantified and consistent methodologies are applied at different time intervals, standard methods do not need to be applied across all countries. This would allow for monitoring and measurement systems to be designed with country circumstances in mind. However, substantial support will be required for the many countries which currently lack technical or financial resources to monitor emissions.

### 3.3 Baselines

Under the Kyoto Protocol, CDM projects must create ‘real, measurable and long-term benefits related to the mitigation of climate change and must be additional to any that would occur in the absence of the certified project activity’ (Kyoto Protocol, Articles 12.5 b and c). ‘In the absence of the certified project activity’ is also called the baseline scenario, which is defined in the Marrakech Accords as one that ‘reasonably represents greenhouse gas emissions that would occur in the absence of the proposed project activity’ and is derived using an approved baseline method. The Marrakech Accords also state that the project baseline shall be established ‘in a transparent and conservative manner regarding the choices of approaches, assumptions’ and that it shall be established ‘on a project-specific basis’ (Pearson *et al.* 2005).

These concepts arise in any greenhouse gas mitigation project that uses ‘baseline and credit systems’ where the number of credits issued depends on the difference in emissions compared to the baseline (see diagram in Chapter 2). This includes CDM energy and AR projects, voluntary projects and most REDD proposals.

#### 3.3.1 Baselines in AR projects

In the CDM, baseline scenarios are derived using methodologies approved by the CDM Executive Board. There are three main approaches, and their selection depends on the specific project circumstances (Pearson *et al.* 2005).

1. Use of existing or historical changes in carbon stocks within the project boundary. This approach is used when future changes are expected to reflect current or past changes.
2. Changes in carbon stocks within the project boundary that represent an economically attractive course of action (e.g. due to plantation development). This approach is used when changes are economically motivated.
3. Changes in carbon stocks within the project boundary relating to the most likely use at the time the project starts. This approach is used when changes are expected that are not due to economic activity (e.g. changing legal requirements).

Voluntary projects and standards often suggest the use of methodologies that have been approved under the CDM. If new methodologies are developed then they are usually approved by independent auditors for the standards (Kollmuss 2008).

In both CDM and voluntary projects, the main issues surround the availability of data for constructing baselines and the technical complexities involved in processing this data into meaningful projections for project sites. Another issue relates to the potentially perverse incentive for project developers to inflate baseline projections, either through doctoring data or altering the project site.

Virtually all projects require independently accredited third party verifiers and rules governing the length of time for which land has not been forested (e.g. land eligible for CDM Reforestation projects is land that has been 'not in forest' since 31st December 1989 - 16/CMP.1, Annex, paragraph 1).

### 3.3.2 Baselines in REDD

The construction of baselines for REDD is one of the most contentious issues in the negotiations surrounding REDD. This is because the way that they are established will have a large bearing on participation by different countries and levels of REDD finance. There are three main approaches to establishing baselines - historic, projected or negotiated – though in practice these may be used on combination with each other and may include different sub-categories. Their advantages and disadvantages are outlined in Table 5 (CIFOR 2008). Some of the biggest challenges include the possibility of inequitable outcomes between countries with differences in DD rates (see Chapter 5), burdensome data requirements especially for degradation and carbon stocks (see this chapter 3.2) where such data may not exist (Olander *et al.* 2008), and technical complexities in modelling future socio-economic pathways.

Decision 2/CP.13 recommends that baselines for REDD should be based on historical emissions, taking into account ‘national circumstances’. Whilst this does not overcome the challenges inherent in historic baselines, it does offer scope for international REDD systems to respond to different country situations in terms of data availability and technical capacity.

Type of baseline method	Advantages/disadvantages
Historic baselines based on time series remote-sensing images of forest area, projected forwards as straight line.	Require significant data on past deforestation rates that may not exist in some countries.  Determining the reference period on which to determine average past rates is difficult and could lead to large inaccuracies in emissions reduction estimates.  Historic rates may not be a good measure on which to base future rates.
Historic baselines projected forward using some other rationale (e.g. decreasing total forest area, or decreasing population growth rates).	As above, but could be subject to inaccuracies due to uncertainties in projecting forwards. They may be more applicable for project-based systems where more data is available and modelling is simpler.
Modelled future baselines based on regression or other analysis of explanatory variables.	Depend on good data for future projections.  Modelling is likely to be complex and costly.
Negotiated baselines (agreed country by country).	May not relate to actual emissions reductions and may therefore be less efficient in terms of reducing emissions.
Baselines based on world average historical deforestation rates.	Will not capture differences between countries and regions.

**Table 5: Advantages and disadvantages of different baseline options.**

Source: adapted from CIFOR 2008

One of the major differences of most REDD proposals compared to CDM and voluntary AR projects is that baselines will be constructed at the national scale rather than at the project scale. This will require improved methods in tracking land use and carbon stock changes over larger areas, but it should make in-country leakage easier to track.



It is possible that national baselines could increase investor interest in REDD projects because leakage quantification may then become easier at the project scale. Such project baselines ‘nested’ within national monitoring and accounting systems are also likely to improve accuracy, as they will account for changes at local levels (Olander et al. 2006).

Another difference between REDD and most AR projects is that the deforestation threat will need to be reassessed through time in order to ensure that the project or programme is responsible for reducing emissions. The Noel Kempff project, for example, reevaluates the baseline every 10 years, partly through the monitoring deforestation rates in adjacent regions.

### 3.4 Additionality

The ‘additionality’ of emissions reductions or enhanced removals is intrinsically linked with the issue of baselines. Additionality refers to the requirement that the greenhouse gas removals after the implementation of the AR project activity are greater than those that would have occurred in the baseline scenario (which is the most plausible alternative scenario to the implementation of the AR project activity)<sup>2</sup>. It forms the main condition for determining the eligibility of all types of carbon projects (whether forestry or energy based and whether CDM, voluntary or REDD).

Standard tools have been developed for assessing additionality within both CDM and voluntary projects. These help to demonstrate that, *inter alia*, projects would not have been viable without carbon finance and face other barriers (e.g. technical or institutional) that would prevent their implementation under normal circumstances and are not local or regional common practice.

Additionality is clearly crucial in ensuring the credibility of carbon offset projects or programmes in mitigating climate change, but it also places a large burden on their development. For example, project developers in effect have to prove that projects are unattractive investments without the carbon finance component. But if carbon finance is a low percentage of project revenue (as is often the case, as discussed in chapter 2), it is easy to see how this restricts the overall scale of the market.

Additionality criteria in voluntary markets generally reflect those in the CDM, though they can be more flexible. Whilst this may mean that they have less impact on the climate, some argue that ‘new additionality doesn’t require you to start from scratch’ and that such ‘looser standards in global carbon markets would reward early actors for being good environmental stewards and encourage other people, companies and cities to do so’ (Sandor 2008).

Another problem with additionality testing for projects is that it is ultimately subjective. For example, a project developer may claim that the internal rate of return for a project is so low that it is a barrier to implementation, but it is hard to validate this claim without access to internal company information (Kollmuss 2008). An alternative to project-based tests would be to use performance standards based on benchmarks for given project types. This can significantly reduce transaction costs, but may be too simple and it ignores project context. This method is also likely to be more applicable to standard energy technologies than to forestry projects, which vary much more widely between different locations.

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<sup>2</sup> See: <http://cdmrulebook.org/PageId/204>

### 3.5 Leakage

Leakage refers to the displacement of emissions from carbon projects or programmes beyond the boundaries of the projects or programmes. There are two main types of leakage which can occur in both forestry carbon and energy-related carbon projects:

1. *Activity shifting* leakage includes leakage which may occur in-country, for example when deforestation or degradation reduced in one area of a country leads to deforestation or degradation in another area. International leakage may also occur, for example when a country makes forestry laws more stringent, leading to investment in other countries with less stringent laws. The scale of activity shifting leakage relates to labour and capital mobility and the availability of forested land. In cases where there is high mobility and extensive forested land, then such leakage is likely to be more pronounced.
2. *Market leakage* may occur when mitigation policies have an effect on commodity prices, driving changes in investment patterns, potentially towards high emissions activities. For example, if timber and crop production are reduced, then market prices will rise, which may cause a shift to more intensive activities (that could involve higher emissions) or clearing of land in other areas.

International and market leakage related to energy and forestry projects are normally assumed not to occur (or be insignificant and within the bounds of insurance buffers), but this is an area that warrants further research, especially as carbon forestry systems grow in scale and could have larger effects on international commodity markets. There are relatively few studies that have quantified the effects of leakage partly because it is very difficult to observe and measure. Leakage assessment requires detailed knowledge of the drivers of deforestation and the relationship of multiple markets (and prices) to these drivers. It also requires knowledge of how the resulting emissions produced shift with activities or market movements. For example, it may be possible to observe a shift in the location of activities, but this may be hard to link to quantified estimates of emissions from the new activities. Table 6 shows the outcomes of studies for avoided deforestation schemes. All of them indicate that leakage is major concern.

#### 3.5.1 Comparing leakage in AR, REDD and energy projects

Given this paucity of information it is hard to make meaningful leakage comparisons between different forms of forestry carbon projects and between forestry carbon and energy projects, but a few key observations stand out:

1. It is often claimed that national REDD systems are preferable to project-based approaches because national monitoring and measurement reduces the likelihood of in-country leakage. Whilst this is true, national systems will still be prone to international leakage unless all tropical forest countries are covered by the REDD agreement (Daviet *et al.* 2007).
2. Leakage levels could be different between AR projects and REDD projects/programmes. This is because AR projects are likely to be implemented to meet demand for timber whereas REDD projects may be implemented to prevent and replace demand, though this obviously depends on the design of the project.
3. Leakage levels may differ between CDM and voluntary projects because of the different standards used, though this is hard to judge because project developers do not necessarily disclose full documentation of project design processes.

4. Leakage is not unique to forestry and land use projects, and its identification and quantification appears to be equally problematic for both types (Chomitz 2000). However, the fact that forestry carbon and land use projects are trying to change land use over large areas and on a fixed land base, combined with the fact that commodity markets are often broad in scope, means that leakage spillovers could easily occur (Murray 2006).

Region	Policy Action	Modelling Approach	Estimated leakage magnitude (%)	Source
<b>Product Volume Displacement Estimates</b>				
Temperate, Pacific Northwest U.S.	Stop Logging Public Lands	<i>Ex post</i> Partial Equilibrium Econometric Model of U.S. Timber Market	Within Region: 43 National: 58 Continental: 84	Wear and Murray, 2004
Global	Reduce forest output at national and regional level	<i>Ex ante</i> Global Computable General Equilibrium Model	45-92	Gan and McCarl, 2007
<b>Carbon Emissions Displacement Estimates</b>				
Temperate/US regional	Avoid deforestation and logging set-asides on private lands (regional policies in isolation)	<i>Ex ante</i> Integrated model of U.S. forest and agricultural sectors	<u>Avoided Defor.</u> Northeast: 41-43 Pacific NW: 8-9 Other regions: 0-92  <u>Logging set-aside</u> Pacific NW: 16 South: 64	Murray et al, 2004
Tropics / Bolivia	Logging set-asides in National Park	<i>Ex ante</i> Partial Equilibrium Model of Bolivian Timber Market	2-38	Sohnngen and Brown 2004

**Table 6: Comparison of leakage magnitude estimates for different avoided deforestation projects.**

Note that only two studies have directly estimated carbon emissions displacement as opposed to product volume displacement and only one study has been conducted ex-post. Source: Murray 2008, adapted from Sathaye and Andrasko (2007)

### 3.5.2 Leakage management

There exist a number of options for controlling leakage at project, national and international scales. These include both ‘project specific’ approaches and ‘standardised approaches’ (Schwartz 2002).

1. **Project specific** approaches address cases-by-case local circumstances such as fuelwood collection or ecosystem characteristics (Schwartz, 2002). They include careful site selection (e.g. degraded land where it is easier to guarantee the activities will not be shifted); implementing multi-component projects that incentivise landowners to maintain emissions reductions or sequestration benefits (e.g. activities that are an alternative or complementary land use for existing landowners, and economic benefits are comparable to non-forest alternatives); use of ‘leakage contracts’ that make it a legal requirement for those that have ceased activities to not carry them out elsewhere; and leakage monitoring.

2. **Standardised approaches** include: Discounting of emissions reductions based on leakage estimates or default values; Use of project eligibility criteria that rule out certain project types that are prone to high leakage levels (note that in REDD, the use of international funds (that are not linked to Annex 1 commitments) as opposed to market-based systems would also have this effect by prohibiting the use of REDD credits as an offset mechanism).

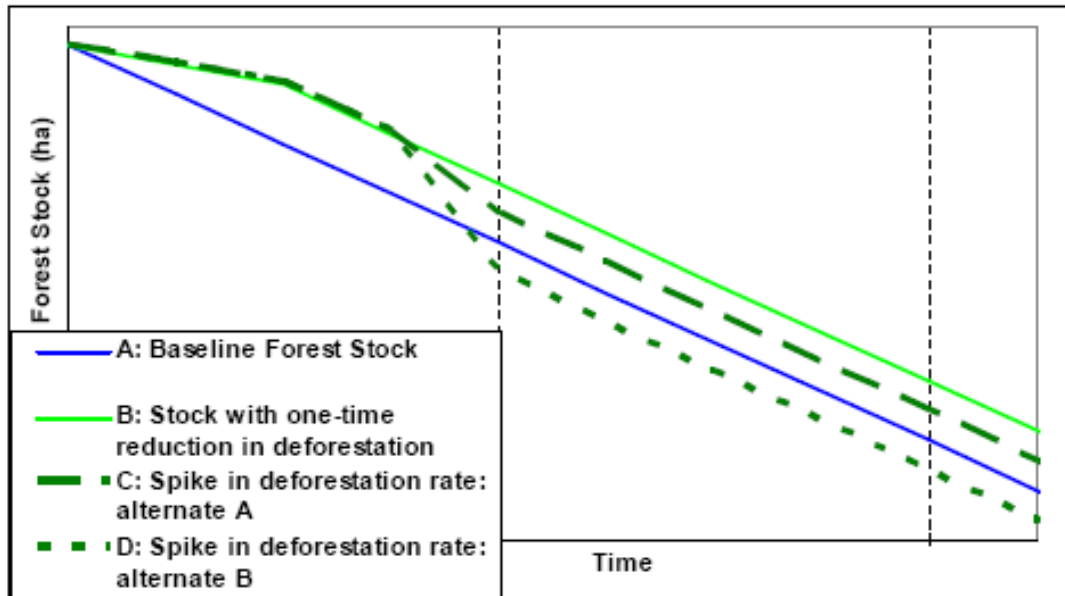
These approaches, if applied in conservative ways, can limit leakage risks, though they also have drawbacks for example in terms of raising technical challenges in quantification, causing potential loss of revenues (e.g. through inaccurate discount factors), and potential equity effects (e.g. through inappropriate alternative livelihood strategies, as discussed in chapter 5).

Clearly the most effective way to deal with leakage is to ensure wide participation in forestry carbon schemes, as the more widely emissions from sources and sinks are monitored, measured and accounted for, the more likely that leaked emissions will be picked up in the system. This applies not only to the number of countries or actors involved but also to the types of activities. For example, many REDD proposals as they stand only account for emissions from deforestation and degradation (with definitions for both of these activities to be agreed) rather than all land use activities. Full carbon accounting would track emissions sources and sinks for all activities and for all sectors, including those beyond the land use sector.

### 3.6 Permanence

The emission of one ton of CO<sub>2</sub> will have an impact on the atmospheric concentrations for as long as it remains in the atmosphere. The Kyoto Protocol allows for emissions in one year to be offset by sequestering an equivalent volume of emissions in the same year. However, this will only be effective for as long as the carbon remains sequestered. If a project fails then carbon will be re-released. This is known as the issue of 'permanence'. Afforestation and reforestation projects create *carbon sinks* (sequestering CO<sub>2</sub> from the atmosphere) and they could be susceptible to project failure, for example through fire or illegal activity. Thus, permanence is a major issue in forestry carbon projects, separating them from most types of energy project.

It has been argued (e.g. Fearnside 1999) that REDD is conceptually closer to fossil fuels in terms of the permanence of emissions reductions than to AR projects. This is because preventing deforestation and degradation preserves *carbon stocks* (carbon that is contained in a 'pool' or reservoir). A temporary REDD programme may ultimately release carbon that was being stored in the forest, but it will also have delayed some emissions into the atmosphere, and thus can be deemed to have had some beneficial effects (Figure 7). Figure 7 illustrates the effects of REDD interventions on possible carbon stocks, and the implications for the permanence of emissions reductions. The light green line shows a one-time reduction in deforestation, after which the rate of stock loss continues at the same rate as the baseline (blue line). This has the effect of delaying stock loss and therefore reducing emissions permanently and indefinitely into the future. However, if at some point a 'spike' increase in rate above the baseline rate occurs, then two outcomes are possible, depending on the severity and duration of the spike. Case (C), where the spike is minor and returns stock losses close to, but above the baseline; and (D) where the spike is severe and causes stock losses to decrease below the baseline rate. In this last case the emissions reductions are not permanent (Myers 2007).



**Figure 7: Effect of REDD interventions on possible carbon stocks and the permanence of emissions reductions.**

Source: Myers (2007).

This discussion confirms that permanence is an issue for both AR projects and for REDD and needs to be managed in order to create credible mitigation options. Different options have been proposed for both national and project-based schemes, as outlined in Table 7. None of these options is ideal from an economic or political perspective, as they can reduce the cost-effectiveness of carbon forestry as an abatement option and may place greater liabilities of certain actors involved in carbon forestry schemes. Based on experience with the CDM, permanent credits are much more attractive to investors and will be a requirement for market-based REDD schemes to develop on a large scale. The use of risk buffers (which usually involves withholding some credits from sale as a form of insurance) probably represents the most promising approach. It is being used in the New South Wales Greenhouse Abatement Scheme, the Chicago Climate Exchange and the Voluntary Carbon Standard. In addition to these instruments, project developers or governments are also likely to take steps to ensure that the associated carbon benefits (and credits) will remain intact for many decades by incorporating activities that are sufficiently rewarding to local people so they are encouraged to continue with those activities in the future. This encouragement can be backed by contractual agreements that require the emission reductions to be maintained for a long time (Streck et al 2006).

<b>Approach</b>	<b>Description</b>	<b>Advantages/Disadvantages</b>
<b>Permanent credits with buffers, banking and reserve accounts</b>	All of these approaches would allow for permanent credits to be issued for AR or REDD but with a proportion withheld from sale as insurance against future loss, leakage or other uncertainty/inaccuracy. The percentage withheld could be determined based on the risk profile of the project or programme.	Less economically efficient as it withholds credits from the market place.
<b>Permanent credits with host country liability</b>	Any country that exceeds the baseline rate would have to purchase reductions credits.	Unlikely to be politically feasible as it implies a binding emissions target for developing countries.
<b>Permanent credits with non-binding commitments.</b>	Countries that exceed their baseline rate would not be liable to purchase replacement credits but no credits would be issued until the rate had returned to the reference rate.	Could result in 'hot air'.
<b>Temporary credits</b>	Used in AR CDM projects and could also be applied to REDD. Credits are valid for one or more commitment periods. After this period they expire and have to be replaced, either by credits from the same project (if it is shown to still be reducing emissions or sequestering carbon below baseline rates) or the buyer would have to find credits from elsewhere.	Experience with the CDM shows little demand for such credits.  Credits are lower value compared to permanent credits and could even have zero value (Myers 2007).
<b>Ton-year approach</b>	Approach based on the fact that a ton of carbon decays through time in the atmosphere. A permanent emissions reduction then becomes equivalent to the turnover time. For example, if a one-ton emissions reduction must persist for 100 years to be permanent, a one-ton emissions reduction for a one-year duration would be worth 1/100th of a permanent ton (Myers 2007).	No consensus on the 'equivalency factor'.  Low value compared to permanent credits.

**Table 7: Advantages and disadvantages of different approaches to dealing with permanence in forest-based carbon projects**

An important conclusion that can be drawn from this discussion is that the threat of impermanence should not be a fundamental barrier to the potential of REDD in mitigation terms<sup>3</sup>. The main issues relate to the implications that the use of tools to control permanence has on the attractiveness of REDD compared to other mitigation options and other knock-on effects, including effects on the poor.

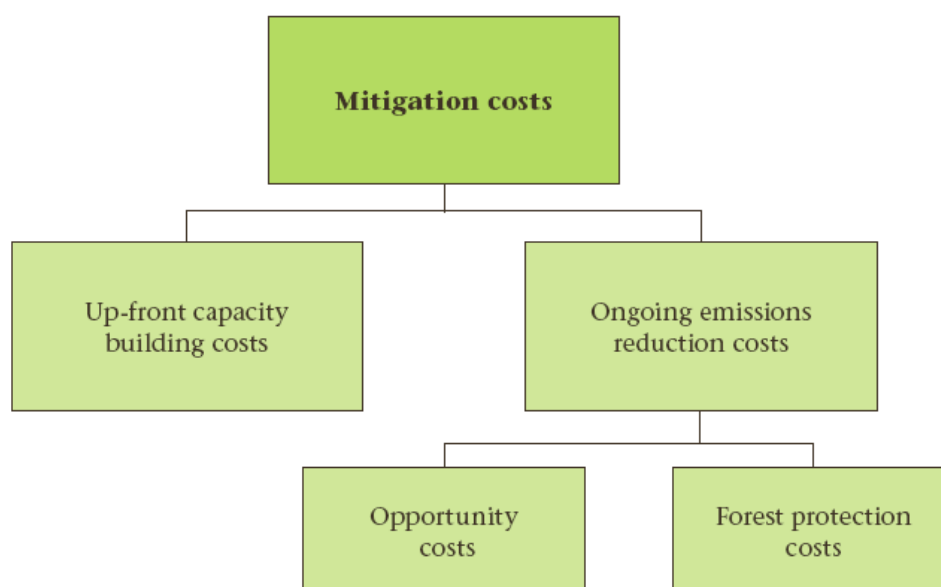
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<sup>3</sup> As the EC itself acknowledges, "non-permanence is not an issue when possible reversals are compensated" using one or more of these instruments (EC 2007)

### 3.7 Costs and volumes of emissions reductions from REDD

Implementing large-scale REDD systems is likely to entail large volumes of finance. This will be needed in two main areas (Eliasch 2008 and figure 8):

1. **Upfront capacity building costs**, including: (1) the costs of building the ‘infrastructure’ for REDD in terms of monitoring systems that can record changes in emissions, forest area etc (these are often termed ‘readiness’ costs; and (2) policy and institutional reform costs that help support an effective ‘enabling environment’ in which REDD systems can function and forests can be preserved sustainably and in the long term.
2. **Ongoing emissions reduction costs**, including: (1) the income foregone from reduced deforestation (opportunity costs) and (2) forest protection costs which include the costs of implementing policies to reduce forest emissions, such as designation and enforcement of protected areas, restricting road building etc, as well as ongoing monitoring.



**Figure 8: Mitigation cost categories for REDD.**

Source: Eliasch 2008

None of these costs are well-known, and they are likely to vary both with context and with the design of REDD systems. The recent Eliasch Review (Eliasch 2008) has attempted some initial estimates for establishing REDD mechanisms that can reduce deforestation by 50% by 2030 (table 8). Whilst these are probably the best estimates that currently exist, they are likely to be large underestimates due to limitations in the existing data and the assumptions made about how REDD will function. The three areas where the estimates are likely to be most inaccurate are the costs involved in strengthening governance, opportunity cost calculations (see box 5) and the costs involved in implementing ongoing forest protection measures.

When ‘rent<sup>4</sup>’ is included in the cost calculations for market-based REDD systems, the overall figure reaches \$17-\$33 billion per year.

Based on a set of assumptions about future carbon markets, the Eliasch Review also calculates the amount of carbon market finance that would be available for forest abatement in 2020. It arrives at a figure of \$7 billion per year, which would be sufficient to reduce deforestation emissions by 22 per cent relative to business as usual. This leaves a funding gap of \$11-19 billion in 2020 under market scenarios, if deforestation is to be reduced by half. This would need to be sourced from beyond market-based REDD mechanisms.

<b>Upfront/ongoing cost</b>	<b>Cost category</b>	<b>Cost</b>	<b>Assumptions/inaccuracies</b>
<b>Upfront cost</b>	Setting up monitoring system	\$50 million for first year for 25 countries	
<b>Upfront cost</b>	Strengthening governance	\$4 billion for first 5 years for 40 countries	Probably a massive underestimate because the costs of previous interventions do not necessarily reflect the actual amounts needed to achieve certain ends and the projects have not always been successful in achieving the desired outcomes.
<b>Ongoing cost</b>	Opportunity cost of land	\$7 billion per year	Likely to be an underestimate because it assumes perfect targeting of individuals and differentiation of the costs they incur; that areas at risk from deforestation and degradation are accurately identified; that leakage does not occur; and that landholders do not derive any benefit from standing forests.
<b>Ongoing cost</b>	Ongoing forest protection costs (monitoring)	\$7-\$17 million per year for 25 countries	
<b>Ongoing cost</b>	Ongoing forest protection costs (policy implementation)	\$233-\$500 million per year for 25 countries	Based on administration and transaction cost estimates for PES systems in small sample of countries. REDD systems may function in a very different way from such schemes.

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<sup>4</sup> The profit received by forest credit sellers who supply their credits below the marginal cost of the last unit of abatement



**Table 8: REDD mechanisms that can reduce deforestation**

Source: Eliasch 2008

**Box 5: Estimating the opportunity costs of REDD**

There are three main ways to estimate the opportunity costs of REDD:

1. Empirical studies of particular regions, dividing local cost (\$/ha) by local carbon density of the forest (tCO<sub>2</sub>eq/ha) to give a price in \$/tCO<sub>2</sub>eq (“local”)
2. Empirical studies taking overall per-area cost (\$/ha), divided by a global figure for carbon density (tCO<sub>2</sub>eq/ha) to give a price in \$/tCO<sub>2</sub>eq (“area”)
3. Global partial equilibrium models of the forest, agriculture and sometimes energy sectors to simulate the world economy and derive supply curves (“global”)

Boucher (2008) compares these three different costing methods in order to determine potential cost estimates for REDD. The most conservative estimates arise from the global partial equilibrium models which take into account the fact that the cost of reductions depends on how deep those reductions are (they also include the timber sector, which is typically high-value relative to ranching and crop production and include adjustment of global land use as REDD is implemented – Boucher 2008b). The models also give an indication of the ‘choke’ price of emissions reductions from REDD – i.e. the potential reductions with an unlimited supply of funding. This has implications for the overall percentage of emissions from deforestation that should try to be addressed through REDD. For example Nepstad *et al.* (2007) estimated that it would cost \$ 0.76/tCO<sub>2</sub>eq to eliminate 94% of emissions from deforestation and forest degradation in the Brazilian Amazon, but \$ 1.49/tCO<sub>2</sub>eq to eliminate 100% - a large increase in cost for a few extra tons of reductions.

### **3.8 Financing gaps in REDD**

The previous section has highlighted two major problems facing the establishment of effective REDD systems:

1. Carbon markets can provide large volumes of finance, but these are unlikely to be large enough on their own to meet ambitious emissions reductions targets in the forest sector. This implies that further funding is needed from other sources.
2. The types of funding sources and delivery mechanisms available could lead to key country needs being neglected, because there are no suitable sources or mechanisms to meet such needs. If funds are not channelled towards these needs, this could result in ineffective, inefficient and inequitable REDD systems. For example, the \$4 billion estimate for ‘strengthening governance’, which includes policy and institutional reform processes (and as noted in the previous section is likely to be a massive underestimate) is unlikely to be supported directly by carbon market sources in most design options for REDD. This is because the private sector will be more interested in supporting the immediate needs for carbon forestry projects or programmes, rather than country-wide reform processes.

The first issue may be most simply resolved by using some of the innovative sources of finance that are outlined in chapter 2, such as EU ETS auction revenues or levies on the airline industry. However, as noted, competition over the use of these funds for other purposes and opposition from industry would need to be overcome.

The second issue will require a more careful analysis of the range of needs to establish effective REDD systems and then matching these with appropriate financial instruments. In particular, financial sources and mechanisms will need to be identified that can support governance and institutional reform processes. Few existing or proposed funding options appear to be able to target this area at the scale required (table 9). New donor pledges (which are mainly from ODA) could increase this, but the current trend is that many of the new funds (e.g. FCPF, UN Collaborative Initiative etc.) are focussed on ‘readiness’ activities or piloting market systems. New NGO and philanthropic money appears to be being targeted at project-based initiatives in specific interest areas (e.g. financing protected areas or conservation concessions) and is at a relatively low level. Proposed carbon market mechanisms are likely to be more focussed on incentive payments rather than supporting wider reform processes in the forest sector.

The most promising options appear to be bilateral and multilateral ODA (through existing systems such as FLEGT) but remain at quite a low level, the World Bank’s proposed Forest Investment Fund which aims to bridge the ‘Readiness’ fund and the ‘carbon finance’ fund, and the innovative sources of finance, which are not yet coupled with specific funding mechanisms.

<b>Financial source</b>	<b>Uses</b>	<b>Advantages</b>	<b>Disadvantages</b>
<i>‘Traditional’</i>			
<b>ODA</b>	Supports projects or ‘general budget support’	May be focussed on reform processes and general budget support modalities	Low level of funding; short term and unstable
<b>FDI</b>	Usually supports commercial projects, such as plantation forestry	Some existing financial structures could be useful for REDD – e.g. company-community partnerships for distributing financial benefits. Innovative financial tools such as forest-backed bonds could make carbon forestry more attractive to investors	Focussed on efficiency, e.g. driving economies of scale, which may have equity and environmental implications (e.g. through promotion of monocultures)
<b>NGO and philanthropic</b>	Often fund protected areas, research activities	May be more experimental and less commercially orientated	Focussed on specific project sites
<b>New climate funds (mainly ODA)</b>	Support ‘readiness’ activities, ‘pump priming of carbon markets’ and some policy reform processes	Focussed on facilitating market-based REDD systems through a range of different processes	Te wider ‘enabling environment’ including more general policy and institutional reform seems neglected
<i>‘Innovative’</i>			
<b>Carbon markets (AR)</b>	Mainly AR projects	Offer possibility of effective, efficient and equitable schemes	Capacity building only linked to the project; may not provide crucial upfront finance

<b>Financial source</b>	<b>Uses</b>	<b>Advantages</b>	<b>Disadvantages</b>
<b>Carbon markets (REDD)</b>	Mainly 'forest frontier' areas, supporting projects or sector-wide reform	National REDD systems offer the potential for more strategic financing systems aligned with sector reform processes and 'green growth' strategies	Focussed on efficiency goals - may not provide crucial upfront finance or support for wider reform processes, especially if project-based.
<b>Use of revenues from ETS auctions</b>	Anything (3%-5% suggested for spending on forestry)	Could be used to fill crucial funding gaps in policy and institutional reform area	Economic impact on EU installations; competes with other spending areas (e.g. adaptation)
<b>International air travel levy</b>	Anything	Could be used to fill crucial funding gaps in policy and institutional reform area	Economic impact on airline industry; competes with other spending areas (e.g. adaptation)
<b>Tobin tax</b>	Anything	Could be used to fill crucial funding gaps in policy and institutional reform area	
<b>Extension of CDM levy to other carbon market transactions</b>	Anything	Could be used to fill crucial funding gaps in policy and institutional reform area	Economic impact on carbon markets; competes with other spending areas (e.g. adaptation)

**Table 9: Existing and proposed funding options for REDD**

### **3.9 Market flooding**

Concerns over 'market flooding' stem from the possibility that allowing fungible credits for REDD into existing carbon markets could 'flood' the market with large volumes of cheap credits given that many estimates of the costs of REDD are lower than alternative abatement options. Whilst this would reduce the overall costs of mitigating climate change it could also destabilise existing carbon markets and reduce incentives to invest in clean-energy technologies, and thus delay the transformation to a low-carbon economy. This concern has arisen mainly in relation to REDD because of the large scale of potential future REDD systems compared to existing CDM AR, though in theory it could also occur with AR projects, given the large potential volume of credits that they could deliver.

The potential for market flooding to occur is influenced by the likely supply and demand of forestry carbon credits in a future market system (see Box 6).

### **Box 6 Market flooding**

The risk of market flooding relates to factors such as:

- the stringency of emissions reduction targets set for Annex 1 countries;
  - emissions trends in countries with reduction targets;
  - the geographic scope of agreements on a post-2012 regime;
  - the sectoral scope of agreements on a post-2012 regime;
  - the rules in trading schemes on the use of credits as opposed to the trading of allowances; and
- the supply of credits from other flexible mechanisms such as the CDM.

Only a few existing studies model the implications of REDD credit supply on carbon markets (Tavoni *et al.* 2007; Anger and Sathaye 2008; Cabezas and Keohane 2008). They are based on differing assumptions about post-2012 climate policy, the structure of carbon markets and actors involved which have big influences on their outcomes. However, in general they find that REDD might result in reductions in carbon prices of around 30-40%. This could have a negative effect on investment in other abatement options. Conversely, as Anger and Sohngen (2008) find, it could also allow for making Annex 1 targets more stringent by at least five per cent at constant mitigation costs for post-Kyoto climate policy.

There are also a number of reasons to think that the price effects of allowing REDD into existing markets may not be so severe. These include:

- *High transaction costs*, increasing the costs of REDD. Only one study explicitly models the effects of transaction costs, finding that these reduce price decreases by around 5% (Anger and Sathaye 2008).
- *Low country participation* in the short-term, reducing supply. As mentioned in the previous section, a slow and incremental start by many developing countries is likely given the capacity to establish REDD systems and a lack of interest. Boucher (2008) predicts that the system is unlikely to include three-fourths or more of deforestation emissions until 2020 or later.
- *Banking of allowances*. This assumes that agents optimize abatement decisions over time by over-complying in early years and banking the resulting allowances for later. Banking raises allowance prices in the short-term, for example with a difference of \$11 per tonne compared to \$30 per tonne in the year 2020 (Cabezas and Keohane, 2008).

Tools also exist for preventing market flooding that could be applied to REDD. These include imposing a maximum limit on the supply of credits that can be traded, the creation of price floors for carbon credits to ensure that they do not fall below a certain threshold, banking mechanisms (as described above), establishing an internationally administered 'single desk' to manage the release of carbon credits into the market place and 'offset safety valves' that allow proportionally more REDD credits into the market as prices increase (Karousakis 2007; Evans and Kruger 2006; Terrestrial Carbon Group 2008).

An alternative option is to create separate markets for REDD credits, as suggested by a number of proposals (Ogonowski et al. 2007; Hare and Macey 2007). Whilst these systems could be effective in reducing the threat of flooding, they would need to be chosen with care. They could be difficult to administer, cause new complexities in an already complicated carbon market and reduce economic efficiency (Karousakis 2007).

Bearing in mind the conclusions from the studies outlined above, it appears that market flooding due to REDD is not likely to be a major issue as long as appropriate safeguards are in place. Foremost amongst these would be the requirement that post-2012 policies ensure more stringent emissions reductions targets for Annex 1 countries that take into account REDD and the considered use of safeguard tools described above to help to manage or prevent negative impacts from arising.

	<b>Cabezas and Keohane (2008)</b>	<b>Tavoni 2007</b>	<b>Anger and Sathaye 2008</b>
<b>Targets</b>	US - 70% below 2005 levels for the 85% of the economy. EU, Japan, Canada, Australia, New Zealand - 20% below 1990 by 2020 and 60% below 1990 levels by 2050. Rest of the world (developing countries plus Russia) - business-as-usual until 2020, then reduce emissions to 1990 levels by 2050.	550 ppmv CO <sub>2</sub> only stabilization by 2100.	EU 27.2% reduction on 1990 levels by 2020. Canada and Japan 20% reduction on 1990 by 2020. Australia and the US 15% reduction on 1990 levels by 2020.
<b>Effects on price</b>	33% price decrease by 2050.	40% price decrease by 2050.	40% reductions by 2020.
<b>Effects on other abatement options</b>	No crowding out occurs due to banking of emissions reductions.	Crowds out other technologies in the first 2-3 decades.	Price decreases imply crowding out, but study finds that crediting carbon abatement from reduced deforestation enables the industrialised world to tighten carbon constraints by at least 5% at constant mitigation costs for post-Kyoto climate policy
<b>Distributional effects</b>	Not considered.	Depend on the emissions allocation scheme adopted in the policy. Equal per capita distribution results in welfare gains for developed countries and small welfare losses for developing countries because of lower prices.	Disadvantageous impacts on CDM permit sellers (e.g. China and India) with low tropical forest due to increased competition. Tropical rainforest regions receive large net benefits, making Africa replace China as the most benefiting permit supplier.

	<b>Cabezas and Keohane (2008)</b>	<b>Tavoni 2007</b>	<b>Anger and Sathaye 2008</b>
<b>Effects of transaction and implementation costs</b>	Transaction and implementation costs not included, but acknowledged that they would increase prices.	Not considered.	Considerable effect and increase with more participants in international trading.
<b>Key assumptions</b>	Over-compliance in early years and banking of forestry credits.		

**Table 10: Comparison of recent modelling studies on the effects of forestry credits on carbon markets**

### **3.10 Introduction of forestry credits into the EU ETS**

In its first two phases (2005-2008 and 2008-2012) the EU Emissions Trading Scheme has not allowed the trading of forest-based CDM credits. The main reasons for this decision were concerns about the temporary nature of forest-based credits and the potential negative impacts on domestic mitigation measures. During 2007 and 2008 the EU ETS has been through a review process in order to alter the design of the system for the third phase (2012-2017). The recent round of voting on the EU ETS (in October 2008) indicates that forests will be kept out of the ETS until at least 2017. It has however been recommended by the Commission that market-based REDD systems be piloted before then, and that the inclusion of forests be considered in the much longer term.

The thinking behind this decision is similar to the issues raised in the earlier design phases. A Commission Staff Working Paper (SEC(2008) 52) and accompanying ‘Questions and Answers’ produced in January, cite the main concerns of the Commission as follows (these remain the same in documents produced by the Commission in October 2008):

“It has concluded that [including LULUCF projects] could undermine the environmental integrity of the EU ETS, for the following reasons:

- LULUCF projects cannot physically deliver permanent emissions reductions. Insufficient solutions have been developed to deal with the uncertainties, non-permanence of carbon storage and potential emissions 'leakage' problems arising from such projects. The temporary and reversible nature of such activities would pose considerable risks in a company-based trading system and impose great liability risks on Member States.
- The inclusion of LULUCF projects in the ETS would require a quality of monitoring and reporting comparable to the monitoring and reporting of emissions from installations currently covered by the system. This is not available at present and is likely to incur costs which would substantially reduce the attractiveness of including such projects.
- The simplicity, transparency and predictability of the ETS would be considerably reduced. Moreover, the sheer quantity of potential credits entering the system could undermine the functioning of the carbon market unless their role were limited, in which case their potential benefits would become marginal.

The Commission believes that global deforestation could be better addressed through other instruments. For example, using part of the proceeds from auctioning allowances in the EU ETS could generate additional means to invest in LULUCF activities both inside and outside the EU, and may provide a model for future expansion. (Questions and answers relating to the Review of the EU ETS, January 2008)”

The decision has met with considerable opposition from the private sector and NGOs involved in carbon markets. A combined response from these groups was compiled in January 2008, which gives a step-by-step rebuttal of the claims made which are referred to in the following section (CCBA et al. 2008).

### **3.11 What do we know about the implications of bringing forestry into the ETS?**

Controversies about the inclusion of forestry credits in the ETS highlight disagreements on the evidence. The Commission’s cautious approach has some justification, but it may be possible to overcome some of the stumbling blocks.

One area where there is clarity relates to the Commission’s underlying concern that bringing forestry into the system could be too risky in terms of the impact on the market as well as being too complicated to administer. Both of these concerns seem to be valid, especially given that the market is still in a ‘learning by doing’ phase and has tended to be very unstable in its early years. They are also valid in that there is still considerable uncertainty over the future international regime, which could have impacts on the trading system (i.e. depending on the targets that are decided and the policy options that are included in a future Protocol). However, there would be benefits in more rigorous analysis of the implications of different future options and administrative requirements and the costs of actually including forest credits in the system.

On the more technical mitigation issues such as leakage and permanence, the findings of the present report indicate that these issues are crucial to the credibility of carbon forestry, but in general, they can be overcome through the use of conservative approaches and appropriate risk management arrangements. The issue therefore is what standards and processes are needed to ensure that such processes are put in place and are enforced, and how feasible these are to implement.

The most noticeable area where more clarity is still needed relates to the understanding of the impacts on the market that introducing forest-based credits into the EU ETS would have. As noted in SEC(2008) 2619/2 no peer reviewed studies have been conducted specifically on this issue. Grey literature does exist (which is reviewed here in Section 3.9, above), but the recently released Eliasch Review appears to be the only available study that looks specifically at implications for the EU ETS. The Review uses a simple model, based on three main variables:

1. Supplementarity limits (the proportion of credits from non-Annex 1 countries that Annex 1 countries and companies are permitted to use to meet their targets)
2. Emissions targets
3. Whether or not forest credits are admitted into the international credit market

It concludes that the EU carbon price would be similar in the Third Phase whether Member States committed to the 20% emissions cut and a 30% supplementarity limit or (b) committed to a 30% emissions cut with a 50% supplementarity limit. Therefore, by adopting a more stringent target and higher supplementarity limit, it could simultaneously achieve greater overall emissions reductions and drive carbon market investments outside the EU at a similar cost. If fully fungible forest credits are allowed into the international system, then the implications for the ETS prices depend on the supplementarity limit. If this limit is high (i.e. >50% of international credits are allowed into the system), then forest credits have an impact on price because more expensive domestic abatement options are no longer needed to meet EU emissions reductions targets (the market price is in this case mainly driven by international credit prices).

However, if the limit is lower than 50% it is found that there is little impact on allowance prices in the ETS. This implies that, with conservative setting of supplementarity limits and stringent emissions targets, the introduction of forest credits into the EU ETS Third Phase would be likely to have little impact on other abatement options or the value of the market.

### **3.12 Concluding remarks**

There is large theoretical potential for forestry carbon projects to contribute to climate change mitigation goals, especially if REDD is introduced as an option.

Standard tools, methodologies and approaches now exist whereby most of the risks from a mitigation perspective can be reduced to acceptable levels in AR forestry projects as long as they are implemented properly. Leakage remains one of the most difficult issues to address in carbon offset projects. Leakage may be more of a problem in REDD than in AR projects due to the scale and the types of initiatives implemented. It can be limited through careful project design and through conservative approaches to accounting. The most effective way to deal with leakage is by broadening the scope of offset schemes, in terms of both the activities (types and geographical coverage) and numbers of actors included.

Implementation of REDD is likely to be highly knowledge-intensive, however, and will pose heavy demands on partner nations. Many of the likely candidate countries have very limited capacity. Considerable technical support and financial resources will therefore be required.

Most studies indicate that market-linked REDD systems will have some impact on carbon market prices and possibly 'crowd out' investment in other technologies, but this depends heavily on the assumptions made about a possible post-2012 agreement and the likelihood that REDD schemes will be implemented rapidly enough to bring large volumes of credits to market. If REDD is implemented in combination with more stringent caps on Annex 1 emissions it offers potential for increasing abatement without increasing costs.

As the European Commission is likely to consider inclusion of forest credits in the ETS in the long term, more rigorous analysis of the options and their implications, and piloting of such a system should be carried out as soon as possible. Key areas for further research include:

- More rigorous comparison between forest-based abatement options and energy-based options in terms of leakage, permanence etc.
- Better understanding of the options being considered by the EU regarding supplementarity limits.
- More information on the potential administrative issues and cost implications of adding forest carbon credits to the EU ETS.



- As mentioned above, the Commission sees that limiting the role for forestry credits in the system would mean that their benefits become marginal. A more thorough cost-benefit analysis should be conducted in order to understand this issue.
- Clarity over how testing a separate pilot “forest carbon market” which could be financed as part of the Global Forest Carbon Mechanism (as suggested in COM(2008) ) would actually be set up and how it would relate to other pilot initiatives.
- Coordination of the ETS and other international trading systems especially as regards movements towards forestry carbon markets needs to be prioritised. In the first instance modelling the sequencing of different processes and decisions could help inform future policy processes in the EU.

## CHAPTER 4: Analysis of Carbon Finance Initiatives/Proposals Targeting Forest Issues from the Perspective of Biodiversity and other environmental issues

### Chapter Four – Summary

1. This chapter addresses the second dimension of the Study Specification: the *biodiversity and other environmental aspects* (soil and water quality and availability) of carbon financing.
2. While biodiversity underpins the main ecosystem services that forests provide, there is often a trade-off between biodiversity conservation and development options that result in biodiversity loss. These trade-offs are particularly acute in the forest sector, due to the under-valuation of ecosystem goods and services.
3. An overall conclusion of the chapter is that biodiversity gains from carbon forestry are likely to be heavily dependent on achieving effective planning approaches at landscape levels

#### *Clean Development Mechanism*

4. The biodiversity effects of the CDM are not yet of real concern, due to the paucity of CDM forestry projects. However, a review of AR projects in general does suggest issues for CDM AR projects when these come on-stream.
  - Plantations help reduce pressure on natural forests though they tend to have negative biodiversity implications, due to much reduced ecosystem diversity.
  - Where they replace natural systems, then there is likely to be a net loss of biodiversity.
  - Intensification can also impact negatively on biodiversity (pest outbreaks, chemical pollution, etc.).
  - Plantations can be designed in ways to minimise these negative effects, and this calls for high standards to be applied.
5. The CDM is potentially ‘biodiversity aware’ in that CDM procedures include:
  - safeguards on the definition of eligible lands;
  - a requirement to describe and assess biodiversity and environmental impacts at project design stage; and
  - a requirement for CDM investments to accord with national laws and sustainable development goals.
6. The projectized nature of CDM investments is a limitation in that it may restrict alignment with wider landscape planning processes.

#### *Voluntary AR Projects*

7. Biodiversity impacts of voluntary AR projects have not been well-documented, but they are likely to be similar to those of CDM projects.

8. The flexibility allowed in voluntary project design could be good for biodiversity, and they are likely to accommodate biodiversity friendly models more easily (for example, agroforestry and trees on farm). The fact that they are generally quite small means that any negative effects will also be on a smaller scale.

9. However, the more lax regulation regime could also be a negative force.

#### *REDD Projects and Programmes*

10. The advent of REDD is potentially very positive for biodiversity, in that natural forest conservation at any scale should have positive effects.

11. In addition, tropical conservation is widely viewed as experiencing a huge gap in funding, which REDD may help to fill.

12. The ways in which baselines are established will be important in determining the biodiversity gains to be had from REDD.

- At the international level, REDD finance will go to areas of high emissions, which are not necessarily areas of high biodiversity.
- At national and sub-national levels, the additionality criterion disqualifies areas that are already protected.
- Aid fund-based systems could overcome some of these limitations, though probably with diminished volume of finance.

13. National approaches are preferable to projectized ones, in the sense that this favours more coherent national planning; project approaches are also more vulnerable to leakage.

14. Inclusion of degradation in REDD would be significant in biodiversity terms, and could substantially increase the geographical area available for funding. Biodiversity criteria could also be introduced into reduced impact exploitation methods, albeit at a cost. Cyclical farming systems would each need to be considered on its merits, as their carbon footprints vary.

15. Agricultural intensification is favoured in REDD, and could help diminish pressure on biodiversity, but could have locally negative effects, due to the use of chemicals and mono-cropping systems.

16. A key message is that it is not necessarily the most threatened or charismatic species that are of prime importance in terms of ecosystem function, but rather functional groups of animals and plants that play specific roles in forest trophic systems. To derive serious biodiversity benefits while also maximising the permanence of functioning carbon forests and maintaining human livelihood benefits, requires a broad approach to carbon forestry at both international and national levels, with a strong focus on landscape analysis.

#### *Soil and water quality and conservation*

17. Large forest blocks have a major influence over rainfall patterns and are crucial in mediating water supply.

18. The impact of AR on water supply and quality is to a large extent determined by project-specific factors (geographic location and previous land use). AR projects can improve water flows and may alleviate flooding, when on areas of previous deforestation or degradation, though it may also lead to a decline in water yields (particularly with plantations of non-native trees such as eucalypts).

19. REDD is likely to help maintain existing water regimes in large catchments (given the potential scale of REDD, this could be of global significance), and at more local scales it could help maintain well-regulated freshwater supplies. The REDD strategy adopted will evidently be critical.
20. Carbon forestry could also be good for soil protection; for example, AR may help to stabilise soils in areas subject to desertification.

#### **4.1 Introduction**

Forest carbon finance strategies offer what appear to be significant advantages in terms of larger and more stable volumes of finance compared to traditional environmental strategies. This chapter focuses on the opportunities that AR, voluntary carbon projects and REDD offer in terms of two sets of environmental issues, as well as the potential trade-offs between them:

1. enhanced biodiversity protection; and
2. soil and water quality and availability.

The evidence base for this chapter comes from (i) early experiences with AR (CDM and voluntary) and non-regulatory REDD projects; (ii) cognate programmes such as the 20 years plus experience of biodiversity conservation in the tropics. The balance of the evidence of environmental impacts of carbon forestry is assessed with regard to potential benefits and risks, asking what strategies can most help enhance the delivery of wider environmental benefits.

The point at issue is whether initiatives focused on conservation and sequestration of forest carbon divert attention from important biodiversity and environmental values or alternatively, provide new finance and impetus to address such concerns more inclusively. It is argued that the latter is feasible, provided that interventions occur at a sufficient scale, applying sound standards and environmental impact criteria, and with adequate regard to the potential leakage and other effects.

#### **4.2 Biodiversity impacts of forest carbon projects and programmes**

Tropical forests are the most biodiverse systems on earth, containing 60% of the earth's animals and plants, and rainforest loss is regarded as the greatest threat to terrestrial biodiversity (Turner 1996). Meanwhile, biodiversity is recognized as underpinning functioning ecosystems like forests which provide goods and services including:

- *Provisioning services* (foods such as game, roots, seeds, nuts, fruit, spices, fodder, pollination and seed dispersal, fibres including wood/ timber & textiles, and medicinal and cosmetic products);
- *Regulating services* crucial for human society (e.g. carbon sequestration, climate and water regulation, protection from natural hazards (floods, avalanches, etc.), and disease and pest regulation;
- *Cultural services* (spiritual and aesthetic) (Hassan et al. 2005).

The threats to ecological integrity may be quite complex. They might come from over-usage of a multi-species resource, which removes an entire functional group – for example, uncontrolled game (‘bushmeat’) hunting which could extirpate all medium-sized mammals from a locality (Nasi et. al 2008). With regard to pollinators, also, there can be very specific relationships between key species which if lost could cause broader ecological losses and the precautionary principle would suggest that the best way to approach such complex ecosystems is to try and conserve entire functioning assemblages.<sup>5</sup>

Despite these complex relationships, there is often a trade-off between biodiversity conservation and short-term economic gains in development options that result in biodiversity loss (Millennium Ecosystem Assessment 2005). One of the key reasons for this is that the management of ecosystem goods & services represents a policy failure in that receipt of them is free, often invisible, and not costed into decision-making. Payment for Ecosystem Services (PES) at scale, for example through the recognition of the economic value of carbon sequestration via forests, represents an important opportunity to provide tangible value to biodiversity-derived goods and services (Bosquet & Aquino 2008).

This section reviews the evidence surrounding the biodiversity conservation value of forestry carbon strategies.

#### *4.2.1 Biodiversity effects of Clean Development Mechanism AR projects*

Due to the small number of existing CDM forestry projects and the paucity of available biodiversity data from these projects, it is necessary to look at the general effects of afforestation and reforestation projects on biodiversity in order to infer biodiversity impacts of CDM AR projects.

Most plantations that exist in the tropics are based on tree monocultures because these are much more efficient for producing timber. This is because fast growing species can give more rapid returns and more uniform growth rates, which make management and harvesting much easier to plan and implement.

Plantations are also a requirement for reducing pressure on natural forests, given high and growing demand for timber in both developed and developing countries. In biodiversity terms, they can occasionally be useful as corridors for small numbers of particular species, but are not suitable for many groups of animals (Barlow et al 2007). In general such plantations are considered to have negative biodiversity implications, although some steps can be taken to improve their biological character (see Box 7).

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<sup>5</sup> However, in species rich areas, there is some evidence that one species may substitute another in function e.g. one pollinator replacing another (Fargione 2006).

To date, CDM plantations are not likely to have had significant negative impacts on biodiversity, given that there are so few projects (CD4CDM 2008). The key question therefore surrounds what effects CDM AR projects might have in the future as more projects are implemented. The CDM could probably work best for biodiversity within mosaic landscapes, using mixed planting and avoiding unnecessary use of exotic species (whilst recognising that some usage is probably a required trade-off, and should be monitored rather than prevented) and, where native species can be used, located in key areas to enhance permeability and connectivity of the wider landscape on longer cycles.

Are such approaches viable within the framework of the CDM? The mechanism certainly offers potential for additional and long term finance for implementing plantations that take biodiversity into account and for increasing the profitability of plantation forestry, which could relieve pressure on primary forests. The main features of the CDM from a biodiversity perspective include:

1. The inclusion of a safeguard surrounding the definition of eligible land which prevents the perverse incentive for cutting existing forest in order to establish CDM projects. Leakage prevention measures should in theory safeguard CDM plantation establishment from displacing activities such as agriculture that may become a threat to high biodiversity primary forest.
2. The requirement to describe biodiversity and environmental impacts of projects at project design stage. This would usually include some form of assessment in line with host country requirements, and could require a full environmental impact assessment, though this is not a mandatory requirement.
3. Approval of CDM AR projects is under control of host governments who are expected to deny approval to projects that do not further their country's sustainable development goals, including biodiversity considerations. The AR tools document also states that all CDM projects: *shall be in compliance with all applicable legal and regulatory requirements, even if these laws and regulations have objectives other than land-use and related regulations, e.g. conservation of biodiversity, soil and water resources protection/conservation, tax and investment regulations, mitigation of air pollution.*

In addition, there may also be potential to combine CDM certification processes with other standards such as the Forest Stewardship Council (FSC) or the Climate, Community and Biodiversity Alliance (CCB), which could increase overall returns (by allowing premium timber prices and carbon credit prices). By streamlining standards overall transaction costs may also be kept down (Peskest and Iwata 2007). However, like FSC, whilst such standards can improve practices they also result in trade-offs that can reduce demand. This could reduce overall scale of investment and reduce net biodiversity impacts of the CDM. In some respects standards such as the CCB can also represent quite a narrow view of biodiversity in the context of forestry for predominantly climate rationale e.g. known threatened species and habitats, rather than ecosystem functionality underpinned by biodiversity. As noted above, ecosystem functionality may represent a stronger concept of biodiversity than the superficially more appealing threatened species and habitats.

#### 4.2.2 Biodiversity effects of voluntary AR projects

The biodiversity impacts of voluntary carbon projects have in general been poorly documented, though in many respects they are similar to those of the CDM. However, there are some differences which mainly relate to the more variable standards and protocols for projects which could have either positive or negative biodiversity effects.

Positive effects could arise due to the greater flexibility in project types allowed in voluntary markets – projects tend to be smaller scale (which means that even if monocultures are established for example, they would tend to be smaller, reducing the likelihood of e.g. pest outbreaks) and could more easily accommodate AR models that are considered more ‘biodiversity friendly’ such as agroforestry and ‘trees on farms’ type projects which encourage the planting of native trees rather than exotics.

Negative effects could equally result from the lack of regulation over the types of forestry models chosen, the land use that is being replaced and the environmental impact assessment processes. These have been observed in some cases (Lohman 2006) though it is not clear whether these are the exception or the norm.

##### **Box 7: Biodiversity characteristics of plantations**

They only support a fraction of the biodiversity of natural forest ecosystems because there is no diversity of ecosystem structure. For example, Eucalypt plantations, the most common form of plantation species in the tropics, have been shown to provide a poor quality habitat for rainforest biota and their open canopies tend to favour grasses and weeds instead of rainforest plants (Kanowski et al. 2005).

- They are often planted in areas of natural or degraded forest, causing loss of biodiversity through planting and lower biodiversity compared to the situation if regeneration had been allowed. Even replacement of grasslands could have negative impacts (Chazdon 2008)
- Additional biodiversity impacts can occur due to the use of intensive practices, resulting in pest outbreaks, invasive species, water pollution etc. which can affect the wider environment.

These impacts vary depending on location, the previous land uses that plantations replace and the management practices chosen.

It is unlikely that plantations can ever match the composition and structure of original forest cover, but there are many options available for designing plantations in ways that enhance biodiversity conservation, albeit in ways that do impose additional costs (Chazdon 2008). These include establishing mixed-age stands; increasing rotation length; planting buffers of local native trees, shrubs and grasses; including in their plans native stream-side vegetation; or the incorporation of old native trees with hollows and fallen timber; targeting plantations near isolated patches of native forest to improve habitat connectivity for native species (CSIRO). The main issue is whether incentives exist to establish such systems which tend to have much lower rates of return, and how such incentives can be mobilised if they do exist.

Where the CDM may be found wanting in biodiversity terms is in relation to wider considerations beyond the project boundaries. The requirement for alignment with national sustainability laws is crucial to improve policy coherence, reduce conflict and maintain sovereignty, but such laws may lack adequate biodiversity mainstreaming. As noted above, maintaining biodiversity requires plantations to be established within wider landscape planning processes to ensure connectivity and conserve ecosystem functionality. The project-based nature of the CDM means that such planning is in the hands of host governments which may have weak environmental legislation.

#### *4.2.3 Biodiversity implications of REDD projects and programmes*

Tropical conservation has experienced a huge gap in available finance for decades (Balmford & Whitten 2003), and even the most significant funding has tended to come for projects that last 3 or 4 years at most - for example, via the Global Environmental Facility. Given the large financial flows predicted under some models of REDD, the mechanism offers huge potential for biodiversity conservation on a massive scale and over long time frames. Whilst it can to some extent be assumed that REDD at any scale will have positive biodiversity benefits (because, by default conserving tropical forests will conserve biodiversity) the different approaches to REDD that are currently being proposed, could imply considerable differences in terms of biodiversity which warrant further analysis in terms of the key design elements of REDD that were outlined in Chapter 2.

##### *Baselines*

The way that baselines are set will be important in determining the extent of potential biodiversity gains possible via REDD. The use of a strict Compensated Reduction approach to REDD based on historical baselines gives rise to two main biodiversity implications:

1. At the international level REDD finance will go to areas of high emissions, which may not necessarily be areas of highest biodiversity. For example, areas such as the Guiana Shield and other High Forest Low Deforestation countries which amount to 18% of the total tropical forest left on earth (Da Fonseca et al. 2007) will be unlikely to benefit from such a system (Ebeling and Yasue 2008). Of course, such predictions also depend on how 'biodiversity importance' is defined.
2. At national and sub-national levels, additionality issues mean that finance may not go towards protected areas (PAs) or indigenous reserves (which for example cover 22% of the Brazilian Amazon) as many environmental and indigenous peoples' organisations would hope. This is because these areas are in theory already protected and not producing emissions – i.e. their inclusion would not give rise to additional emissions reductions that would not have occurred in the absence of REDD. However, in practice, PAs are often under-funded which makes them susceptible to degradation and deforestation (e.g. through illegal logging) and in some instances (Belize & Bolivia, for example) there have been moves to de-gazette large areas, or even entire networks, to enable exploitation or revenue generation from the forests therein. This could make PAs eligible within REDD. The UNFCCC's official stance is that under Compensated Reduction mechanisms e.g. REDD, PAs causing emissions could be included if governments list them within National REDD plans (June 2008 SBSTA meeting).



Stock-based and fund-based REDD systems could avoid these dangers because the allocation of finance would not be decided on the basis of historic emissions rates. However, there would probably be a trade-off, particularly in fund-based systems, in that the overall levels of finance would likely be much lower, meaning that the funds available to invest in high biodiversity areas could be less than compensated reduction approaches.

#### *Framework*

The types of biodiversity standards that are specified for REDD projects will clearly have effects on their impact, as will environmental impact assessment standards set at national level, although the implementation at that level is still problematic in many cases. Requiring that potential REDD projects undertake ex-ante evaluations of biodiversity threats, as required in the CDM, would be beneficial, although the effect is inevitably to increase bureaucracy and costs.

#### *Project versus national approaches*

In general terms, national systems have distinct advantages in biodiversity terms over project approaches. National systems may promote a more 'joined up' approach to landscape planning and national measurement and monitoring systems could improve forest management practices beyond 'carbon management', by creating added value in landscape planning, enforcement etc. (see, for example, IUCN, 2008).

Project approaches are more vulnerable to leakage effects, although there is some evidence that even with the risk of leakage, projects may be beneficial in biodiversity terms. For example, this has been suggested in relation to the Noel Kempff Mercado Project in Bolivia, where, despite distinct risks of leakage, the project has succeeded in consolidating forest fragments into a more ecologically coherent forest landscape (see Robertson and Wunder, 2005).

#### *Scope of REDD systems*

As discussed in Chapter 2, the scope of REDD systems includes questions of whether and how emissions from forest degradation and wider land use emissions (e.g. from agriculture) are included in REDD. Relating to this are questions over what types of activities may be prevented or incentivised through REDD, for example whether and how Reduced Impact Logging (RIL), SFM, modifications to shifting cultivation systems, forest regeneration and agricultural intensification can be financed.

The inclusion of degradation in REDD would be significant in biodiversity terms because it could increase the geographic area over which financial incentives are delivered (e.g. over large areas of Central/West Africa where degradation is more prevalent than deforestation) and therefore the amount of biodiversity that could be protected. It could also help to finance 'buffer zones' around protected landscapes by providing incentives not to deforest these. Degradation often precedes deforestation, so its prevention could have proportionally much greater benefits beyond degradation areas themselves.

REDD could potentially finance various types of forest management strategies, if these can be demonstrated to reduce emissions below those that would have occurred without the strategy. There exist a wide range of options for sustainable forest management which generally reduce both emissions and biodiversity loss compared to conventional clear felling and other logging practices (which may be a precursor to deforestation).

RIL, for example, reduces emissions and can be better for biodiversity. However, it is expensive to implement in biodiversity-friendly ways, because measures to preserve biodiversity (e.g. soil and water conservation measures; respect of stream-side buffers; etc.) reduce rates of return through increased management costs and lower logging incomes (Tropenbos 2008). REDD could provide additional finance for RIL, making it a financially viable option, though this depends on the price that can be obtained from carbon and probably the availability of upfront finance in order to establish RIL systems before the carbon revenues are received.

Agricultural intensification is another strategy that has been suggested in order to meet REDD objectives. In theory, agricultural intensification could draw people away from primary forest areas by reducing demand for land. This may have positive impacts on biodiversity in the forest areas, but would probably reduce biodiversity in agricultural areas due to high inputs of chemicals and mono-cropping systems.

Large areas of monoculture agriculture may also reduce biodiversity even where forested areas are preserved due to 'island effects' and reduced ecosystem connectivity in landscapes which is vital for maintaining ecosystem functions. This demonstrates a need for biodiversity assessments of both REDD strategies and their 'off-site' impacts, even if the strategies do not focus directly on forest areas themselves.

The promotion of agricultural intensification has to be seen, in the context of REDD, in relation to concerns about shifting cultivation and other forms of cyclical land use. Shifting cultivation can have adverse effects on levels of forest cover, where the underlying drivers (such as population growth) move the relationship out of equilibrium, but the reality is often more complex (see Box 8). The policy implications need careful consideration, as other threats to the forest may be more significant.

In the case of the Democratic Republic of the Congo (DRC), for example, the main future threat to forests is from conversion to oil palm which is likely to have much larger implications on both emissions and biodiversity than expanding shifting cultivation. This illustrates that REDD strategies need to be carefully assessed against each other, so that small-scale farmers are not targeted in preference to large-scale production systems which are likely to be more amenable to change, and to have greater environmental impact.

**Box 8: *Shifting cultivation and biodiversity***

Shifting cultivation has been controversial in biodiversity conservation terms for a long time, depending on how and where it is exercised. It tends to be interpreted in a slightly different way to strategies such as RIL, SFM and agricultural intensification in the REDD debate. These activities are generally seen as positive strategies that need to be promoted, whereas shifting cultivation is seen as an activity that needs to be stopped.

There is obviously likely to be some biodiversity loss due to shifting cultivation, though secondary forest also has high biodiversity value (Tutin and Fernandez 1985), so the level of loss relates to the extent to which abandoned forest clearings are left to recover and the pattern of degradation. There are still tenuous links between shifting cultivation and carbon emissions, although in some areas (e.g. DRC) small-scale farmers are said to be the prime drivers of emissions (Laporte et al. 2007). Cyclical cultivation could cause emissions or be broadly carbon neutral over the long term depending on rates of re-growth.

The key factors governing this surround issues such as population growth within countries or regions, which may take systems out of the 'steady state'. The main drivers are likely to be extrasectoral, therefore, and the potential leakage effects of any redressive actions need to be considered accordingly, in this wider frame of reference.

REDD systems could be established to try to reduce shifting cultivation, for example, through the promotion of alternative income generating activities, though these are often ineffective and could be inequitable (see Chapter 5). Displacing small-scale farmers could lead to net carbon and biodiversity losses. An alternative would be to try to use REDD incentives to help manage shifting cultivation in ways that are sustainable in both emissions and biodiversity terms – for example, by encouraging community-managed RIL. Such possibilities are considered further in Chapter 5.

#### *4.2.4 Enhancing biodiversity within AR and REDD carbon forestry systems*

A key message in this section has been that it is not necessarily the more threatened, perhaps charismatic, species that are of prime importance in terms of ecosystem function, it might well be the more common and dominant ones (and it might be species not yet discovered). The crucial components of biodiversity for ecosystem services are functional groups of animals and plants that play specific roles within the forest trophic system. This implies that to derive serious biodiversity benefits that maximise the permanence of functioning carbon forests (with additional ecosystem services), and maintain human livelihood benefits, any scheme – whether REDD or AR – should be part of and be implemented at wider landscape/habitat level thinking to maximise connectivity and permeability. This will require a much broader approach to carbon forestry at both international and national levels, because, as has been demonstrated, high carbon conservation or sequestration strategies do not necessarily correlate with high biodiversity conservation strategies. National governments in tropical forest countries are likely to play a particularly important role, as they can define appropriate legislation for investment in an appropriate range of REDD and AR activities that consider biodiversity impacts beyond individual projects. Some key issues around landscape analysis approaches are considered in Box 9.

### **Box 9: Conservation priority setting and landscape analysis**

Although there are multiple systems of international conservation priority setting from hotspots (Myers et al. 2000; Olson et al. 2001) - such as Important Bird Areas; Important Plant Areas, and Alliance for Zero Extinction (AZE) sites - it could be argued that landscape characteristics should be used for identifying major forest blocks (e.g. within the Amazon and Congo Basin – as the largest terrestrial carbon sinks on earth) and be combined with ecoregional approaches [Olson et al. 2001] to identify key landscape areas within these regions. Ecoregions are functional units that provide a useful tool to define where major ecotones and environmental gradients exist. WWF describes landscapes as: “a large area of land or water that contains a geographically distinct assemblage of natural communities that (a) share a large majority of their species and ecological dynamics; (b) share similar environmental conditions, and; (c) interact ecologically in ways that are critical for their long-term persistence”. This could then be supplemented by information on *refugia* and carbon data.

Taking a more biodiversity-centric stance, and irrespective of carbon mechanisms, Protected Areas networks are likely to remain critical for national level conservation. ‘Key Biodiversity Areas’ analysis (Langhammer et al. 2007) is a useful theoretical tool for pooling the available biodiversity data and combining it with carbon data to identify priority areas for forest conservation investment. But, this comes with the significant caveat that in reality PA creation is often opportunistic – particularly in highly threatened ecosystems (Gordon et. al 2006).

Perhaps more usefully, at the local landscape level, emerging planning tools like High Conservation Value Forests (HCVF)<sup>6</sup> should be explored as a mechanism for landscape planning [and their ability to be taken to scale analysed], given that, crucially, they can provide a way to integrate social data with biological data, to determine the best mosaic designs for landscape biodiversity conservation and human livelihoods needs at local level. The EU funded Landscape Mosaics Project [CIFOR] may offer another starting point in terms of tools, to be integrated with other initiatives like HCVF in terms of best practice in biodiversity mapping data and livelihoods/ participatory multi-stakeholder process’.

### **4.3 Soil and water quality and conservation**

Large forest areas, such as the Amazon Basin, have a big influence over local and global rainfall patterns, and are therefore crucial in mediating water supply. They also control surface water runoff which is linked to stream flow (and the functioning of aquatic ecosystems). Related to this they moderate soil erosion which has an influence over both water quality and soil quality, creating feedback loops in terms of plant productivity in landscapes. Globally, 75% of usable freshwater supplies come from forested catchments (Fischlin et al. 2007). This section considers the relationship between carbon AR and REDD projects, water and soil resources.

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<sup>6</sup> See: <http://hcvnetwork.org/>

#### 4.3.1 Impacts of AR projects on water resources

As with biodiversity issues, the impacts of AR on water supply and quality are to a large extent determined by the geographic location of the project in question and the previous land-use.

In general forests of any type are likely to improve water *quality* within a given catchment, by reducing surface erosion and thereby the solid particulate component in the water supply, and by increasing water filtration, which removes pollutants (Bruijnzeel 2004). However, in some cases the converse may be true depending on previous land use, the type of AR forestry (e.g. the levels of chemicals used) and the management regime (e.g. harvesting practices which can affect erosion and therefore volumes of particulate matter in water).

AR projects can also improve water *flows*, especially in areas where deforestation or degradation has occurred. Deforestation of a given area does not tend to decrease overall water provision in most cases<sup>7</sup> but it does affect peaks and flows, which has implications in terms of the likelihood of floods or droughts. Fast water flow, combined with increased surface runoff, also means that pollutants are quickly transported to rivers, rather than being filtered through the soil (Brauman et al. 2007). Reforestation may not immediately restore the modulating effects of the original forest in terms of improving low flows in the dry season and reducing peak flows in the wet season since the soil storage and infiltration capacities lost with deforestation may take years to recover. These functions are crucial, and provided by the structure of roots, and the variability of terrain found within a living forest.

However, the immediate effect of reforestation may be a decline in water yields that is particularly felt in the dry season, which is more likely to occur in plantations of fast-growing non-native trees (most typically, eucalyptus). Globally, the effects of *afforestation* on grassland, shrubland or cropland could cause large-scale impacts on water quality. Jackson et al. (2005), combining field more than 600 observations, with climate and economic modelling found decreased stream flow by 52%, and 13% of streams (in drier areas) drying completely. However, the authors noted that *reforestation* is being used successfully to alleviate flooding, and that the co-benefits on water and soil resources may be greatest where former forests have been replaced by crops - restoring water quality and recharge, whilst reforestation of floodplains can be beneficial for biodiversity, erosion reduction, improving water quality, mitigating peak flows, and controlling groundwater discharge.

#### 4.3.2 Impacts of REDD on water resources

There is little existing information on how REDD might effect water quality and supply. From the above analysis it is evident that REDD is likely to help maintain existing water regimes in large catchment areas such as the Amazon and Congo Basin, and at more local scales it could help to maintain well regulated freshwater supplies in small catchments and river basins. The exact effects are again dependent on the types of strategies used to achieve REDD objectives. For example, localised PES schemes have been implemented for water environmental services in which downstream beneficiaries (villages, towns and companies) pay upstream farmers for forest management in catchment zones.

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<sup>7</sup> On the other hand when conversion of montane cloud forests occurs flows *are* reduced because water flows within this ecosystem are generated by cloud and fog interception (Postel & Thompson 2005). For this reason, reforestation in this habitat [although relatively difficult] is more likely to quickly result in enhanced flows as a result of moisture interception by the vegetation.

Given that these schemes also conserve carbon, they could be ‘bundled’ into REDD approaches. On the other hand, approaches such as agricultural intensification may have negative effects on water resource quality.

Given the potential scale of REDD, there could be impacts of global significance in the long term, particularly via the interaction between large forest areas and global climate and marine systems. Bruijnzeel (2004) for example, predicts that large-scale Amazonian forest conversion to pastureland would result in a 7% reduction in annual rainfall. This may sound small, but there are still many unknowns about its influences on global marine currents and solar heat absorption, both of which play a role in global atmospheric circulation. Recent research on the Amazon also suggests that it feeds carbon sequestration by diatoms in ocean, amounting to an additional 7.2 million tons of carbon sequestration each year due to nitrate and phosphate (Subramaniam 2008). All of these issues indicate that REDD could help maintain a stable global climate and prevent the possibility of ‘tipping points’ (through a series of climate and anthropogenic vicious circles) which would accelerate climate change dramatically (Nepstad 2007).

#### *4.3.3 Carbon forestry and land/soil degradation*

The physical protection provided by a forest canopy and its understory mean that surface erosion is rarely a significant issue in forested areas (of any form) as well as the accumulated leaf litter – which also plays a filtration role. Erosion rates can increase significantly when deforestation takes place, as tropical soils lose their organic matter and become compacted with lower impaired infiltration capacity. Increased surface runoff then occurs and, during rainfall, leads to increased erosion and watershed sediment yields.

One area where the overlaps between carbon forestry and soil degradation are particularly relevant is in dry forest lands and arid lands (types of areas covered by the UN Convention on Combating Desertification, UNCCD), with few existing trees but potential for afforestation. In these cases, carbon forestry could be relevant in two main ways:

1. Carbon finance could be used to support AR projects that stabilise soils, for example in areas susceptible to desertification.
2. Carbon finance could be used to support REDD initiatives in UNCCD forestlands.

In both cases, the commercial viability of these approaches will be determined by the amount and rate of carbon sequestered or conserved, which is likely to be much lower than more extensive plantations or tropical forests (GM/EcoSecurities 2008; Tipper 2002). Given the tight profit margins of carbon forestry enterprises, this may make them infeasible, especially within the CDM. However, some voluntary AR schemes have been established using trees and nutritional plants that are sustained and flourish in drought-stressed and highly saline conditions (e.g. the Australian ‘Greening the Desert’ initiative), though they are not yet common and little information is available on their success. There is currently not enough data available to estimate whether REDD finance could support UNCCD forest lands, which would require knowledge of the coverage of such forests, their carbon densities and their deforestation baselines. Given the significantly lower returns compared to moist tropical forest areas, there will be a need for systems to reduce transaction costs, such as the use of default carbon values, bundling of projects and programmatic approaches.

#### 4.4 Concluding remarks

Environmental relationships in forest areas are often complex, and careful analysis is needed if the impacts of forest changes are to be understood. Biodiversity impacts are highly dependent on the location where the intervention is implemented, as biodiversity differs across landscapes, and thus a situational perspective is often essential. A number of useful principles can be identified, however, and these need to be taken into account in policy development.

##### *Conserving the largest sinks*

Global prioritisation for carbon forest finance must go into conserving the largest remaining terrestrial carbon sinks, and therefore be biggest potential GHG wins. This means primary forest in areas under existing and future threat. Expansion of forest cover in the tropics due to natural regeneration of native forests will not be covered under REDD arrangements, though it is important in many areas, and needs to be recognised policy at some stage.

##### *Type of AR and REDD*

From a biodiversity perspective, the mechanisms applied within REDD are less crucial than ensuring its broad application. REDD is vastly preferable in areas with intact forest over AR project alternatives. Flexibility and context specificity is crucial to both REDD and 'improved AR'. CDM AR rules should continue to be scrutinized, and emerging standards (e.g. CCB) applied more broadly.

##### *Stratified REDD approaches according to location with pro-poor considerations in mind*

There is a case for structuring REDD policies in a stratified manner. The best wins for climate and biodiversity can probably be found in the so-called 'wilderness areas', within which there is probably the most justification of applying the more realistic livelihood goal of avoiding harm, whilst on their peripheries [in 'frontier' areas] there is probably the most need, and potential. to apply pro-poor policies to ensure that DD is tackled .

##### *Costing biodiversity into REDD*

The real cost of making REDD work are yet to be defined, and there is a considerable danger that governance failures will decrease effectiveness (or increase costs) considerably. Even as an internationally administered mechanism (*vide* the GEF), the reductions in financial flows to the field level may be substantial. Overburdening delivery with biodiversity criteria is probably unrealistic and, in the case of REDD, to some extent unnecessary, as the programme itself will be a significant biodiversity gain. However, there is potential for the voluntary market to stand 'higher value/ quality' carbon crediting with stricter standards.

##### *Landscape planning and biodiversity relationships*

In terms of maintaining a suite of ecosystem services from functioning, permanent, adaptable forest carbon sinks, the species richness of forest is not necessarily the most important element of a biodiverse landscape. Therefore, whilst 'biodiversity co-benefits' have a crucial but indirect relationship with REDD and well-executed AR, from a GHG permanence perspective the size of forest, and abundance of ecologically important species may be more critical. Such areas should then be the subject of concerted landscape planning to include a mosaic of more and less protected areas [with varying degrees of usage], based on a mix of finance [which could include AR projects in the right contexts]. REDD at scale should be able to leverage the participation of the disparate stakeholders that will be required to do this, and to encourage [and finance] wider connectivity and permeability across a given area. A conclusion to be drawn, therefore, is that biodiversity gains from carbon forestry are likely to be heavily dependent on achieving effective landscape planning approaches.

## CHAPTER 5: Analysis of Carbon Finance Initiatives/proposals Targeting Forest Issues from the Perspective of Development

### Chapter 5 Summary

1. This chapter addresses the third dimension of the Study Specification: the *development and pro-poor dimensions of carbon financing*.
2. The development agenda is addressed in relation to poverty *at four spatial scales* (the individual, community, national and international), and on *three main dimensions of welfare* (income and growth; equity; voice and choice).
3. The starting point of the analysis is a recognition that, despite frequent high dependence on forest resources for their livelihoods, the poor are often the least well-placed to benefit from external finance intended to improve their welfare. Investments in the forest sector are long-term and high-risk, particularly for those with low assets and purchasing power. Quick and easy ‘win-win solutions’ with environmental and social benefits should therefore be treated sceptically.
4. The interests of the poor are explored in relation to the enhancement of carbon sinks, through the CDM and voluntary schemes, and initiatives to reduce emissions and/or preserve carbon stocks through REDD (both the compliance architecture currently under consideration and some voluntary schemes).
5. Forest carbon finance could have *three main effects on the poor*: delivering clear *pro-poor* benefits; delivering no new benefits but *doing no harm*; and creating *new risks* for the poor. There are good grounds to argue that successful initiatives are likely to be ones that are pro-poor, particularly in relation to REDD, though concerns also as to the negative effects that REDD might have on the poor, eroding their assets and impeding the attainment of their rights.
6. *Clean Development Mechanism*
  - i. The CDM has not performed well in any sector, in relation to international equity (benefits being concentrated in a small number of emerging economies) or forestry (there being only one fully validated CDM project. Four sets of issues are considered that explain this situation:
    - CDM procedural barriers
    - Forestry barriers
    - LDC barriers
    - Market barriers (non-recognition by the EU ETS).
  - ii. Given the low take-up of CDM forestry, the main lessons that can be learnt from the experience to date concern equity at the inter- and intra- national levels, and the steps that should be taken by the UNFCCC to avoid similar problems with REDD.
7. *Voluntary Schemes*
  - i. Voluntary schemes are freed from regulatory requirements, and tend to be much more conditioned by corporate social responsibility imperatives and values. Forestry has proven much more attractive to voluntary investors than the CDM (mainly in the AR area), with a noticeably better take-up of projects. However, the size of the market is still quite small (\$91 million, as of 2006, which compares to \$24.4 billion for the EU ETS).



- ii. The fact that NGOs are very active in the conception and management of voluntary schemes suggests that they should, in principle, favour pro-poor activities. Likewise the CSR rationale. There is some concern about standards, however. Not all voluntary standards cover forestry projects, and those that do are not necessarily very demanding.
- iii. There are also concerns at the top-down orientation that CSR motivation tends to introduce into field projects. Some projects have a distinct flavour of ‘communities being saved from themselves’.

#### 8. *Reduced Emissions from Deforestation and Forest Degradation (REDD)*

- i. While there are a few voluntary schemes of the REDD type, REDD has yet to be introduced into a compliance regime, and developments at Poznan and Copenhagen will be critical.
- ii. Design issues relating to REDD in the post-Kyoto international regime are examined at two levels:
  - International design options which are common to all policy interventions covered by the UNFCCC
  - Implementation issues at the national level, where international finance is converted into nationally-specific programmes of activities.
- iii. The *international dimension* involves a number of design options, with implications both for international and sub-national equity. These are:
  - *Contrasting reference scenarios* (cap and trade systems are unattractive for LDCs, on cost and administrative grounds; baseline and credit systems using historical baselines, disadvantage certain countries and advantage others, though they are more difficult to apply where there are capacity constraints than stock measurement approaches working on an incremental (gross-net accounting) basis.
  - *Forest definitions* (the inclusion of both deforestation and degradation is logical, in that both are significant influences on carbon storage in forests, but the drivers are often very different; inclusion of degradation poses risks for poor producers, though it also offers positive opportunities.)
  - *Financing mechanism* (whether market based or fund based and whether, in the latter case, aid funded or levy funded [as with a % levy on the ETS auction].)
  - *Liability arrangements* (how risk and liability are handled, particularly where upfront finance is required for investments to be made).
  - *Spatial scale* (degree of projectisation and alignment with national systems).
- iv. The *national dimension* depends heavily on decisions to be made at the national level, as the main international agreements guiding REDD delivery (as indicated in the Bali Road Map; for example, the CBD, CCD and UNFF) acknowledge the sovereignty of the producer state, and its primacy in relevant areas of policy.
  - Much of the focus to date on the national level has been on the ‘readiness measures’ needed to help forest rich countries monitor their forest resources, and assess changes in forest cover.
  - More problematic, however, are the broader capacity building measures concerned with creating an enabling environment for REDD. The requirements here tend to be more political rather than technical, and they are likely to be both very costly and time consuming to put in place.

Cases in point are the tenurial and legal reforms that may be needed to incentivise local actors, and allow them to defend their rights. Such reforms could well be critical the success of REDD but they depend heavily on the political will of government, and long-term commitment to reform. There are concerns that the size of the challenges in these areas could be underestimated.

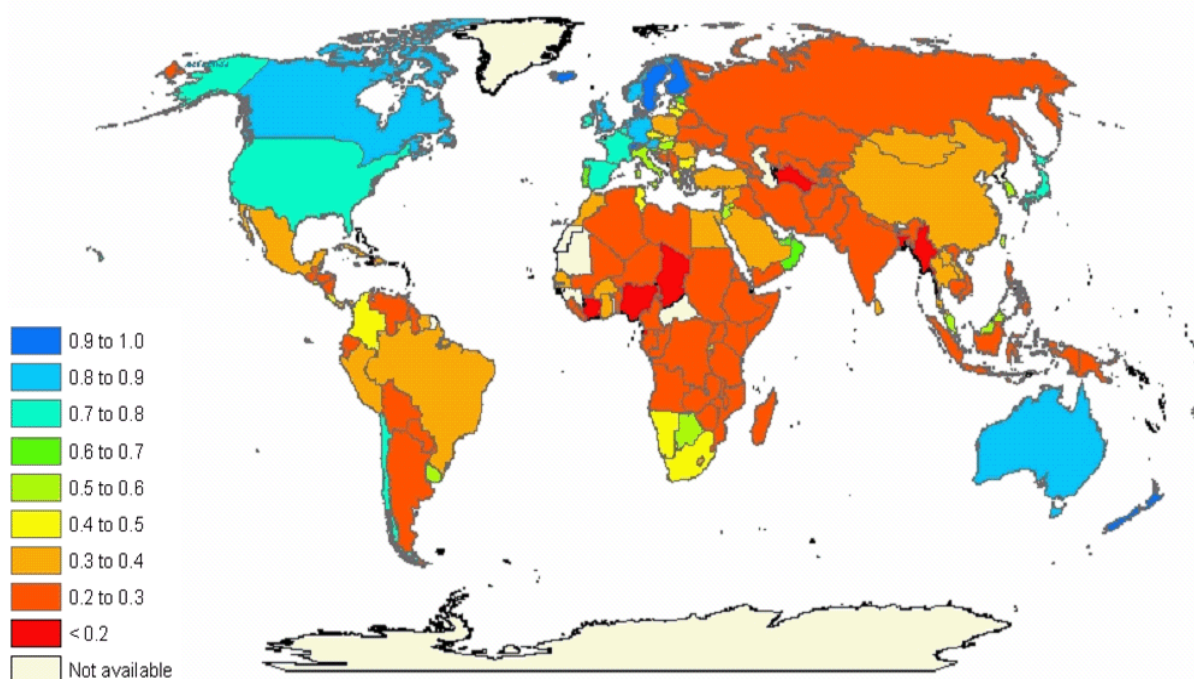
- A heavy dose of realism is also required when assessing the downstream implementation measures, which are intended to relieve pressure on the forest, and counter the underlying drivers of deforestation. These measures cover a very broad range of activities, with varying levels of ambition, including national level policy decisions (for example, removing subsidies that encourage deforestation), improvement of industrial practices (for example, support to carbon-conserving reduced impact logging), and initiatives targeted on diminishing forest dependence of the poor (for example, agricultural intensification schemes and alternative income-generating activities). An evidence base already exists on livelihoods interventions, for example, and is not encouraging. As mitigation strategies often depend heavily on success at community level, this is a particular cause for concern. There is a strong case to require standard-setting and monitoring of social costs and benefits, according to agreed international standards, as most of the implementation measures would have implications for the poor.
- A number of ethical issues arising concerning the ways in which REDD payments are made and behavioural changes incentivised. These include: questions regarding subsidies to industry to the detriment of the poor (should the costs of green strategies be internalised by industry, or subsidised by REDD, and if the latter, over what time frame?); effects on rural communities (for example, of creating high external dependence); and perverse effects (for example, creating shortages of food and firewood, which inflates prices and could encourage further deforestation).
- There are a number of issues relating to REDD payments at national level, concerning *scale and architecture of activities*. Areas of concern the ways in which projects are promoted and the issues of liability around them. A key issue here is the links to policy, as extensive policy and institutional reforms are likely to be necessary for positive impacts to be achieved, and projects isolated from the policy milieu could prove both ineffective and inequitable.

v. The chapter concludes by identifying a number of recommendations to inform REDD design. These are:

- The need for international and national climate change architecture to be designed with clear social co-benefits in mind
- The need for realism as to the capacity for social transformation to serve climate change imperatives
- The importance of tenure reform
- The importance of clear links into national policy

## 5.1 Introduction: Forests and Poverty

The introduction of development issues and concerns into international policy on climate change is contentious, particularly as the UNFCCC is at heart a pollution convention and largely driven by climate science principles, evidence and actors. Development goals can appear as a diversion from these priorities. In addition, forest-rich societies are often marked by particularly weak national governance (See Figure 9), which reduces international confidence in the likelihood of success in delivering mitigation measures. It draws into question the ability of governments to handle multiple environmental and social agendas; to manage financial flows to the national benefit, including the immediate resource users; and to ensure that forest-sector actions have long-term permanence. More generally, there is a need for realism as to the strength of the existing the policy architecture in the forest sector in many forest-rich societies, and the significant challenges in using this architecture to simultaneously pursue the triple agenda of climate change, pro-poor development and biodiversity/environment.



**Figure 9: Illustration of forest rich areas and poor governance**

Note: The Corruption high values (blue) indicated positive scores, while low values (red) indicate negative ones. Source: Encyclopedia of Earth; based on diverse perception surveys and multi-annual data. See: [http://www.eoearth.org/article/Development\\_indicators\\_and\\_indices](http://www.eoearth.org/article/Development_indicators_and_indices)

This section of the paper addresses the benefits and risks of the various forms of international forest carbon finance for socio-economic development primarily from the perspective of the poor. The focus is both on poverty (in the sense of relative and absolute deprivation) and equity (in the sense of distributive justice at various social scales). The approach to ‘poverty’ adopted is an inclusive one which sees it both in ‘material’ terms (low income and material wealth), and also in relation to heightened vulnerability and deprivation of basic capabilities (health, education, etc.). These qualities are likely to be mutually reinforcing. Thus, material poverty increases deprivation in terms of capabilities (lack of skills, high incidence of ill-health, weak public voice) and this reinforces vulnerability, perhaps leading to further material poverty.

In the discussion that follows, poverty and equity are considered in relation to four spatial scales (the individual, community, national and international). The potential for carbon finance to contribute to development is assessed in relation to three main dimensions:

- **Income, welfare and growth:** *income and welfare* in both monetary and non-monetary terms (for example, cash income and access to forest products, but also new skills and knowledge), and in relation to the direct benefits of climate change activities (such as PES-type payments) and indirect benefits (such as increased public welfare and services, heightened voice); *growth* in relation to macroeconomic changes as judged by indicators relating to income generation and stabilisation, skills development and diversification, strengthening of institutions and economic development, and the emergence of low carbon economies.
- **Equity:** in relation to the distribution of risks, benefits and vulnerability within a population, and considered at both micro (individual, household and community) and macro (national and international) scales. Inter-generational equity is also a concern, to the extent that climate change imposes heavy costs on future generations for actions taken by previous ones; REDD could, however, reverse this relationship.
- **Voice and choice:** to distinguish a concept of the poor as passive recipients of aid from a more rights-based approach, which sees the strengthening of institutions of public representation as central to development, and as an important way of helping the poor adapt to and master their changing circumstances.

Table 11 relates these three dimensions to the four levels of spatial scale.

	<b>Individual</b>	<b>Community</b>	<b>National</b>	<b>International</b>
<b>Income and growth</b>	<ul style="list-style-type: none"> <li>• Labour income</li> <li>• Non-labour income</li> <li>• Enhanced rights to land</li> <li>• Rights to carbon</li> <li>• Access to subsistence products</li> <li>• Small enterprise development</li> </ul>	<ul style="list-style-type: none"> <li>• Infrastructure improvements</li> <li>• Local spending</li> <li>• Improved public services</li> <li>• Improved environmental quality</li> </ul>	<ul style="list-style-type: none"> <li>• Infrastructure improvements</li> <li>• Skills and knowledge</li> <li>• SME development</li> <li>• Attaining the Millennium Development Goals (MDGs)</li> </ul>	<ul style="list-style-type: none"> <li>• Simultaneous attainment of development, CC and biodiversity conservation targets</li> </ul>
<b>Equity</b>	<ul style="list-style-type: none"> <li>• Level of income from REDD compared to others in household</li> <li>• Continued or increased ability to access forest resources under REDD</li> </ul>	<ul style="list-style-type: none"> <li>• Level and distribution of income in community</li> </ul>	<ul style="list-style-type: none"> <li>• Regional distribution of REDD investment</li> </ul>	<ul style="list-style-type: none"> <li>• International distribution of REDD investment</li> </ul>

	<b>Individual</b>	<b>Community</b>	<b>National</b>	<b>International</b>
<b>Voice and Choice</b>	<ul style="list-style-type: none"> <li>•Effective participation in community discussions of REDD project design and implementation</li> </ul>	<ul style="list-style-type: none"> <li>•Effective participation in decision making surrounding REDD (with companies; government etc.)</li> <li>•More viable and representative local government</li> </ul>	<ul style="list-style-type: none"> <li>•Effective participation in national REDD processes</li> </ul>	<ul style="list-style-type: none"> <li>•Effective participation in global REDD negotiations</li> </ul>

**Table 11: Simplified poverty framework giving examples of indicators that can be used to assess the poverty implications of REDD at different scales**

Source: Peskett et al, 2008

The starting point for any analysis of forests and poverty must be a recognition that, while the poor tend to have high dependence on forest resources for their livelihoods, they are often the least well-placed to benefit from external finance intended to improve their use of them, and the most vulnerable to marginalisation through inappropriate, even if well-intentioned, development strategies. Relationships between forest dependence and poverty are considered in Box 10.

Policy responses need to respect the multi-faceted nature of forest dependence and the diversity of circumstances. While there is a significant ‘pro-poor’ dimension to forest conservation and development, it is a more complex one than might initially be thought and the issues need to be carefully deconstructed. In addition, forests have a broader relevance in society which requires a longer-term perspective on development than the immediate welfare of the poor. There are thus significant challenges in attempting to link mitigation and environmental concerns to development goals in situations of high forest dependence.

**Box 10: Relationships between forest dependence and poverty**

1. Tropical forest regions are characterised by high levels of poverty, and the poorest sections of the population tend to be the most forest-dependent both directly (i.e. forest-dwellers reliant on forests for income and livelihoods) and indirectly (poor people not living in close physical proximity to forests, but using timber and non-timber forest products, such as animal (bushmeat) and plant (various rattans, leaves, nuts and oils for consumption and associated purposes [e.g. furniture and household items, building and wrapping materials], etc.).
2. The forest sector is a challenging one for pro-poor development; poor people tend to lack secure tenurial rights to both land and trees; they also tend to lack the networks and resources to defend their rights, even when they nominally possess them. While pro-poor tenurial reform is highly desirable, great caution is needed in putting such programme in place, as there is a high risk of elite capture. The interests of the poor are often best served by reinforcing collective rights rather than individual ones.
3. The 'forest-dependent poor' is a very variable category, encompassing:
  - hunter-gatherers and long-rotation cultivators, who obtain most of their livelihoods from forests;
  - small farmers relying for only part of their livelihood on adjacent forests or woodlands;
  - traders and processors of forest products and employees in forest industries (i.e. artisan and landless rural poor); and
  - urban- and peri-urban consumers of forests products. (Byron and Arnold, 1999).

Such individuals are likely to differ in the extent and nature of their dependence on the forest, and also in its relative importance to their welfare and the likelihood of changes occurring over time in patterns of their demand.

4. An important perspective on varying levels of forest dependence is in relation to 'forest transitions' (see Ch.2.2); this implies the ways in which amount of forest cover and attitudes to it tend to evolve in particular directions according to the level of national economic development. Periods of high forest loss and low conservation commitment may be succeeded by periods in which economic interests and public attitudes favour forest recovery and conservation (Rudel *et al*, 2005). There tends to be a transition from high forest cover and low deforestation rates, with low levels of commitment to forest conservation, to growing population pressure and high deforestation rates, and both of these contrast with post-industrial societies, with lowered dependence on forest products in the economy, but a stronger ethos of conservation and a commitment to forest restoration. Thus, user behaviour and attitudes are likely to be significantly influenced by broader societal pressures which individuals are powerless to control.
5. Quantitative measures of forest resource use tend to mislead, in that the highest levels tend to go with wealth not poverty, and extent of usage is thus a poor indicator of forest dependence; quality and timing are at least as important - for example, in relation to food security of the poor, where forest resources may provide the safety nets to tide the poor over critical shortages (Ibid); equally, it should not be assumed that the poorest only enjoy subsistence use – poverty could well increase propensity to sell rather than to consume (e.g. de Merode *et al*, 2003).

The high dependence of the poor on forests tends to be irrespective of the condition of the forest: it is as much a consequence of poverty as forest structure.

6. Probably the most significant form of dependence on forests (in terms both of importance for livelihoods and numbers of beneficiaries in tropical carbon-rich contexts) relates to the role of forests in maintaining soil fertility in long-rotation and cyclical systems of cultivation ('swidden agriculture'). Many important forest products are also derived from forest fallows (as opposed to climax forests), at various stages in their regrowth.
7. Certain aspects of the economy of the poor (for example, slash and burn agriculture involving fire as a means to release biomass fertility; charcoal production and fuel-wood gathering; and hunting for bushmeat) are important to livelihoods in many forest environments, but difficult to defend in public policy fora, even where alternatives are unproven, unavailable or socially and environmentally questionable. Such cyclical usage challenges the precepts of much of the dominant environmental discourse, and there is limited international will to champion the cause.
8. As regards AR activities, as a general rule the poorest are the least likely to be able to benefit, because of their restricted ability to withdraw land from production for long enough to derive an adequate return from long-cycle crops like trees; this is particularly the case where land is in short supply. In such instances, the potential for increasing tree cover on farmland is likely to derive mostly from 'agroforestry systems' through planting trees on farm.<sup>8</sup> Even where land is in surplus relative to labour, however, poor people may still lack the resources to invest in tree crops where the returns are delayed by 5-10 years or more.
9. By and large, there is an inverse relationship in the tropics between forest cover and numbers of persons living in poverty, particularly in Africa. Even in countries with high overall national populations, the most densely populated zones are usually outside of the high forest areas. An approach which targeted climax moist forests for conservation efforts would be the least socially disruptive, other things being equal.
10. Nor are the most forest-dependent poor always to be found in the highest carbon value forests (the highest population densities in rural Africa, for example, may be in the Sudano-Sahelian zone, not the moist forests). A purely carbon-based *numeraire* will not necessarily prove the most effective or efficient in poverty-alleviation terms (see Figure 9). Inevitably, therefore, a systematic approach to rural poverty alleviation will require additional considerations beyond those relating to purely to optimising carbon content and capture.
11. Account needs also to be taken of the strategic role of forests in economic planning, and the potential for forest resources to contribute to national development. Where forest lands are largely in public hands, this is often justified in terms of these national, strategic dimensions. This breaks the direct link between forest residence and forestry benefits, and emphasises redistribution of revenues at national level. This is an important consideration given the very substantial financial flows to which climate change mitigation may lead.

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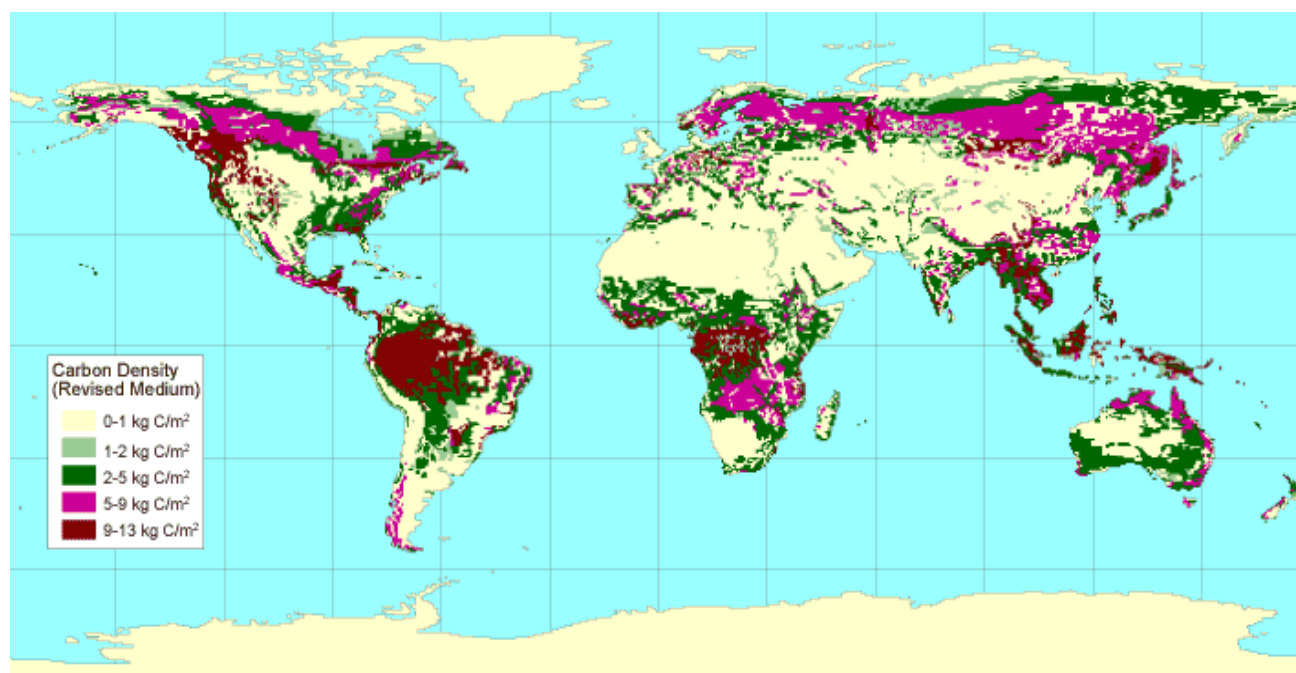
<sup>8</sup> A variety of delivery methods are possible for new ventures in such areas (company-company partnerships, outgrower schemes, farmer-to-farmer extension, etc.), and these vary in their suitability to the poor.

## 5.2 Carbon Finance and the Poor

The large range of instruments and rules, actual and potential, and the infinitely wider range of environments in which they might be applied, require a degree of caution in assessing the likely outcomes of carbon finance for the poor. As was discussed in Chapter 3, the emerging international architecture, particularly the regulatory framework for REDD, is still in development, and thus different instruments and rules may have different implications at different moments in time. The emphasis must therefore be on ensuring that the benefits outweigh the costs within a dynamic process of change.

In broad terms, forest carbon finance could have three main effects on the poor:

- Deliver benefits such as increased income and be *'pro-poor'*; increased income might derive from financial transfers to the forest-dependent poor as reward or compensation, possibly in return for ecosystem services delivered, or from increased revenues to central and regional governments in return for carbon emission reductions on a variety of bases.
- Deliver no new benefits but do not necessarily create new risks, and thus *'do no harm'*; this could be associated with an approach oriented to defending indigenous peoples' rights or 'poverty safety nets'.
- Create *new risks*, such as: impose changes on livelihood systems which are economically unsound and which diminish welfare and livelihood security, and which destabilise political structures; reduce access to forests for livelihood needs; impose liabilities for failure to meet targets; increase financial risks in other ways. Risks may also be imposed indirectly; for example, carbon finance could privilege individual land ownership, and thus progressively erode the communal tenure systems which are integral to the wellbeing of those with low purchasing power.



**Figure 10: World ecosystem complexes ranked by carbon densities in vegetation**

Source: <http://cdiac.ornl.gov/epubs/ndp/ndp017/carbonbig.html>



This paper proceeds from the view that the social co-benefits of carbon finance for the poor potentially outweigh the risks. This would be contested by those who argue that, as the main aim is to tackle climate change not poverty, the appropriate stance should be that of 'do no harm'. This latter position asserts that the urgency of the case for action on climate change to reduce carbon emissions requires abandonment of any concerns that are outside of its immediate remit and which might significantly impair its efficiency, social co-benefits included; this is consistent with the conclusions of many recent international conservation efforts, where attempts to reconcile conservation with development, through cognate mechanisms ('integrated conservation with development projects' [ICDPs] and the like), are often felt to have been to the satisfaction of neither constituency.<sup>9</sup>

However, there are some important counter-arguments, which would favour a more socially-oriented approach. Aside from the moral argument that the poor should have a right to an equitable share in any benefits to which they have a legitimate (if not always legalised) claim, there are some more instrumental considerations relating to the immediate abatement aims (see Box 11).

**Box 11: Why should Carbon Finance be pro-poor?**

- (a) *Sustainability*: without the support of the main resource users, mitigation schemes will not be sustainable; this applies to any schemes where there are issues of access and encroachment. Local-level commitment and stewardship of natural resources has been shown to be important to achieving sustainable development objectives (Wells and Brandon, 1992; Fischer et al., 2005); equally, lowering levels of poverty may lead to greater sustainability through decreased pressure on forest ecosystems (Soriaga and Walpole, 2007).
- (b) *Risk reduction*: investors and buyers may be expected to have little confidence in a mechanism which marginalises the resource users and increases the risk of social conflict.
- (c) *Increased returns*: particularly for voluntary schemes with CSR aims, social co-benefits are a major attraction to potential investors (cf. Gold Standard, 2008); likewise, actions which harm the poor and risk damaging the corporate image are major disincentives.
- (d) *Satisfying contractual and legal obligations*: particularly for REDD (which is likely to have high set-up costs that are not fundable through a market mechanism), the support of donors and the international community is likely to be essential, and this could be contingent on delivering social co-benefits.

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<sup>9</sup> There is, of course, a third view, strongly promoted in some quarters, that the roots of the climate crisis lie in the profligate habits of the industrial north and need to be solved there; thus, any attempt to involve the southern forest-dependent poor is morally unacceptable, whatever the co-benefits they may derive, as this will merely allow Annex 1 countries to avoid their abatement obligations (see, for example, the websites of environmental groups such as: CDM-watch; Sink-watch; Forest Peoples Programme (FPP); Fern). This is a major concern; the test of it will lie in the extent to which compliance and voluntary offset markets are supported not only by heavy investments but also changes in patterns of behaviour in polluting societies. The present paper is written from within the parameters of the current policy framework, and this challenge is not considered further here, whatever its underlying merits.

*Political considerations:* without acceptance of a development agenda, it is unlikely that developing countries would maintain their support of the existing policy architecture, with its emphasis on north/south collaboration and mutual benefits, and it might draw into question the validity of REDD.

On balance, there would seem to be strong arguments in favour of mechanisms which are both cognizant of the likely effects on the poor and which offer social co-benefits as a complement to emissions reduction.

### **5.3 Benefits and risks of forestry projects – evidence to date**

The following paragraphs will present evidence of existing project-based approaches for using carbon finance in forestry, covering the five classes considered in Chapter Two: *CDM AR projects* (enhancing sinks, through regulated markets); *voluntary projects* (enhancing sinks and reducing emissions, through voluntary markets) and *REDD* (reducing emissions and perhaps also preserving stocks, through both regulated and voluntary markets). The existing profile is mainly AR projects (notably, CDM LULUCF class projects in the compliance market, and a variety of voluntary AR schemes), but there are some voluntary REDD-type projects. The architecture for regulatory REDD is still under discussion, so considerations of the implications for the poor is particularly timely at this stage.

#### *5.3.1 The Clean Development Mechanism*

The CDM is the only current mechanism which both targets non-Annex 1 countries and includes forestry credits. CDM AR projects are attractive not only because of their mitigation potential but also because of their adaptive qualities; these might reduce vulnerability to climate change by helping to protect and stabilise landscapes, reverse land degradation and protect biodiversity (Dutschke, 2005). There are also potential benefits for the poor, which include income-generating AR projects and employment opportunities in small and medium forest enterprises (through the small-scale CDM window).

Since its inception, a key requirement for the CDM has been the coupling of carbon emissions reductions by Annex 1 countries to sustainable development in LDCs. This was central to LDC buy-in to the process, and proof that its purposes went beyond the mere convenience of the industrial north (hence the name ~ ‘clean *development* mechanism’ [Kollmuss *et al*, 2008]). Article 12 of the Kyoto Principle spells out these dual goals:

‘The purpose of the clean development mechanism shall be to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments under Article 3.’ (UNFCCC, 1998)

Under the Marrakesh Accords (2001), all LULUCF projects are required to contribute to the conservation of biodiversity and the sustainable use of natural resources (Cosbey *et al*, 2006). Their contributions to sustainable development are to be assessed according to host country specific indicators (Peskett & Iwata, 2007).

However, the CDM has not performed well in relation to its development goals in any sector, particularly in terms of international equity (see Figure 11). There has been little take-up on afforestation/reforestation projects to date. Recent studies have also concluded that CDM projects in general have proven more effective in offsetting carbon emissions than in promoting sustainable development, and that there has been an inverse correlation between effectiveness in emissions reductions and sustainability (Olsen, 2007; Sutter and Parreno, 2007, quoted in Kollmuss *et al*, 2008).

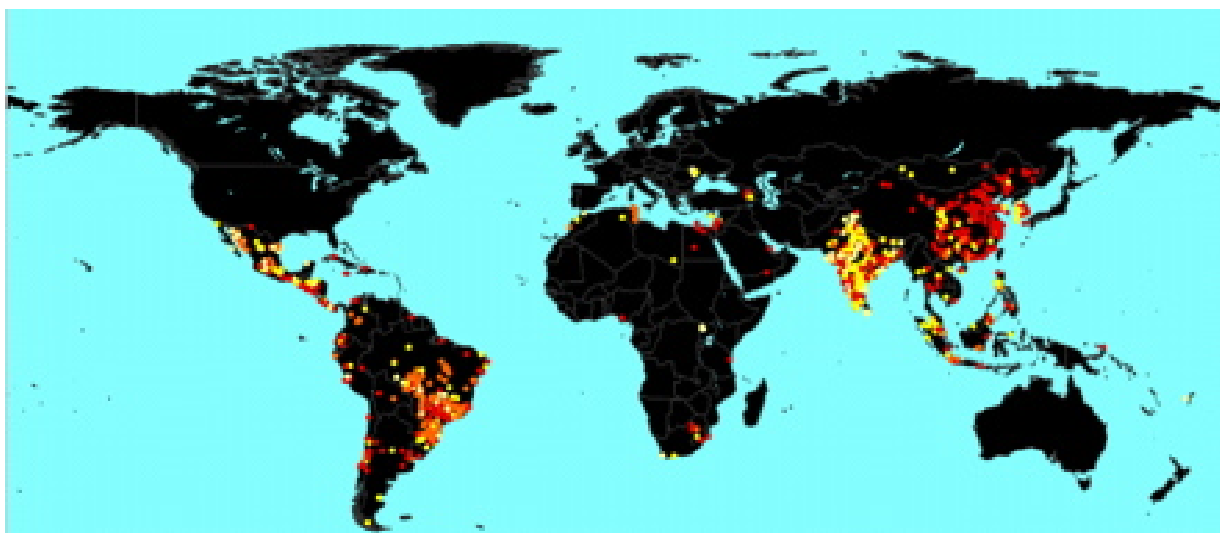
Equity has been low at both the national level (LDC vs. industrialising economies) and in terms of the priority given to forestry (AR vs. innovative technologies in the areas of energy efficiency/production/renewables). As noted in Chapter 2, there is only one registered CDM project in the LULUCF class, to date, with 23 more in the pipeline, out of a total of about 3,700 pipeline CDM projects (CD4CDM 2008). Development of credible methodologies has taken more time than had initially been envisaged. The fact that, after this very slow start, there are now 13 validated methodologies (10 large, 3 small) is a promising sign, even though so far only one has led to a project that is registered to trade.

These difficulties were recognised from the start of the CDM, as the following statement (of UNEP's cd4cdm project) attests:

‘The Clean Development Mechanism (CDM) proposed under Article 12 of the Kyoto Protocol is an important potential instrument to promote foreign investment in GHG emission reduction options while simultaneously addressing the issue of sustainable development.

With the international framework for the CDM presently under development, many complex legal, financial and technical issues still require further discussion. Under these circumstances, most developing countries with limited institutional capacity will face a significant challenge in taking a pro-active approach to participate as equal and reliable partners in CDM when it becomes operational.’ (UNEP Risø Centre<sup>10</sup>)

Given the very limited progress in the forest sector, an evidence base is lacking on which to assess the developmental implications of this mechanism as judged by the first batch of projects. However, a number of writers have considered the reasons for the poor forestry performance to date, and the potential benefits and risks of applying the mechanism to the forest sector, and these provide grounds on which to assess the likely impacts should projects become more widespread. They also offer some useful lessons for REDD.



**Figure 11: Global Distribution of CDM Projects (all classes)**

Source: <http://cdm.unfccc.int/Projects/MapApp/index.html><sup>1</sup>

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<sup>10</sup> See <http://www.cd4cdm.org/index.htm>

The barriers to forestry promotion in the CDM have hitherto been of four main types:

- Barriers related to the CDM as an approval and financing mechanism, which have implications for forestry investments, particularly for pro-poor forestry;
- Barriers related to the characteristics of the forestry sector itself, independent of the CDM;
- Factors which affect the ability of LDCs to host CDM projects of whatever type.
- Market barriers – most notably, the ineligibility of forest credits under the EU ETS

The following paragraphs review each of these barriers in turn, before considering the ways in which they may be addressed.

#### *CDM procedural barriers*

The CDM has proven relatively high cost and bureaucratically demanding in relation to the forestry sector, due in large measure to the ways in which the diverse risk factors associated with the instrument and the sector have been addressed.<sup>11</sup> These risks relate to issues such as permanence, leakage and additionality, as were discussed in Chapter 3.

Such concerns have the effect of increasing the bureaucratic demands of CDM management, in terms of project design and development, monitoring and verification, and they encourage investors to be doubly aware of the need to limit their risk. LULUCF CDM methodologies have also taken much longer to develop than for other sectors due to the complexity of estimating carbon stocks and flows (Cosbey *et al*, 2006). Costs typically run to \$100,000 or more, plus variable payments for registration and issuance, and on-going monitoring and verification, possibly \$200,000 in all (Neeff and Henders, 2007; Boyd *et al*, 2007). There are significant economies to scale. While simplified procedures exist for small projects (less than 16,000 CERs per annum), the transaction costs are still likely to be relatively high, indeed disproportionately. Such costs are compounded by the discount factors applied by investors to forestry projects when faced with other, probably more reliable (though perhaps less iconic), alternatives.

#### *Forestry barriers*

Account needs also to be taken of factors relating to the forestry sector itself, which are not necessarily CDM-specific. These mainly concern the long cycle nature of forestry investments. For example:

- i. high and front-loaded investment costs
- ii. long delayed returns on investments
- iii. long-term maintenance and upkeep costs
- iv. low rates of return
- v. high risk (for example, of environmental damage and damage by livestock)

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<sup>11</sup> The revenue returns from carbon is also an issue in the CDM, given that they are often a low % of total project revenue. This is a problem for additionality (see Ch.3).

AR projects could be beneficial to the poor where they are supported to make the necessarily long-term investments in what could become 'bankable' assets. However, uncontrolled AR investments could be very damaging to them also, when investors encroach upon their livelihoods (taking over the 'wastelands' and 'marginal lands' from which they many forest products, for example). The entry of private finance into the rural economy could also be a problem. Where the banking sector is involved heavily in plantation development, then this may favour gradual erosion of community rights and marginalisation of community interests in favour of private ownership and individual land tenure which are more attractive to commercial entrepreneurs. Forest sector decision making tend also to be highly politicized, and political influence over investment decisions in the sector is also unlikely to favour the poor (Neeff and Henders, 2007:12).

#### *LDC barriers*

These relate to the fact that forest-rich countries are particularly prone to poor governance (Ebeling et al, 2007), and tend to have a limited in-country skills base and lack 'redundancy' (in the sense of multiple and alternative providers and competences). These influences translate into a number of concerns (Cosbey et al, 2006):

- i. lack of capacity to implement technologically and bureaucratically demanding projects;
- ii. an additional increment to already high transaction costs;
- iii. poor investment climate and poor record on Foreign Direct Investment (FDI);
- iv. lack of information on emissions profiles and project opportunities; and
- v. low in-country potential for abatement, due to low levels of energy use.

#### *Market barriers*

Finally, the ineligibility to date of forestry credits under the EU ETS has limited international interest in the CDM. As noted in Chapter 2, the EU Linking Directive has, since 2004, allowed operators to trade credits from other CDM and Joint Implementation (JI) projects to help meet EU emissions reductions targets, but CDM AR projects are excluded from the market. There is a strongly held view in some quarters that opening up the ETS to sink projects would give a welcome boost to CDM forestry and to the forest sector more generally (Neef and Henders, 2007), and if so, AR projects might well outperform technological investments in terms of cost-effectiveness. An opposing view would warn against any attempt to target such an inherently problematic sector in uncompetitive countries by free market means, pointing also to ongoing concerns about permanence, leakage, verification and market flooding. Chapter 3 of this study suggests that the latter concerns may be less serious than has been assumed as long as projects make conservative estimates of GHG balances, use appropriate safeguards and implement strict standards properly.

Inevitably, the effects of ETS exclusion have been most severe in predominantly non-industrial LDCs which have not commended themselves to the international community for other (industrial) investments.

Collectively, these four sets of barriers are likely to be particularly inimical to pro-poor involvement, both nationally and sub-nationally (Ayres et al, 2006; Cosbey et al, 2006). Poor nations and poor people have to apply very high discount rates on any investment opportunity, and they tend to trade long-term benefits for more assured short term ones, even when the former are potentially much more lucrative. High investment costs contribute to heightened risk of long-term investment, and are thus unattractive investment options.

At the project level, there is also a risk of elite capture, potentially shifting control over land and resources from the poor and risk averse to rich and strategically placed risk-takers. The CDM has tended to favour more hi-tech activities that can achieve maximum carbon abatement at lowest cost and risk. These may offer few development and employment benefits, and are unlikely, therefore, to be ‘pro-poor’.

There may also be indirect effects. For example the fact that, in order to prove additionality, CDM projects tend to be developed on degraded and marginal lands with few recognised alternative uses (Boyd et al, 2007; and see Chapter 3, above), and may have uniquely detrimental effects on the poor. As decades of development projects have shown<sup>12</sup>, their typical designation in official discourse as ‘wastelands’ may be quite misleading. Such lands are often the ones on which the poor depend disproportionately for their livelihoods – for example, for Non Timber forest Products (NTFPs); fuel wood and other combustibles (e.g. leaves); grazing land for livestock; etc. The loss of access rights could be particularly damaging to them, though of no concern at all to the politically and economically more secure who can derive all the products they need from private land and market sources.

Given this unpromising scenario, an important question is whether sufficient potential still exists for the CDM to support pro-poor forestry in the coming years. It may be the case that, once the ‘low-hanging (industrial technology) fruit have been plucked’, attention will increasingly turn to CDM forestry. Much will then depend on the eligibility rules of the EU-ETS, given the likely dominance that this will continue to exercise in the carbon market.

Given the low take-up of CDM forestry, the main lessons that can be learnt from the experience to date concern equity at the inter- and intra- national levels, and the steps that should be taken by the UNFCCC to avoid similar problems with REDD. It is generally agreed that the heavy bureaucracy of the CDM needs to be avoided with any future mechanism, ensuring also that one of the major consequences of this bureaucratic burden should be addressed, *viz.* high transaction costs which strongly disadvantage poor countries and small initiatives, and potentially favour elite capture should small-scale projects be established. However, there is a need for realism when assessing the room for manoeuvre. The UNFCCC has been aware since the inception of the CDM of the need to keep down transaction costs, although the problem has hitherto proven intractable (Capoor and Ambrosi, 2008). In addition, not all of the barriers to forestry take-up pertain to the CDM *qua* UNFCCC financing mechanism; some relate to the low governance environments in which many forest opportunities occur.

### 5.3.2 *Voluntary Markets and Projects*

If the uptake of the CDM in the forestry sector has been poor, then how have voluntary projects compared as vehicles for pro-poor development?

Voluntary carbon schemes are freed from the constraints of CDM and from regulatory requirements, Kyoto and otherwise, which offers the prospect of lowered transaction costs. They are able to invest in any type of project where there is investor demand.

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<sup>12</sup> See, for example, Jodha (1990), on the situation in India, where the areas of accessible ‘common lands’ diminished by between 30-55 % in the period 1950-1980.

This has given voluntary projects a more flexible character, being viewed as ‘sources of experimentation and innovation in the carbon markets, as well as the markets most likely to reach poorer and smaller communities in developing countries’ (Hamilton et al, 2007). Voluntary schemes are also able to widen participation (bringing in actors working in unregulated sectors or non-Kyoto compliant countries such as the USA), and they may enhance the reputation of business firms for corporate social and environmental responsibility, and help them gain useful experience of emissions reduction programmes outside of the regulatory system (Kollmuss *et al*, 2008).

Voluntary markets have also been more favourably disposed to forestry activities than compliance markets, being much less affected by the higher level of perceived investor risk. As of 2007, about 18% of offsets were forestry projects (the proportion in 2006 was 37%), which contrasts strikingly with the 1% of offsets under the CDM (Hamilton et al, 2008). About twice as many credits proportionately were sourced from Africa by voluntary schemes when compared with the CDM (6% vs. 3%). 36% of offset credits in the voluntary sector were sourced from small projects (less than 10,000 tCO<sub>2</sub>), underlining the greater opportunities for small-scale community based and ‘pro-poor’ schemes. Most of the existing voluntary projects in the forestry sector seek to promote afforestation or reforestation, though a few promote avoided deforestation. In terms of carbon price, forestry projects have performed reasonably well. As judged by a survey undertaken in 2006-2007 of over 70 organisations by Ecosystem Marketplace and New Carbon Finance (Ibid), the average price for Verified Emission Reductions (VERs) has been about \$14/t CO<sub>2</sub> for avoided deforestation, and in the range \$5-13/tCO<sub>2</sub> for afforestation schemes, as against an overall range of \$4-19/t CO<sub>2</sub>(with a retailer price of up to \$45/t CO<sub>2</sub>) and an overall average of \$4.1/t CO<sub>2</sub> for all schemes (including forestry, methane, industrial gas, and renewables).

The immediate downside is that the size of the voluntary ‘market’ is very small, by comparison with regulatory schemes.<sup>13</sup> Total funding as of 2007 was \$331 million (all sectors), while (for example) the ETS was at \$50 billion, and the CDM (all sectors) was almost \$8 billion. (*Ibid*).

The fact that many voluntary schemes have been developed and operated by NGOs or multi-stakeholder fora, should, in principle, favour pro-poor activities.<sup>14</sup> Their financing tends to have much more of a corporate social responsibility (CSR), rather than compliance, rationale, which could reinforce this orientation. A number of independent carbon offset standards are available, with varying aims and methods. Some are design standards, which indicate the social and environmental conditions that need to be met to screen projects under development, subsequently demanding third party verification of their compliance, without requiring assessment of social and environmental impacts. Others are expressly focused on social co-benefits. By and large, voluntary standards are less stringent than compliance standards, although some aim to go beyond them in terms of social criteria.

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<sup>13</sup> The voluntary ‘market’ is not a market as such, more a collection of schemes, hence the parentheses.

<sup>14</sup> The volume and value vary, however. Hamilton et al (2008) note that, in 2007, 90% of all voluntary transactions were supplied by for profit entities, up from 60% in 2006. However, before 2006, non-profit and for-profit organizations each took about a 50% share.

This is the case with the Gold Standard which applies both to the CDM and voluntary schemes, though the requirements in the latter case are less stringent than in the former, particularly in areas such as additionality; however, it imposes extra conditions in relation to social development by comparison with the CDM, and also applies these to the voluntary projects<sup>15</sup>. Many of the schemes are strong on consultative processes, which should increase their responsiveness to local interests.

Not all voluntary standards cover forestry projects. The Gold Standard does not do so, as yet, because its central concerns are with behaviour changes at source, and carbon sequestration is not its current priority; its main focus is on energy efficiency and renewables. The VCS includes both AR and avoided deforestation (although it is said to be a much looser scheme than the CDM [Kollmuss *et al*, 2008]). For all these schemes (perhaps particularly for them, given their voluntary character), achieving the right balance between rigour and cost is a challenge. Applying the CCB standard, for example, adds \$4-8,000 to the cost of standard CDM certification, which could provide a further disincentive to LDC projects and providers (Peskest & Iwata, 2007).

Opinion is divided as to the value of such voluntary standards. Concerns have been raised about the discipline of the sub-sector - laxity of voluntary standards and lack of agreed, comparable procedures for certification and verification - and this might be considered a further weakness of this class. To the extent that it creates a perception that voluntary offsets are of poorer quality than those on compliance markets, it also lessens buyer confidence. Faced with this competitive disadvantage, there is some evidence of a progressive convergence between voluntary and regulatory schemes, as the former seek to increase their credibility.

Supporters of voluntary markets would point to their roles in promoting climate policy and activities in difficult environments, helping to nurture an atmosphere of climate awareness in both demand and supply environments, and to the role of well-defined standards in helping voluntary markets to mature and grow (Kollmuss *et al*, 2008). Doubters would point to the gulf between satisfaction of project standards and pro-poor rights; achievement of the former does not necessarily indicate recognition of the latter (Griffiths, 2007). Some schemes have been alleged to leave communities worse off than before, with poor people losing rights to own or use land, or being denied the ability to assert rights over carbon (Lohman, 2006). This is particularly likely where the poor have weak or no legal tenurial rights, and have already been reduced to squatting on public land by the application of exclusionary colonial and post-colonial policies. In such cases, the enhanced value that carbon trading brings to public lands could have very adverse effects, making it ever less likely that tenurial insecurities will be resolved.<sup>16</sup> There is also a danger, as with timber certification schemes, of standards being applied with perverse effects. Schemes that require conformity with all relevant local laws, for example, will only be 'pro-poor' to the extent that the laws in question are already socially just (Peskest et al, 2008). In developing country contexts this is often not the case, and thus conformity with the standard could add a further element of oppression to the poor.

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<sup>15</sup> See <http://www.cdmgoldstandard.org/>

<sup>16</sup> There may however, be climate change/FLEGT synergies here, to the extent that programmes such as the EU FLEGT Action Plan succeed in helping LDCs clarify what are often over-complex, unworkable and contradictory forest and land laws.



The corporate social responsibility rationale that drives much of the international interest may have ambiguous dimensions, both positive and negative. It is likely to prioritise particular types of narrative (what Hamilton et al call ‘positive story projects’ [2008]) and to encourage an interventionist culture in which third world communities are in some senses to be ‘saved from themselves’ (Ebeling et al, 2007). The fact that the main purchasers are often motivated primarily by a desire to improve their corporate image with their buying publics in the north may affect their responsiveness to the needs of community partners in the south. It certainly encourages a top-down orientation, which may have implications for the types of story line promoted (Boyd et al, 2007; cf. Annex B of this study).

### 5.3.3 *Reduced Emissions from Deforestation and Forest Degradation (REDD)*

While the need for a broader focus than the forest sector alone is a principle of general validity in relation to changes in forest cover, this is particularly the case with REDD. The drivers of deforestation and degradation are diverse and in the main, quite different. Degradation is not necessarily a precursor to full deforestation (Kanninen *et al*, 2007; Skutsch, 2007). Geist and Lambin (2001) divide the drivers into five sets of underlying drivers, and three sets of proximate causes (as well as one intermediate set), which can be further segregated according to their association with deforestation or degradation (Table 12). Corbera has underlined the highly political and complex nature of many of these drivers, particularly deforestation drivers, the importance of international demand in creating them, and the high risk of international leakage that is implied (2006, as quoted by Skutsch, 2007). There is evidently the need for a cross-sectoral approach, which engages all the relevant national and international institutions and which is concerned to address the ultimate not the proximate causes of DD. There is also the need to bear in mind the contrasting origins of the two phenomena, and the need to acknowledge these contrasts in international policy. This has definitional implications, as will be later discussed.

The potential benefits and risks of the different REDD proposals within the UNFCCC policy process are still hypothetical. However, there have been a growing number of REDD-type projects in the voluntary sector, such as the Noel Kempff Mercado Project (see Annex C). Hamilton et al (2008) note that 5% of new voluntary market projects were for avoided deforestation in 2007, as opposed to 10% for AR (the respective figures for 2006 were 3% and 33%, however). Insights can also be gained by analysing the different UNFCCC ‘design options’ described in Chapter 2, as well as looking at the political realities of the implementation of similar policies within developing countries, from the perspective of past forest conservation interventions. This section first examines the international design options which are common to all policy interventions covered by the UNFCCC, and then looks at the likely implementation strategies at the national level, which will convert international finance into nationally-specific programmes of activities.

<b>Underlying driving forces</b> (Fundamental social processes)	<b>Proximate causes</b> (Immediate human actions directly impacting the forest)		
		<i>Deforestation</i>	<i>Degradation</i>
<p><i>Demographic factors</i></p> <ul style="list-style-type: none"> <li>• Natural increment</li> <li>• Migration</li> <li>• Population density &amp; distribution</li> <li>• Life cycle features</li> </ul> <p><i>Economic factors</i></p> <ul style="list-style-type: none"> <li>• Market growth &amp; commercialisation</li> <li>• Economic structures</li> <li>• Urbanisation and industrialisation</li> <li>• Special variables (e.g. price increases/comparative cost advantages)</li> </ul> <p><i>Technological factors</i></p> <ul style="list-style-type: none"> <li>• Agric-technical change (e.g. intensification)</li> <li>• Wood technology</li> <li>• Agric. production factors</li> </ul> <p><i>Policy and Institutions</i></p> <ul style="list-style-type: none"> <li>• Formal policies</li> <li>• Policy climate (e.g. corruption)</li> <li>• Property rights</li> </ul> <p><i>Cultural factors</i></p> <ul style="list-style-type: none"> <li>• Values and beliefs</li> <li>• Individual and household behaviour</li> </ul>	Infrastructure development	Road construction and improvement	Road construction and improvement
		Urban settlement	
		Extractive industries (mining, gas pipeline, etc.)	
	Agricultural conversion	Plantation agribusiness	
			Subsistence agriculture
		Large-scale market-oriented agriculture such as ranching	
	Forest product extraction	Commercial logging (in some conditions)	Commercial logging (in some conditions)
			Domestic fuel wood & charcoal
			Domestic polewood
		Other factors (may be variously underlying or proximate causes depending on the circumstances)	<p><i>Pre-disposing environmental factors</i> (e.g. land characteristics)</p> <p><i>Biophysical factors</i> (e.g. triggers such as fires, droughts, floods, pests)</p> <p><i>Social trigger events</i> (e.g. war, economic shocks)</p>

**Table 12: Drivers of deforestation and degradation:**

Source: adapted from Geist & Lambin, 2001.

## 5.4 The International Dimension – International Frameworks and Instruments

The implications of REDD proposals are likely to vary significantly with the choice of design options, internationally and nationally, as well as within different country contexts, and in relation to different types of actors and projects. International REDD negotiations are currently focused on introduction of a baseline and credit type of system, rather than a national cap and trade one. Cap and trade systems could lead to penalties being imposed on developing countries for failure to meet reduction targets. This is obviously unattractive to heavily cash-strapped nations, and would be seen by many non-Annex 1 countries as a step too far in terms of ‘common and differentiated responsibilities’. It would also be administratively complex and expensive, and demand high enforcement capacity, probably with an international dimension (and such international enforcement would be weak). The only cap and trade element of the future international REDD architecture is likely to lie in the ways in which the baseline and credit arrangements in non-Annex 1 countries might be linked to overarching cap and trade systems in Annex 1 countries, through projects which are not themselves covered by the cap, as currently happens with JI and the CDM in the ETS.

The various design options currently under consideration have diverse and often uncertain implications for developing countries, as well as for vulnerable groups within them. The various design issues considered in Chapter 2 are re-visited in the following section, for their equity effects, and these are summarised in Table 13.

### 5.4.1 *Contrasting reference scenarios*

Should performance be judged on historic, projected baselines or negotiated baselines, or some combination of these options? There is an element of moral hazard in the application of the historic baseline option, particularly in relation to inter-national equity. Countries with low historic rates, either for reasons of policy (India) or commercial marginality (DRC) would tend to lose out in baseline and credit approaches based on historic rates of DD, while countries with high deforestation rates (quite possibly because of poor forest governance) would tend to be rewarded. Similar considerations apply at sub-national level, for example, between the Brazilian states of Mato Grosso and Amazonas.

Given the low capacity of many LDCs for forest and natural resource monitoring and the lack of relevant archives, baselines which depend on historic trends in stocks are unlikely to be workable. An approach which depends on stock changes in the accounting period is probably the only workable option in such instances (M.Skutsch, *pers.com*, 20 October 2008).

Stock conservation as a form of stock-based accounting, where payments are made for the preservation of standing carbon stocks, is attractive to the general public and also to the conservation movement. It would reward those countries that still have large standing stocks of timber, which would be marginalized in a system focused on reducing emissions and additionality. It suffers less from this equity problem, but risks paying for stocks that are not under threat, which would lower the efficiency of the REDD instrument, and is generally out of favour in UNFCCC circles.

### 5.4.2 *Forest definitions*

The types of landscape that are recognised as ‘forest’ within the international process will affect the relevance of REDD policy to the poor. A long-standing problem is the failure to recognise that lands which are outside of technically defined ‘forests’ may well form part of a single farm-forest continuum to populations who reside there. Areas that are not currently under immediate occupation as farmlands may well be subject to user rights, and not to be regarded as *Res nulis* (without owner).

A definitional issue of particular significance in the international climate change context is whether to include degradation as well as deforestation within the remit of the regime. In policy terms, this potentially has both positive and negative dimensions (see Box 12).

**Box 12: *Bringing Degradation into the international regime***

Inclusion of degradation as well as deforestation has the advantage of recognising the grounds for a significant proportion of forest emissions, and also promoting the ecological integrity of the instrument, in that it avoids perverse incentives to degrade forests as an alternative to deforestation; this could also be beneficial to the poor, as it opens up the possibility of direct payments to small forest users as a form of PES; it also would encourage recognition of beneficial agro-forestry systems that might otherwise be classified as ‘non-forest’.

However, it would also bring cyclical cultivation systems within the purview of the mechanism. The carbon content of slash and burn agriculture is an under-researched topic that would merit further investigation. Recent research by the CGIAR<sup>17</sup> Centres’ ‘Alternatives to Slash and Burn’ research partnership (e.g. Swallow et al, 2007) suggests that the carbon content of cyclical cultivation systems is highly variable, depending on the length of fallow, cropping systems and other factors, but in conditions prevalent in the tropics, is up to 77% of the values for conserved high forests (industrially cleared land, by contrast, has a carbon content of 1% or less). More work is needed on the implications of different types of cyclical system for net carbon emissions but any attempts to force poor forest dwellers to change their agricultural systems to improve the carbon balance should be seen in this context. They would also need to show a good understanding of the economics of farmer decision-making, be realistic as to the availability and feasibility of alternatives and be cognizant of their carbon footprint. On past evidence, the national authorities (who would have responsibility for delivering emissions reductions in many REDD proposals) are often unsympathetic to small farmer interests, and shifting cultivators are stigmatised in policy processes.

One way to develop a more progressive approach to cyclical cultivation systems, perhaps, would be to recognise them as forms of ‘forest management’ within a revised definition of forest degradation (Skutsch, *pers. com.* 31 July, 2008). The main benefits may well relate mainly to the definition and costs of monitoring the class of ‘degradation’ within the broader REDD taxonomy, but, from a pro-poor perspective, there could be some incidental advantages of a more strategic nature. Specifically, if, through formal acknowledgement of cyclical cultivation systems as forms of forest management, shifting cultivators were perceived as allies with industry in the search to conserve and enhance the total carbon stock. There tends, for example, to be a marked difference in the treatment in international and national policy discourse of shifting cultivation (as destructive activity that should be suppressed) and of reduced impact logging (which tends to be regarded as meriting significant financial support). Recognizing cyclical cultivation as a form of management would encourage it to be seen as a variable set of practices that can be gradually developed in more conservative directions, mainly through internationally-supported tenurial reforms and compensation for interventions foregone, rather than (as all too often at present) as an incursion into forest areas and as a lifestyle preference which must be eliminated by substituting (often implausible) alternatives.

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<sup>17</sup> CGIAR, Consultative Group on International Agricultural Research

### 5.4.3 Poverty implications of international REDD frameworks

A carbon market governed by international regulation, operating either independently of the current Kyoto market or integrated with it, would offer three major advantages from the perspective of development:

1. It would be likely to provide very substantial financial flows to qualified countries and parties, according to an internationally even-handed set of agreed procedures with which all beneficiaries would be required to comply.
2. While the costs of running it would likely to be high in absolute terms, the costs relative to the total turnover would be low, and they would normally be borne by the buyers not the sellers (see Chapter 2). This could be important given the technical complexity of REDD delivery, and thus the danger of intermediaries creaming off benefits to the detriment of the grass-roots forest managers. The danger is that, if the value chain is too long, and too biased in favour of providers and intermediaries in high cost environments, then only residual finance will actually reach the decision makers in the forest.<sup>18</sup>
3. A commercial market for REDD would, in addition, respond to market signals, which would not only boost investor confidence but also help ensure that REDD operates on sound scientific, rather than political, principles. The fact that a market mechanism would only support REDD-related actions if investments resulted in positive impacts on carbon stocks would provide an important safeguard of environmental integrity. (There is no guarantee that positive environmental outcomes would be associated with social benefits, except insofar as this aids adaptation to future climate change.)

However, the size of the institutional challenge does need to be recognised. The poor governance of many forest-rich countries suggests that investors would be likely to concentrate their efforts on emerging economies, and eschew high risk LDCs that are unable to guarantee a stable long-term investment climate, a consistent and depoliticised legal framework and an independent judiciary. Thus, a market-based REDD system could well end up displaying the same weaknesses and geographical inequities as the current CDM.

A contrary view would be that the very size of the inflow of funds under REDD, and the prospect of it continuing and multiplying in the future, might generate newfound will to resolve such governance constraints. This is possible, though the evidence of the forest sector to date is not very encouraging, and high resource rents are more likely to remain a largely negative social force (cf. Ross, 2001). Given the potentially very high volume of capital inflow, there is a distinct risk of distortion effects as with any forest rents, *viz.* large windfall profits that are likely to be captured by elites, strengthening the hold of the politico-industrial nexus, and shoring up inequity.

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<sup>18</sup> Past experiences with tropical environmental conservation warn of the difficulties in this regard (see, for example, the experience of 'Campfire' in Zimbabwe [Thomas, 1995; Whiteside, 1998]).

For LDCs with a poor record of forest governance, a *fund-based system* seems altogether more likely to develop, both for key input-level measures of types that private sector investors are unlikely to support (capacity-building operations such as basic regulatory and monitoring infrastructure, and enabling legislation such as tenurial reform) and also for downstream implementation activities (Ebeling et al, 2007). Some of these could have strong pro-poor dimensions. International aid-based fund transfer mechanisms might be more ‘pro-poor’ than regulated markets, in that donors are more able to negotiate their own agendas. Given the relative importance of aid budgets by comparison with most environmental budgets, in donor terms, aid transfers are highly likely to favour actions with a development orientation and social co-benefits.

Governance considerations would also encourage the engagement of strong international actors in national policy development of forest rich states, even despite the sovereignty constraint, at least under certain conditions. Passing large amounts of funding through central government coffers (whether through a fund or market-based mechanism) would strengthen national government capacity, though to be effective, it would also require that the national government successfully and reliably passes funds to the lower levels to ensure that the actual forest managers are properly incentivised. Where national governments are democratic and regional and local government structures effective, then this is unproblematic. In the case of failing states or Low Income Countries under Stress (LICUS), such broad and democratic participation may not be assured. Putting in place strong and viable institutions in forested areas, where such institutions are notably lacking, may prove particularly challenging.

A particular advantage of such a fund-based approach is the leverage that would be given to harmonise the financial flows with internationally agreed aid strategies - poverty reduction strategies and associated aid mechanisms and modalities, for example – helping to ensure that pro-poor growth occurs in synergy with existing aid policies. This could prove an effective way of reducing long-term forest dependence, lowering rates of degradation and deforestation and helping LDC economies to become less reliant on extractive use of resources. Such harmonisation could be effected under other payment arrangements, though the international leverage would probably be less.

On the down side, the volume of aid funding is likely to be much less than with a market mechanism, and would be subject to politicisation and the vagaries of donor fashions. Climate change funds would probably have to compete with traditional aid priorities to the possible disadvantage of both (Dutschke, 2007).

Given this reservation, an alternative system funded by non-revenue dependent international finance would have much to commend it, along the lines presently proposed for the ‘Global Forest Carbon Mechanism’ by the European Commission. A levy based as a % of auctioning allowances under the EU ETS (or some other levy on traded carbon) might be very much greater and longer term, and could be used to replenish UNFCCC—administered funds (Schmidt and Scholtz, 2008).<sup>19</sup> This might generate very substantial funds, with a relatively high degree of regularity and stability. These funds could be deployed to address the critical contextual and institutional challenges that a market is not likely to easily cover.

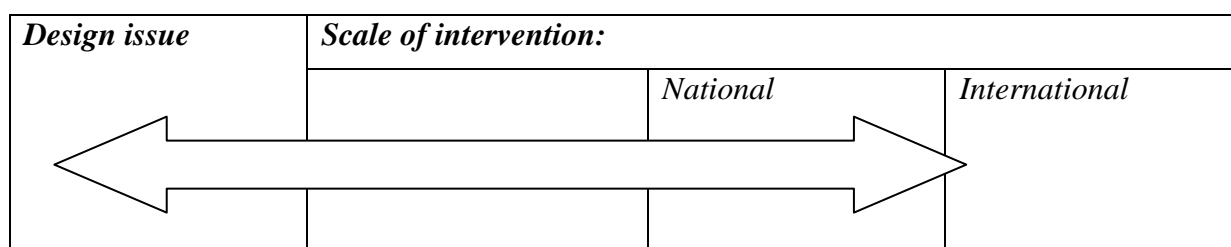
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<sup>19</sup> According to CAN International, selling Assigned Amount Units (AAUs) at a price of 30–40 US\$ apiece would raise 3.75 bn US\$ for each 1% of AAUs sold. Selling a fraction of AAUs, e.g. 20–30 %, would result in a total of 75–112.5 bn US\$ a year available for adaptation, REDD and technology transfer. See: <http://www.climatenetwork.org/>

A levy system would not necessarily overcome the problem of fungibility with traditional aid priorities, though it would be possible to build some level of ‘firewalls’ between the two.

A common feature of all forms of non-market financing is that, where fund are discretionary and not based on a market mechanism, the link between level of funding and environmental performance is broken. This could have some positive aspects. As discussed above, it would provide finance for essential but non-quantifiable activities that markets are unlikely to support (most policy reforms, for example), and create the enabling conditions in which the markets could then function.

It doesn’t guarantee pro-poor action, however. For example, some of the REDD *R-PINs* (‘Readiness Project Idea Notes’, by which applicant developing countries make their case for World Bank REDD capacity-building funds) have identified increased law enforcement as priority candidates for donor support. The need for law enforcement is often greatest in relation to the forest industry, the regulation and monitoring of which have long been problematic (and current initiatives such as the EU’s Action Plan and VPA programme, are focused on this level). Sub-nationally, however, the emphasis may be somewhat different. On past form (and particularly when the focus is on conservation and the wider environment), forest law enforcement could well be heavily targeted on small-scale natural resource users (charcoal producers, etc.), where the opportunities for unfettered rent-seeking are greatest.<sup>20</sup> Even where this is nominally justified by the climate science (which one suspects is not always), it could be highly questionable in practice, to the extent that other viable livelihood alternatives may just not be available. And where market possibilities do exist (for example, alternative forms of domestic fuel), there might be good reasons to leave poor people to their own devices, given their purchasing power constraints, rather than to increase their dependence on an uncertain cash economy. Work by Gibson, Williams and Ostrom and other (2005) suggests the hypothesis that <local users’ [own] monitoring and enforcement leads to better forest conditions>. If this hypothesis is upheld, it is difficult to see how positive environmental outcomes can come about where punitive policies are imposed from the political centre in conditions where livelihood options are minimal. Thus, a fund-based mechanism would need to put sound and responsive feed-back loops in place, to ensure that the investments that were made in the name of carbon sequestration and conservation did lead to the outcomes intended.



<sup>20</sup> This latter danger is acknowledged in the World Bank FLEG Strategy: ‘Despite the magnitude of the problem [of forest crime], there are few instances of prosecution and punishment. In fact, if there are prosecutions it is the poor, looking to supplement their meager livelihoods, who are victimized and sent to jail. Large-scale operators continue with impunity. Arguably, this is the worst form of violation of equity and justice, arising from a clear failure of governance and it needs to be addressed’. (2006: xi)

<b>Baseline/ reference level</b>	Historic baselines favour actors that have high historic deforestation rates, and disadvantage the good performers		
		<p>1. <i>Cap and trade:</i></p> <p>~ unworkable for LDCs due to high administrative costs (and perhaps risk of financial penalties).</p> <p>~disfavours low polluters</p>	[Cap and trade will be an important mechanism in Annex 1 countries, though not requiring the same mechanism in their non-Annex 1 partners.]
	<p>2. <i>Stock conservation:</i></p> <p>easier to calculate than emissions rates, but risk payments for carbon stocks not under threat;</p> <p>Unlikely to find favour in UNFCCC negotiations</p> <p>3. <i>Stock increment:</i> easier to calculate, but may penalise the good performers</p>		
<b>Deforestation or deforestation and degradation?</b>	Problem of how temporary degradation is treated, including cyclical cultivation systems	<p>Forest definitions will affect classes of activities that benefit (e.g. could disadvantage systems at interface with agriculture)</p> <p>Difficulties in monitoring degradation may penalise countries where little outright deforestation</p> <p>Could reward countries with high degradation rates more than those with strong conservation policies</p>	Deforestation has more international media potential than degradation
<b>Framework</b>	<p>Voluntary markets will be favoured if REDD is located outside the UNFCCC; this will encourage a 'projectized approach'.</p> <p>Danger of market flooding (though not Annex 1 targets adequately adjusted); danger also of destabilising existing markets, if full fungibility.</p>		



<b>Market or fund?</b>	Volume of finance has implications for growth and development. Market mechanism offers highest financial volume;		
	Poor may gain most from donor funds with development vocation	Low governance countries may find it difficult to attract market finance, and likely to depend largely on donor funds.	Greatest capacity for donor leverage from a fund-based approach; however, higher volumes might be obtained from obligatory levies
<b>Voluntary or regulated market</b>	Questionable and uneven standards in voluntary markets	Voluntary markets have primary CSR rationale in donor countries, and are likely to have 'top-down orientation (northern interests and 'narratives' dominant)	Equity greater at international level in voluntary schemes
	Voluntary market likely to have much lower overall volume of finance Greater flexibility of voluntary schemes potentially improves equity		
<b>Liability arrangements</b>	Risk that the poor could find it hard to meet fines and penalties or other enforcement measures, if liabilities transferred to them.	Delivery risk reduction may lower upfront finance, and divert investments to low-risk countries	Some liability instruments (e.g. temporary credits) may reduce overall investment in market systems as less attractive to buyers
<b>Spatial scale</b>	Easier to monitor social risks and benefits in projects  Projectized approaches not necessarily effective in addressing underlying causes/drivers  (Risk/benefits depend on effectiveness of decentralisation/ ability to reach forest decision-makers	Alignment with national systems may improve sustainability in REDD and beyond	
	Investors prefer projectized approaches  National and international public goods difficult to finance through international market mechanisms		

**Table 13: Poverty Implications, risks and opportunities at different scales**  
Adapted from Peskett et al 2008

#### 5.4.4 Risk factors

Risk is an issue in any market situation, but perhaps particularly so in a carbon market, due to the nature of the commodity traded. Experience to date with the two Kyoto international project mechanisms (JI and CDM) underlines the centrality of managing risk to the effectiveness of the instrument, and this has had knock-on effects on the third Kyoto mechanism (emissions trading), where risk assessment has major effects on price. The tools applied to manage risk have implications for transaction costs, lead times, and application procedures. Almost universally, high costs, long times and complex procedures will operate in an anti-poor way.

Managing *delivery risks for the benefit of investors* carries with it major consequences for the poor. For example, one way to reduce investor risk is to make payments on an *ex-post* (performance) basis. Performance-based payments are beneficial in that they help protect poor people from inappropriate and repressive policies, such as could easily be promoted with an inputs based approach (for example, rewards to governments for implementing specific activities such as increased law enforcement). However, they may disadvantage them in other respects. Pre-funding at national level is likely to diminish central government willingness to transfer benefits down the line. Upfront payment to be assessed against future performance also raises the spectre of future liabilities, which have a range of implications for the poor (from heavy policing by central authorities to ensure that targets are met, regardless of their social consequences, to indebtedness of the poor, where they are subsequently held liable for payments already made.)

The issues pertaining to risk are summarised in Table 14 below.

	<b>Description</b>	<b>Local</b>	<b>National</b>
<b>Risk buffers</b>	Percentage (often~30%) of credits withheld from sale as insurance in the event of project or programme failure.	Equity issue if other projects in national REDD systems fail and national account is corrected; could be high risk for the poor	Lower overall income because credits withheld in buffer; implications for national planning
<b>Replacement of issued credits by sellers</b>	By bringing new areas under REDD schemes if areas from which credits have been forward sold fail to deliver credits	High risk if cannot replace credits Prevents access if cannot guarantee replacement	
<b>Repayment of revenues/fines</b>		Risk of not being able to repay Risk of poor legal representation in cases of default (particularly likely in typical LDC context of weak legal processes and inability of the poor to defend their rights).	Could result in large national debt and reduce spending in other areas

	<b>Description</b>	<b>Local</b>	<b>National</b>
<b>Temporary credits</b>	Expire after a certain time period and need to be replaced. Used in CDM afforestation and reforestation projects.	Lower overall investment but potentially less risky for sellers, which may increase flexibility at the local implementation level	Low income because of low interest by investors (evidence from CDM); likely marked inter-national inequities
<b>Payment after verification</b>	Ex-post payments can significantly reduce risks for buyers.	Likely to impact most on the resource-poor. Poor market access if no upfront capital access Could result in transfer of liabilities from governments taking on upfront costs May decrease willingness of governments to transfer benefits, if activities have to be pre-financed.	LDCs may lose out if low levels of upfront capital available Resource poverty also at inter-national level – may increase national inequities.
<b>Portfolio approaches</b>	A range of project areas and types are developed. Sourcing credits from such a ‘portfolio’ reduces risks arising, for example, from forest fires that will only affect certain geographic regions.	Lower income and poorer equity of benefits for ‘high risk’ activities Conversely could increase risk taking e.g. by governments	Increased overall investment Promotes wider range of geographic areas to be included within country Administratively complex?

**Table 14: Potential poverty implications of different risk management approaches to REDD at national and local scales.**

Adapted from Peskett et al, 2008.

## **5.5 REDD at the National Level – Translating the International Regime into a Set of National Policies**

Forests are almost always recognised as sovereign resources of the state under international law, and their management is ultimately an issue for national authorities. The delivery of co-benefits is thus mandated mainly at national level.

The ‘Bali Road Map’ seeks to apply international standards to REDD co-benefits, albeit only in the Annex on ‘Indicative Guidance’ for demonstration activities. It is noted that:

‘Demonstration activities should be consistent with sustainable forest management, noting, inter alia, the relevant provisions of the United Nations Forum on Forests, United Nations Convention to Combat Desertification and the Convention on Biological Diversity’ (*UNFCCC Decision relating to ‘Reducing emissions from deforestation in developing countries: approaches to stimulate action, 2007*)

International conventions and agreements such as the CBD [1992], the UNCCD [1992] and the UNFF ‘Legally non-binding instrument on all types of forests’ [2007] make explicit reference to the nature of international support for interventions in the forest sector. Other measures such as the World Bank’s ‘Safeguard Principles’ and the Equator Principles are also relevant. In general, opportunities for international influence are limited largely to procedural matters of a ‘soft-law’ type.

Thus, the CBD recommends use of the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity (2004). These have biological considerations at their core, though they make a connection to social co-benefits by noting that adverse impacts on ecosystems can also have an adverse impact on cultures, societies and communities. *Article 10* of the CBD asserts that States should recognise and protect customary use in accordance with traditional cultural practices that are compatible with conservation and sustainable use requirements, and *Article 20*, that economic and social development and poverty eradication are the first and overriding priorities of the developing country partners, and international support needs to be tailored accordingly.

The UNCCD notes that achieving its objective of ‘combating desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa, with a view to contributing to the achievement of sustainable development in affected areas’ will involve long-term integrated strategies that focus simultaneously, in affected areas, on improved productivity of land, and the rehabilitation, conservation and sustainable management of land and water resources, leading to improved living conditions, in particular at the community level (*Article 2*).

Likewise, the UNFF legally non-binding instrument recognises the sovereign right of states, and the importance of maintaining and enhancing the economic, social and environmental values of all types of forests (Annex to the preamble). The purposes of the instrument include to ‘enhance the contribution of forests to the achievement of the internationally agreed development goals, including the Millennium Development Goals, with respect to poverty eradication and environmental sustainability, and to provide a framework for national action and international cooperation’ (*Para II Principle 1*).

None of these has real international sanctions, however. Where there are serious governance concerns, then there is a particularly strong case for internationally validated and sanctioned standards to be applied.

#### *5.5.1 REDD Preparedness and Implementation*

As regards REDD demonstration activities, a great deal depends on the types of activities that are envisaged by the relevant governments and their partners to implement REDD on the ground. The various activities in which forest nations will be required to invest can be decomposed into three separate, albeit sometimes overlapping, classes of activity: REDD *readiness measures*; broader *enabling reforms* (policy and institutional) and downstream *implementation measures* (which will include many demonstration activities).

‘*Readiness measures*’ refer to preparedness activities which the World Bank and other funders are beginning to finance to satisfy REDD eligibility requirements (see Chapter 2.3). These would include the input investments such as the creation of national emissions registries, remote sensing capacity, etc., which are required to position countries to participate in the REDD mechanism and report on their performance.

A number of ‘*enabling reforms*’ are also likely to be required, to create the governance and institutional framework for REDD implementation. These might include, for example:

- Securing of property rights, relating particularly to land and tree tenure; and
- Pro-poor institutional changes, such as establishment of democratic institutions for local government, and increased capacity to manage revenues and resources within both central and decentralised government.

Achievement of such reforms is likely to be extremely challenging in many cases, particularly where the will for change within the political establishment is seriously in doubt (see Box 13). It is arguable that the size of the challenge is likely to be underestimated in the desire to make the case for REDD. The economic dimensions of the challenge would provide a further argument in favour of a funding approach which draws on a percentage levy on the ETS auction revenues, as was discussed in Chapter 3. However, the challenges are not merely economic; the political issues are likely to be even more intractable.

**Box 13: *Property rights reform and other measures of ‘readiness for REDD’***

The Eliasch Review provides cost estimates for 18 different types of readiness measures, ranging from highly specific activities (establishment of monitoring systems, for example) to much more diffuse and politically more challenging measures such as ‘forest policy and legislative reform’ and ‘building NGO capacity’ (2008: Ch.13). Costing such reforms is extremely difficult, given their dependence on high levels of political will over lengthy periods of time.

A case in point is tenurial reform. Clear property rights are an important component of sound forest governance reform, and very probably an essential precursor of pro-poor REDD. Only with secure tenure can one:

- enable communities to claim and defend their rights
- ensure that financial transfers reach the actual forest managers;
- incentivise long-term changes in their behaviour;
- encourage investment in land improvement;
- make participation in public policy development a meaningful activity; and
- democratise local government reforms.

The primary benefit will derive from the incentives that tenurial rights give to land owners to conserve trees on farm, both by withholding valuable specimens from destruction and investing in new land-economising technologies. The Eliasch Report’s claim that ‘many forest nations will want to undertaken policy and institutional reforms in order to create a governance environment in which sustainable land and resource management is possible and profitable’ (2008: p.xv) is an interesting hypothesis, which could prove justified if the financial flows are sufficiently large and regular, but one for which there is not always much evidence.

The Report estimates land tenure reform at an upper estimate of \$20 million per forest nation, and the aggregated cost of all the necessary readiness measures (both the immediate technical requirements and the broader policy and legislative changes) at \$91 million per nation (Ibid.). The total estimate for a five year period for forty nations, grossed up from these figures, is put at \$3.7 billion. However, these estimates are based on the recorded expenditure of recent internationally supported initiatives, whether or not the desired ends were actually achieved. The Report notes that ‘funds spent are more often a reflection of the availability of funds and donor priorities rather than actual requirements’ (Ibid). One suspects that the real costs could be very much higher, even discounting the impossibility of costing political will. It also remains to be seen whether the considerable upward valuation of some forest lands which results from REDD policy developments increases or decreases the willingness of interested governments to pursue much needed policy and tenurial reforms, when this would lessen their control over potentially significant financial flows.

*REDD Implementation:* a wide variety of measures has been proposed to implement REDD, ranging from national level policy decisions (for example, removing subsidies that encourage DD, taxing land clearance, strategic planning of communications systems), to improved industrial practices (such as support for timber certification and reduced impact logging), to initiatives that directly affect the livelihoods of the poor (fire prevention programmes, alternative livelihoods programmes, agricultural intensification schemes aiming to reduce forest destruction, and improved off-farm employment). These have been described as ‘forest protection costs’ (Eliasch, 2008).

There is a strong case to require standard-setting and monitoring of social costs and benefits, according to agreed international standards, as most of these measures would have implications for the poor, either positive or negative. For example, removing subsidies that encourage DD and taxing land clearance could well benefit almost all sectors of the population, but particularly the poor. As earlier noted, large-scale land clearance and industrial development programmes often take place on undervalued public lands and result in the eviction of forest-dependent poor whose lack of tenurial rights increases their reliance on such areas. To the extent that corrective measures benefit the poor (and don’t merely encourage other forms of conversion), then this would provide one justification for priority being given to subsidy removal. Similarly, timber certification schemes may include requirements for public consultation and negotiation, and RIL methods may help to ensure that lands which have been logged are returned to the forest-dependent populations in ways which allow them to sustain their livelihoods. Other reform measures are more ambiguous in their effects (as with enhanced forest law enforcement, which will only be as just and ethical as the laws it seeks to enforce and the authorities that must implement them). Application of social standards would be particularly important in these areas of significant social ambiguity.

An important and controversial class of REDD activities relates to the alternatives that are being proposed to limit degradation by forest dependent communities. These include various ‘*alternative income-generating activities*’ (‘AIGAs’) to remove communities from the forest and replace farming systems that depend on extractive use of forest resources. Practical strategies to address leakage in REDD policy development are anticipated to rely very heavily on these kinds of change. As it is so hard to measure leakage, project developers will need to be doubly sure that they are providing viable alternatives. Measures would vary somewhat depending where the country in question is on the forest transitions curve, with different measures, say, for countries with high forest cover and low deforestation from those with high deforestation.

Particularly challenging are those countries which record high rates of degradation and deforestation though without being able to identify any obvious major ‘villains’ whose changes of behaviour would have dramatic effects on the national footprint. However, finding viable AIGAs is likely to represent a major challenge in almost any tropical forest environment. The extent of this challenge needs to be recognised.

Though few REDD projects yet exist, there is a considerable body of evidence on AIGAs and their likely effectiveness, particularly within the conservation community. ‘Integrated conservation with development projects’ (ICDPs) were much favoured in the 1990s and are still widespread, and AIGAs provided a major vehicle to relieve pressure on the forest in many of them, though with notably little success. Such experiments are likely to enjoy a revival as conservation groups engage with REDD, even despite their poor record on the ground. The alternative activities in this class range from agricultural intensification through development of irrigation infrastructure and other means, through community forestry enterprises, to various livestock schemes (see Box 14). AIGAs of these diverse types are attractive to outsiders (particularly conservation agencies) because of their environmental logic and the facts that they are relatively cheap to implement, are highly visible and accessible to supporters, and can be implemented by generalist staff without great technical skills. But this very accessibility warns of their weaknesses. With few exceptions, it can be assumed that were the innovations to have offered major advantages to forest dwellers, they would have been adopted by them long ago. Thus, only where significant new incentives can be brought into the equation would most of these AIGAs merit consideration.

#### **Box 14: Alternative Income-generating Activities**

International estimates of the feasibility of mitigating DD are based on opportunity cost arguments, which give a low value to traditional cultivation systems. Thus, the World Bank (2008) notes that, from an equity perspective, small-scale subsistence farmers, shifting cultivators and communities would bear about 20% of the total costs of mitigation, if opportunity costs were used as the basis for the allocation of payments although they probably account for close to 50% of the estimated global annual deforestation rate. It is recognized, however, that opportunity cost does not capture all the elements of farmer decision making, and that other factors would have to be taken into consideration in REDD implementation on the ground. One of the most important of these is what else can be done to wean the targeted communities from their former ways.

The first stage in agricultural reform is likely to be a demand that cultivators abandon cyclical cultivation methods, including the use of fire to maintain soil fertility. The second stage is the substitute activities. The outcome will depend not only on the financial incentive mechanism used to encourage the change, but also on the labour and capital requirements of the proposed alternatives, and the feasibility and carbon footprint of the other means on offer to maintain livelihoods. For example, fire plays an important role in many forest fallow systems in suppressing weed growth and plant diseases, and may have no ready substitute.

Providing extension services to help resource-poor farmers invest in perennial beverage crops (cocoa, coffee) is one strategy with real pro-poor potential, and it is relatively scale-neutral. However, such crops are unlikely to do away with the need for land for food crop production using more extensive methods, and thus the net effect on carbon storage is uncertain.<sup>21</sup> Development of irrigated agriculture is also widely promoted, and this has much to recommend in that it not only intensifies cultivation and relieves pressure on the land, but also increases yields and incomes, particularly where the farming season can be extended and multiple crops harvested. But irrigation is not scale-neutral, and is not necessarily a rational strategy for resource-poor and risk-averse farmers, who can ill-afford the investment, infrastructure, maintenance and pest control expenditures needed to sustain the enterprise.

A sceptical stance is also in order regarding the livestock projects that are promoted as an alternative to existing practices – for example, attempts to confine domestic animals, improve profitability by introducing high-yielding varieties to replace the traditional land races, or replace the wild harvest of bushmeat with captive-reared game. Schemes of these types tend to impose major husbandry and animal health care requirements on multiple enterprise peasant farmers who survive through a range of low-input, low-output activities, and rural women often bear a particularly heavy load.

Community forestry could be a more promising option, particularly when broadly conceived to include small-scale commercial timber transformation, sale of non-timber forest products, and more sustainable wildlife management methods. Leakage has been found to be much reduced where forests are allowed to provide other benefits to forest users than offset payments alone, and forests with high resident human populations are likely to be much better protected and managed than ones from which all communities have been cleared.<sup>22</sup> Recent experiments have also shown that incomes 10-20 times greater can be achieved by communities practising small-scale commercial timber transformation, when compared to the informal payments made to them by industrial logging companies (Fomété, 2001). Among the attractions of the approach is the ability to offer gainful employment to rural youth, who are increasingly difficult to satisfy within traditional agricultural economies, and a potentially disruptive force, particularly in failing states. However, it is questionable whether the artisanal sector can be sustained and protected under conditions that would otherwise favour industrial forestry.

Finally, ecotourism has also been promoted as a way to lessen consumption use of forest resources and provide broad community benefits. It may sometimes do so, particularly where national-level infrastructure is already developed (as in Costa Rica, for example); it is less likely to succeed where tourist infrastructure is lacking, and development projects have shown themselves to be a poor instrument to build up such capacity (cf. Brown, 1998a). Thus, while ecotourism expansion could well have some localised potential, it is unlikely to be transformative on a major scale, especially in low governance environments.

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<sup>21</sup> One notes, for example, that investment in perennial beverage crops is advocated as a forest-conserving strategy in the Liberia R-PIN, though the same activities are inferred to be part of the problem to be overcome in the R-PIN for neighbouring Ghana. An issue in the Ghana context has been that, whatever the interests of forest conservation, agricultural research has succeeded in delivering non-shade tolerant cocoa varieties, which have done away with the need to retain heavy cover of trees on farm in cocoa-rich areas.

<sup>22</sup> E.Trines/M.Dutschke, *pers.com*, 9/08



### 5.5.2 *Ethical issues arising*

Many of the proposed REDD measures suffer from many of the same ethical dilemmas that have been noted in relation to other environmental investments such as payment for environmental services (Wunder, 2005), and the following examples may be illustrative (Box 15). These are additional to ethical issues relating to the basic design criteria mentioned in the text (for example, the fact that baseline and credit systems tend to reward high polluting nations, or that stock-based approaches can compensate countries for forests not at risk).

Care will evidently be needed in establishing the ground rules for REDD implementation, and in identifying appropriate standards and monitoring criteria. There is a strong case for providing support to private actors to undertake pilot low-carbon activities or to compensate for income foregone where the investments would not otherwise be made and where the outcomes are of direct public benefit. A take-up mechanism to scale up the pilots or translate them into a broader policy would then be needed. Likewise, where the aim is to establish ground rules for the private sector, where there is an evident gulf between the public and private interest (as with systematic state funding of forest management plans for the whole forest industry). The case is much less clear where the benefits are of a purely private nature, even less so where (as with reforestation of degraded concession areas and some instances of RIL), the payments do not compensate for carbon storage so much as for past and future indiscipline.

Such cautionary notes do not negate the validity of the attempt to relieve the pressure on the forest, but they do warn of the need for a heavier dose of realism, and a politically more sophisticated approach than has often been the case in the past. All this calls for an approach which seeks to support forest-rich societies to develop much broader low-carbon strategies than the scale of most of these projects allows, and to eschew isolated and piece-meal ideas, however attractive these might appear to those who don't have to live under the constraints endured by small-scale and resource poor forest farmers. The design implications are considered further in the sections that follow.

### **Box 15: Ethical Issues involved in REDD investments**

REDD support strategies raise a number of ethical dilemmas in relation both to the balance between attempts to address the major industrial drivers of deforestation (which risks concentrating support on ‘the bad guys’ to the detriment of those in genuine need, and also the types of activities which are favoured to wean people off forest-dependent livelihoods. A number of examples are considered in the following paragraphs.

#### *Subsidies to industry*

Using REDD-derived finance to improve industrial practices in the forest sector raises some ethical questions as well as issues of cost-effectiveness, particularly in the context of REDD additionality. This requires that REDD targets forests under genuine threat of deforestation.<sup>23</sup> Where powerful industrial forces are at play, there is a distinct danger that funds will be devoted to compensating the wealthy and powerful for condescending to conform with sound environmental practices, when a more socially just approach would require that compensation payments be made to more needy, and probably already more forest conserving, local communities (Richards & Jenkins, 2007, quoting Wunder, 2007). It could be argued that sustainability should be internalised within the industrial business model, and that if it cannot be, then the enterprise is not viable. The counter-case would need to be made in terms of the wider benefits to the society of industrial subsidies, and the longer term perspectives and social benefits. For example, if RIL prevents long-term conversion of forest lands to other less carbon conserving uses then this benefit could arguably tip the scales in favour, but the time frame for support would need to be addressed.

Somewhat similar dilemmas are raised in other areas where industry stands to impact negatively on the forest – for example, large-scale oil-palm plantations as a source of biofuels – and where there is again a great risk of diversion of REDD transfers to those who are least in need of them. The logic of climate change mitigation in a market context and the desire to optimize public welfare do not necessarily coincide, which could well prove problematic for a mechanism which relies on broad international consensus, and has to cope with massive variations in opportunity cost.

#### *Creating externally-dependent and unproductive communities*

Several of the proposals that have achieved highest profiles in the popular pressure require forest dwelling communities to sign up to a pledge of forest conservation, in return for which they will be given regular cash transfers (perhaps on a family and community basis) as well as help in developing environmentally benign activities, under the guidance of external advisers. The forest areas in question would then monitored on a regular basis and, assuming that emissions reductions are sustained, transfer payments would be continued. While such schemes may have beneficial aspects (some of which – support for children’s education, for example – would seem best considered independently of conservation issues), they are contentious in a number of respects. The concern expressed earlier about the viability of aid-funded AIGAs is a case in point. In addition, it must be wondered at the wisdom of suppressing viable economies in the name of global environmental concerns, and undermining the authority of communities over their own livelihoods.

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<sup>23</sup> There is a wider debate about how ‘additionality’ rules should be interpreted. See, for example, the interview with the head of the Chicago Climate Exchange, reported by Reuters, 21 August 2008 ([www.reuters.com](http://www.reuters.com)).

At worst, such proposals would appear to require behavioural changes among very poor people which put at risk their social solidarity and economic welfare, arguably to offset the profligate lifestyles of consumers in prosperous post-industrial societies.

*Rural Livelihoods and the danger of perverse effects*

The ways in which benefit flows are received and distributed by host governments will reflect the political environment and might also influence it. Taking large areas of land out of the productive economy, and substituting large flows of un-earned income could prove highly inflationary, and the urban poor, spending a disproportionate amount of their household income on food, would be particularly vulnerable. Measures which increase prices of agricultural commodities while distorting purchasing power away from the poor could well encourage land speculation and/or in-migration, increasing social conflict and leading eventually to proletarianisation. However, a more equitable distribution of benefits could stimulate the rural economy, encouraging diversification and ‘unimodal mechanisation’ (see Johnston and Clark, 1982).

Decisions that affect the scarcity (and therefore price) of goods could have perverse effects, increasing the risk of leakage outside of the area of intervention. Thus, high food prices might provide an incentive to intensive or extensive agriculture, and thus either promote conservation or increase deforestation, depending on the circumstances.

*5.5.3 Scale issues in relation to REDD Payments at the National Level:*

Of comparable importance to the types of activities that might be implemented are the ways in which they and other REDD payments are organised.

At one extreme, REDD finance could be organised as a series of more or less independent and localised projects, each with discrete outputs and liability, as would be favoured were delivery to be largely in the hands of conservation NGOs under a ‘preventative crediting’ scenario (Da Fonseca et al, 2007). At least under certain conditions, these could be bundled with other environmental services (for example, conservation of biodiversity or limited offtake of timber and other products) to lower costs and increase the attractiveness to the agencies (Pearse, *pers.com.* 2008). At the other end of the scale is a well-integrated national approach, based on a clear and coherent national-level strategy and national liability for emissions reductions. A hybrid approach is also possible (and indeed probable in the early years), involving either projects nested within a national framework and national baseline, or adoption of a project approach until a threshold of credits is reached where a national system takes over. In large and complex societies, there may also be need for a sub-national approach, in which liability structures are located at the provincial level. In each of these cases, there would be a number of issues relating to crediting – how long-term liabilities would be institutionalised, and national and project-level targets integrated in a way that aids and incentivises achievement of the national target while eliminating the risk of double accounting. In the case of nested projects, for example, there would be a need to ensure that projects were not credited individually in a context of rising national emissions. In the case of a market for REDD credits, institutions and mechanisms would be required at international and national levels to channel individual investor purchases into a coherent implementation framework and link project level interventions to the structure of national liability.

In principle, a national approach in which individual project-level activities are subordinated to the national ‘green growth’ strategy under strong government leadership has more potential to be ‘pro-poor’ in that it focuses attention on national level institutional and legislative reforms. Given the centrality of tenurial change to pro-poor development in most tropical environments, this would be a welcome corrective to the tendency to shift responsibility down the line to the immediate resource users, without creating a policy framework supportive of their interests. It would also avoid the core problem of the projectized approach – *viz.* the inability to interact with and influence the policy environment in progressive directions. Against this must be set the fact that many investors will prefer a localised project approach, in which their own involvement and responsibilities are very clearly demarcated, and a clear line of accountability drawn. Finding the right balance between these two dimensions is likely to be particularly problematic, especially where the governance challenges are significant.

## **5.6 Concluding Remarks**

This section has underlined the challenges involved in bringing a pro-poor agenda into international climate change negotiations, particularly REDD. An appropriate policy architecture is often lacking to deliver any one of the three sets of values (climate change mitigation, pro-poor development, and conservation of biodiversity and the wider environment), let alone all three of them in tandem. Poor people could benefit from the vastly increased financial flows that REDD could bring about, but they are perhaps equally likely to suffer from them, as governments and other actors struggle to control environmental changes which they have little ability to influence. The challenges are thus significant and should not be gainsaid merely to advance the cause. A number of suggestions can be made to address these challenges.

### *5.6.1 International and national climate change architecture needs to be designed with clear social co-benefits in mind*

Two factors – the primacy of climatological considerations within the UNFCCC negotiating process and the sovereignty exercised by producer governments over their forest lands – suggest that ‘pro-poor’ climate change mitigation will require strong political will at the international level. A coherent set of international standards would reinforce this commitment, and there is some scope for this via the UNFCCC, though it would require a further process of international consensus building as to what pro-poor climate change mitigation (particularly pro-poor REDD) might involve. Lessons can be learnt in this regard from the experience of the EU’s Forest law enforcement, governance and trade (FLEGT)<sup>24</sup>, which has had a strong participatory dimension, as well as from the forest certification movement, where organisations such as the Forest Stewardship Council have had some success in building consensus between widely disparate groups.

Particularly in low governance conditions, there are strong grounds for multilateral and bilateral aid donors to retain a strong role in the negotiating process at national level, and this would be justified by the need for international confidence in the objectives defined, and the national mechanisms by which they will be delivered.

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<sup>24</sup> See: [www.ec.europa.eu/environment/forests/flegt.htm](http://www.ec.europa.eu/environment/forests/flegt.htm)

There is a particularly strong case for the involvement of donors such as the European Commission, which have already-established entry points for dialogue with producer governments (in this instance, through the National/Regional Indicative Programme (NIP/RIP) negotiation processes).

#### *5.6.2 There needs to be realism as to the capacity for social transformation to serve climate change imperatives*

Treating social benefits as secondary ‘add-ons’ is not always the most effective strategy for success in any endeavour, particularly in a technical demanding field like climate change. Many of the proposed policies and measures by which climate change might be mitigated through forest sector activities have some recent history, and a track record that is not necessarily enviable. The experience of conservation organisations in managing protected areas and in seeking to alleviate pressures on them through ICDPs and AIGAs offers some uncertain models on which to base climate change experiments, especially in Africa. Attempting to resurrect such models as a vehicle for REDD would be questionable on grounds of effectiveness, efficiency and equity. There is the need for an independent and critical analysis of what two decades of ‘integrated biodiversity conservation and development’ has actually achieved, particularly in Africa.

The social category that needs the most careful consideration and protection is poor people who have high forest dependence and few livelihood choices. There would be particular dangers in promoting activities that foreclose on local economic opportunities in the interests of climate change imperatives, without offering any proven and feasible alternatives. This would be unjust and in all likelihood ineffective, as past conservation strategies have tended to underline. The large volume of finance that climate change activities might bring is a new dimension to the situation, and potentially a very positive force. It increases the opportunities for wealth generation outside the forest, and also for experimentation at the local level to alleviate pressure within it. However, it would be essential to protect forest-dependent communities from the effects of uncertain policy experiments where they might be made to bear the risk, and where their livelihoods would be very negatively affected by failure to deliver. In the highly polarised contexts that are typical of forested countries in the tropics, the danger is that heavy policing of poor people will provide the easiest and (for public servants) the least risky focus for action, which would make it much more attractive than taking on the serious polluters who are politically much more secure.

#### *5.6.3 The importance of tenure reform*

The case for tenure reform, as regards land and property rights, is overwhelming in many situations, particularly in Africa and Asia. However, the record of such reform is not good outside of revolutionary contexts, and such contexts would be impossible to engineer externally. The risk of perverse effects (mainly elite capture) would also be extremely high (Hobley, 2007). A number of case studies exist to show that ‘customary ownership’ is not necessarily any more egalitarian than non-ownership, unless supported by real political will (cf. Bird et al, 2007). Equally, tenure systems which do not provide incentives to nurture and conserve trees on-farm are unlikely to deliver major environmental improvements (cf. Brown, 1998b; Brown & Amanor, 2006).

The governance challenges are particularly great as regards the delivery mechanisms by which financial transfers to national governments might be transmitted down the line and converted into positive incentives for decision-makers (both large and small scale) in the forest environment. The record of the governments of forest-rich countries in controlling and managing their basic forest resources is often questionable, even without any need to channel substantial funds to the local level.

Effective structures of democratic local government are required, and secure tenure of farm and forest lands by those who depend on them for their livelihoods is likely to be an important precondition for democratic functioning at the local level, as is a functioning and equitable legal system. This does not necessarily require individual tenure. Strong, accountable and transparent community tenure systems may be preferable, especially for the poor, as they would counter the tendency for elite capture (particularly where farmland is accepted as collateral by the banking system and urban elites are well-placed to profit from the opportunities arising). Putting these institutions in place could be expensive, and imply high maintenance costs at the local level, particularly in ‘forest frontier’ areas which lack strong and stable institutions (it may be less challenging and costly where there are local institutions of long historical standing). One of the benefits of the large financial flows that REDD promises is that such ambitions could be achievable, in some cases probably for the first time.

#### *5.6.4 The importance of clear links into national policy*

Apart from the exceptional volume of finance that integration of the forest sector into international climate change mitigation and adaptation mechanisms might bring, this movement also has the potential benefit of introducing a clear performance criterion into changes in forest management. This would be justified even if its only effect is to dissuade producer governments and others from instituting and sustaining ineffective rent-seeking actions which disadvantage and constrain the poor but deliver little else. Its ability to deliver positive welfare gains for forest dependent populations would be a significant bonus.

Feedback loops on performance and effectiveness are thus of great potential value, though they also require clear links into policy. The greatest danger will come from isolated projects which have no ability to influence policy and end up ‘victim-blaming’ as a result. The size of the challenges, as regards tenure reform and wider processes of forest governance reform, increases this likelihood. This requires national strategies that treat all classes of forest user – not just industrial timber industries and concessionaires but also forest farming communities – as co-authors of innovation and change, rather than problem actors whose activities have to be suppressed. Again, this will be difficult to achieve in many forest environments without major reforms.

Achieving these reforms is problematic. International thinking on aid processes is moving strongly against the use of donor conditionalities, and the principle of integrating aid into national strategies supports this approach. A tension is likely to develop in REDD delivery to LDCs, particularly in low governance conditions, between three dynamics: first, operating as a set of highly-focused external funds, perhaps with some element of aid conditionality; second, as a set of more or less independent projects, very much in line with current conservation strategies; and third, much tighter integration into national pro-poor growth strategies, though probably at the cost of short term efficacy and profile.

## CHAPTER 6: Conclusions and recommendations for Steps Forward on a Pro-Poor Forest Agenda for Carbon Finance: Perspectives, initiatives and proposals

Climate change has reinvigorated interest in forestry, and particularly forest conservation. Large new flows of finance are being directed towards the sector in developing countries in order to try and preserve forests, reduce carbon emissions and enhance carbon sinks. New financial instruments are also emerging in relation to these flows. Most of the attention is on carbon markets, which are both a new source of finance (raised through putting a value on carbon and allowing for it to be traded) and a mechanism for its distribution. Allocation of finance is decided on a competitive basis depending on performance in relation to reducing emissions (REDD) or increasing carbon sequestration (AR). It is the preoccupation with these two elements (carbon balances and performance) that makes forest carbon markets a unique and relatively new instrument in the forest sector. Fund-based systems are also emerging. These are typically more similar to existing financial instruments in the forest sector though they may also have a performance element. The sources of such funds may be traditional (e.g. from ODA) or more innovative (e.g. from levies placed on fossil fuels or on the carbon markets themselves).

The overall story that has emerged from the report is that these financial flows present a major opportunity for supporting the forest sector in developing countries and mitigating climate change (particularly through REDD). But these need to be balanced against a range of new risks that carbon finance could present, especially for the poor. In summary:

- From a *mitigation perspective*, most REDD proposals are attractive. Predictions based on the opportunity costs of land in relation to carbon prices imply that potentially huge emissions reductions could be achieved through market-based REDD mechanisms at relatively low costs. Technologies and methodologies are available to monitor and measure deforestation and degradation, and to calculate emissions reductions. By using conservative approaches and applying appropriate safeguards, it also appears that REDD programmes and projects can be implemented in robust ways, and at macro scales, negative impacts on carbon markets and investment in other abatement options can be minimised. But looking at the realities of actually implementing such approaches raises major questions about the actual scale of emissions reductions that could be achieved in the short-medium term. This is due to the large differences in country capacities, assumptions about the competing drivers of land-use change and the realities of establishing systems in what will commonly be situations of poor governance.
- From a *biodiversity perspective*, the positives are also clear. This is based on the assumption that in preserving forests, biodiversity is also likely to be preserved. It also offers the potential for much greater financial flows than most existing biodiversity financing instruments. However, the links are not necessarily as obvious as has sometimes been implied. Most REDD approaches are likely to channel finance towards areas of high emissions (and deforestation/degradation), not necessarily those that are highest in biodiversity. It could encourage greater fragmentation of landscapes in ecological terms if not designed in line with broad landscape planning approaches, and at macro-levels could result in shifts in funding away from more dedicated biodiversity finance.

- From a *development perspective*, the picture is more complex. On the positive side, REDD offers the prospect of very significant financial flows to countries which have hitherto been marginal in international climate change policy. It also offers a mechanism that encourages these flows to be channelled towards the rural areas which are the most depressed and under-funded sectors of most LDC economies. It places a value (and potentially a growing value) on environmental services that are currently undervalued financially or not valued at all. Provided it can be developed in ways that satisfy non-Annex 1 countries that it will aid their development, not hinder it, then it is likely to sustain a high level of international support (Trines et al, 2006). REDD, compared to existing project-based carbon markets, also offers the prospect of an approach which accentuates the trend in development finance away from isolated but heavily context-dependent projects towards broader policy changes involving forest governance and tenurial reform, and creation of a supporting legal framework that rewards both forest conservation and the poor who are the primary forest stewards. This would not only provide benefits from a development perspective, but should also help to promote a more joined-up approach to wider environmental goals, especially biodiversity.

Whilst this is a prospect on paper, it is also the *major challenge faced by REDD* as an international development strategy. Supporting the vital reforms (most notably this includes reform of land and tree tenure in favour of the forest-dwelling communities) that are required to achieve environmentally-sound, equitable and pro-poor development. Without such reforms, it will be difficult to ensure that financial flows derived from REDD payments reach the forest managers, nor to ensure that, if they do, they are expended on investments which improve the quality of forest management. The systematic strengthening of property rights needs to be complemented by governance reforms, to increase the authority of democratic local government, and aid local authorities to play their part in the deployment of REDD finance in an open, transparent and accountable way. Without the strengthening of democratic local government, participatory processes are likely to remain weak and discretionary, fobbing off local communities with tokenistic participation. It is this policy dimension that will be most difficult to address under any future LDC-oriented climate change regime. Policy reforms are difficult to link to emissions reductions quantitatively (Ward 2008), and demanding implementation of complex policies of LDCs with little government capacity will be a big challenge.

So, how should such initiatives be promoted and configured so that they respond adequately to the three dimensions discussed in this report?

Any single system on its own appears to leave vital needs unaddressed, which will have a negative impact on the success of the approaches promoted. Market mechanisms may have a major part to play in the story, but will require considerable additional finance in order for them to deliver effectively. To achieve emissions reductions at scale, they will need to be complemented by funding from other sources, possibly to levels of up to \$11-19 billion per year for reductions of up to 50% by 2020 through REDD (Eliasch 2008). And to deliver them in ways that have a reasonable chance of being equitable, even more funding may be required. This implies that multiple funding sources and delivery mechanisms are likely to be needed in parallel.

One of the most promising sources looks to be from EU ETS auction revenues (which could raise \$2.3 billion to \$3.9 billion per annum assuming 3-5% of revenues are channelled to forestry mitigation options), though even this source will need to be matched by considerable extra funding from elsewhere.



It will also need to overcome pressure from inside and outside the climate change community to demonstrate that spending revenues on REDD will be an effective use of funding. This probably justifies a stance that the maximum level of funding delivered should be in line with the volume of emissions that REDD could theoretically prevent (around 17%).

In terms of the design of financial delivery mechanisms, the current focus of the debate on technical issues (such as permanence and leakage) and on cost efficiency also appears to be leading to some trends that are at odds with mainstream development policy. This includes issues such as:

1. A tendency to focus on project interventions with less attention given to the surrounding policy and institutional reforms that might be required in order to develop more effective and long term sustainable growth. In this context, approaches to market-based REDD (e.g. nested approaches and sectoral crediting approaches) which offer significant potential for increasing private sector investment whilst forging closer links with national policy processes look to be particularly interesting.
2. A renewed emphasis on forest management interventions that fit with the logic of climate change mitigation (e.g. AIGAs), without clear evidence that these are effective or equitable.
3. A bias towards mitigation 'delivery' over wider environmental or social needs.
4. Multiple and sometimes competing initiatives that lack coherence and country ownership.

There is a plethora different financial instruments – already announced or just proposed - that either have these characteristics or offer opportunities for filling the gaps. As acknowledged in the recent EC Working Paper on deforestation (SEC(2008) 2619/2), existing channels should be utilised to avoid the development of many new structures. However, there is also an implicit recognition that many of the existing approaches have failed to address deforestation and degradation, and anticipation that the new incentive and market-based mechanisms can break this trend. There would be merit in taking stock of the existing approaches and their strengths and weaknesses before any additional finance is passed through them to support REDD objectives.

Many of the new options (e.g. the World Bank's FCPF; UN Collaborative etc.) aim to help facilitate the development of REDD carbon markets. These have a role to play, but again, probably only to the extent that such mechanisms can raise additional finance for forest protection (in the range of \$7 billion per year by 2020 to mitigate 22% of forest emissions – Eliasch 2008) and are proven to work more effectively than other strategies. 'Effectiveness' implies ability to deliver robust results from demonstration projects and programmes implemented at scale. The biggest gap in finance is likely to be in the area of general enabling and institutional reform processes, and effort is required to identify options that can help countries move towards greener growth and more pro-poor development strategies. Project-based carbon trading does not generally appear to be having such an effect.

Approaches need to be designed with these wider concerns in mind, and funding sources then identified that can address the challenges. The starting point for the debate may need to shift from how carbon financing mechanisms can be tailored to reduce emissions or increase sinks, towards what strategies are best suited to pro-poor forest conservation or AR. Then appropriate and more strategic approaches can be found to meet the financing requirements.

How can different stakeholders engage with the debate to help ensure a pro-poor forest agenda? The following section outlines some recommendations for five key categories of actors (EU, UNFCCC, National policy makers in forest-rich states, NGOs and civil society, and the private sector), with a particular emphasis on the roles that the EU can play.

## RECOMMENDATIONS

### A. Policy Recommendations for the EU

#### A.1 Fund-raising for climate change mitigation:

1. *The use of market-based AR systems as sources of finance:* CDM and voluntary forest carbon markets already exist to support AR. In carbon abatement terms these initiatives are small compared to energy related abatement options. However, there are some signs that the number of projects is increasing and that market-based carbon finance can be mobilised to support relatively sustainable forms of plantation management. These may not be directly beneficial to the poor, though in some contexts may contribute to national growth. Whilst the EU may not support such initiatives directly (i.e. through the EU ETS), it could help provide technical assistance and seed funding which could usefully contribute to the development of low carbon forest sectors in certain countries, through the use of existing funding instruments (such as bilateral aid).
2. *The use of market-based REDD systems as sources of finance:* New market-linked REDD mechanisms do appear to offer a potentially new source of finance for supporting the forest sector in developing countries and a new performance-based mechanism for addressing the drivers of deforestation. For this reason the EU should support the development of such approaches, but with careful consideration for their limitations in certain contexts and with certain design options. In general, 'nested' proposals appear to be the most suited to mobilising private sector finance whilst linking these to wider sectoral reform to improve the chances of pro-poor outcomes. Nevertheless, additional sources of finance will be needed to support these mechanisms and to support different types of approaches where market systems are not appropriate. This will also help to ensure international equity in funding delivery for REDD.
3. *Financing volumes and funding gaps:* A range of cost estimates have been attempted for reducing emissions from deforestation and degradation, though these are of uncertain value due to lack of accurate cost information and some questionable assumptions about the needs of REDD systems. It is estimated that carbon markets could contribute around \$7 billion per year in 2020, representing around a 22% reduction in emissions compared to business as usual. Estimates of a funding gap of \$11 to \$19 billion per year required to reduce emissions by 50% are likely to be conservative, as they are based on assumptions of perfect targeting of individuals and differentiation of costs as they occur. The conclusion is that additional sources of finance will need to be mobilised if there is to be a significant impact on global emissions.
4. *Forests in the EU ETS third phase (2012-2017):* It is noted that the EU is in process of reconsidering the existing exclusion of forests from EU ETS in its third phase (with a view to inclusion in the long term), in the light of issues around:
  - a. Leakage
  - b. Permanence
  - c. Increasing the complexity of ETS systems

- d. Market flooding
- e. Lack of comparability of monitoring and reporting between LULUCF and the emissions covered by installations in the ETS system
- f. Uncertainty in the evolution of the international system (the post-2012 deal and the emergence of other trading schemes in particular)

Inclusion of forests in the EU ETS does have considerable merit in the long term (post 2017), as it would have the potential to mobilise very substantial amounts of finance for the sector. However, the EU's caution is supported, on the grounds that there is still high uncertainty about the future of the international regime and about the implications for the ETS. However, the case has not yet been fully made. Further effort should be put into weighing up the evidence about the problems of carbon forestry versus other abatement options and the cost versus benefits to the EU of administering a trading system that includes forestry. Pilot carbon market initiatives for REDD do need to be developed soon and at a large enough scale to ensure learning for future systems design.

5. *The proposed use of auction revenues from ETS allowances:* has much to commend it, given the need for very significant levels of financing maintained over long timescales and in view also of the limitations of both a direct market mechanism (where the distribution of benefits is likely to be very inequitable between recipient nations, and investment costs are unlikely to be adequately covered) and donor aid transfers (where the volume of funding is likely to be low, there is the risk of fungibility with existing development budgets, and future levels of funding are likely to be uncertain, due to politicisation). However, there is need for greater clarity on alternative proposals, as regards:
  - a. The percentage level to be applied to forestry over other areas (e.g. adaptation)
  - b. The operation of the proposed Global Forest Carbon Mechanism (GFCM), and the principles for allocation of funds to REDD. (It is noted that a consultation planned in 2009).
  - c. The governance of the GFCM, and the degree of EU discretion over fund allocations
  - d. The effects of such a levy on the functioning of the ETS need to be more thoroughly assessed and tested. These include, for example, the costs versus benefits of spending the money raised on international climate change initiatives rather than on domestic initiatives, and the losses to the European economy that such a levy would imply.
6. *Alternative levy and tax options* (such as direct taxes on fossil fuels) could supply huge volumes of additional finance for addressing climate change. However, as with the ETS auction revenues, they will suffer from debates over appropriate allocation (especially domestic versus international spending, and forestry versus adaptation versus other energy *abatement options dimensions*). Their economic and political feasibility needs to be more thoroughly explored before conclusions can be drawn as to their potential for the EU as instruments for carbon forestry.

7. *ODA as a source of finance:* ODA is already being channelled towards carbon forestry initiatives by many donors, EU Member States included. ODA is likely to be crucial in supporting carbon forestry initiatives that cover all three dimensions (mitigation, environment and biodiversity, and development), due to its pro-poor mandate and greater focus on general reform processes in developing countries, rather than supporting isolated incentive mechanisms. However, concerns about the use of ODA to finance climate mitigation imply that transparency of information on its use for this purpose will be important.
8. *Other EU financial sources:* A number of other financial sources exist that could be used to support carbon forestry:
  - a. *GCCA:* The low take-up to date of the GCCA by EU MS is a matter of concern. There are doubts as to whether it can provide an effective mechanism to support carbon forestry unless it becomes more attractive to European partners and funds are substantially increased. There is a need for a better understanding of the relative merits of the GCCA carbon finance related funding windows against other instruments, such as the World Bank's FCPF.
  - b. *The EU's External Action: Thematic Programme for Environment and Sustainable Management of Natural Resources including Energy (ENRTP)* has, as its objective, 'to integrate environmental protection requirements into the Community's development and other external policies as well as to help promote the Community's environmental and energy policies abroad in the common interest of the Community and partner countries and regions'. An indicative amount of €804 million is assigned for the period 2007-2013 (€ 469.7 million for the period 2007-2010). This will assist developing countries to better integrate MDG 7 (environmental sustainability) into decision making, and addresses a number of challenges of particular relevance to this report, including climate change and global environmental governance.
  - c. *FLEGT* : It is noted that the EU is exploring the links between REDD and FLEGT. The latter is particularly relevant in relation to intra-sectoral causes of deforestation (i.e. illegal and uncontrolled forest exploitation) and the opportunities which the EU Action Plan offers to support institutional strengthening and capacity building. There may be synergies between the two in these areas, and also in relation to the tenurial reforms and access rights that the FLEGT Action Plan recognises to underpin many improvements to forest management.

#### *A.2. Finance distribution options for supporting carbon forestry initiatives*

The EU can support carbon forestry initiatives in two main ways – either through carbon market mechanisms or through a range of other international funding channels (e.g. bilateral aid via Member States; through European instruments such as the FLEGT Action Plan; through multilateral development banks; through the UN etc.). In reality there is some overlap between the options and with the funding channels option there is also a range of emerging funding instruments more specifically focussed on carbon forestry (e.g. the World Bank FCPF, the UN Collaborative Programme on REDD, the Brazilian National Fund). All of these channels offer some potential for meeting the needs of carbon forestry, though some basic principles need to be adhered to in order to help ensure that carbon forestry initiatives meet the three objectives discussed in this report.

9. *Matching financial sources and needs:* Some sources of finance for carbon forestry are intrinsically linked with certain types of delivery mechanisms, whilst others offer some flexibility in how funds can be distributed. Careful evaluation (from effectiveness, efficiency and equity perspectives) of where needs are greatest and not matched by adequate sources will be required in making decisions over finance distribution. The findings from this report highlight the importance of:
- a. Ensuring adequate finance is channelled through mechanisms that support policy and institutional reform. This is where needs appear to be greatest and in most danger of being neglected – this will help ensure the long term sustainability of carbon market mechanisms and all other options. The new Forest Investment Fund (FIF) of the World Bank offers potential in this funding space.
  - b. Channelling finance through a range of different mechanisms, as each has different attributes and suitability in terms of what it is intended to support. The proposal by the Eliasch Review for a single global fund manager for REDD is an interesting one, though it is far from clear that it would be acceptable in the current climate of global environmental finance and many questions arise as to which international body should be responsible for such a fund, and how it should be managed. However, as noted below, ensuring coherence between initiatives will also be important, and long-term harmonisation is a valid aim.
  - c. Maintaining finance over long timescales. This would tend to favour integration into a market mechanism either directly (through involvement in the EU ETS) or indirectly (through a levy on auction revenues).
  - d. Sophisticated and sensitive approaches to understanding opportunity costs will be required to ensure that REDD is pro-poor. The REDD debate centres around opportunity cost calculations and the assumption that if these costs can be met and exceeded, actors will change their behaviour. In reality this is oversimplified and opportunity costs (particularly of the poor) are unlikely to be well known, or the alternatives well understood.
10. *Use of market mechanisms to meet REDD objectives:* Market mechanisms should only be supported in proportion to their likely effectiveness. The Eliasch Review indicates that market mechanisms can raise around \$7 billion finance in 2020, reducing deforestation and degradation by 22%. Whether additional funds should be channelled into these mechanisms to increase this percentage should be a decision based purely on whether this is the most effective use of such funding. Given the lack of evidence about such systems, demonstration activities will be crucial in determining future decisions.
11. *Use of incentive-based mechanisms:* Most of the market-based carbon forestry proposals are based on the use of financial incentives and strict performance criteria. There is also an implicit assumption amongst many of the fund-based proposals that similar incentive mechanisms would be used and that they are qualitatively better than other instruments that have been proposed. There is so far little evidence that this is the case, and the options should be explored in much more detail before money is channelled to such instruments.

Nevertheless, from a mitigation perspective, maintaining the funding and performance link appears essential in any future agreement, and this will require very careful handling if it is not to both (a) penalise poor, cash-strapped countries which would be vulnerable if performance is not attained; and (b) risk reinforcing the negative tone of much forest law enforcement in LDCs, which can operate in a distinctly anti-poor way.

12. *New bilateral and multilateral financing mechanisms:* A number of other financing mechanisms have recently been announced. There is a need to clarify MS and other donor strategies on environmental finance. A number of issues need to be further considered, including:
  - a. The liability aspects and the loan element of these mechanisms
  - b. Coherence between initiatives
  - c. Governance structures and developing country ownership over the design and implementation
13. *Coherence with other EU policy initiatives:* There is a need for coherence of carbon forestry financing systems with other EU policy initiatives at all levels. Decisions in other policy areas (both sectoral and extra-sectoral) are likely to have a huge impact on GHG emissions from the forest sector that could dwarf any progress made with initiatives to support REDD or AR. Alternatively, with careful policy planning, they could be used to achieve REDD objectives. The impacts in these other areas are not well known but should be evaluated. Key areas include:
  - a. Biofuels policies, including supporting shifts to second generation biofuels and biofuel certification initiatives
  - b. Agricultural policies
  - c. Encouraging sustainable consumption practices within the EU
  - d. Developing common procurement criteria for wood products in the EU
  - e. Partnerships with emerging economies that have increasing demands over forest resources in tropical countries (e.g. China's demand for Indonesian palm oil)

### *A.3. Principles for finance distribution*

In choosing which types of financing initiatives to support, the EU should also bear in mind a set of basic principles that are crucial in helping to ensure that the three objectives are met.

14. *Maintain support for crucial enabling reforms in forest-rich states,* and not to allow the urgency of the international policy cycle to pre-empt the completion of necessary preparatory steps in key areas. These include:
  - a. property rights and land/tree tenurial reform;
  - b. local government reform;
  - c. pro-poor legal reform;
  - d. regulatory equity and effectiveness; and
  - e. educational advancement and improvements to health services.

15. *Help establish social and environmental standards for REDD:* consideration should be given to the ways in which negotiation of REDD financial flows could be brought within the wider framework of EU/LDC partner relations, with a view to establishing social and environmental standards for external investors. The EC is well-placed to take the lead on behalf of the EU MS, given the institutions that already exist for national and regional dialogue and planning.
16. *Types of initiatives to fund 'on the ground':* This report indicates that the success of carbon forestry initiatives in terms of the three dimensions is likely to be highly context specific. However, a few general principles are evident:
  - a. Market-based systems are only likely to work effectively in specific circumstances, where there is a clear and unambiguous tenurial regime for land and trees, a stable long-term investment climate, a consistent and depoliticised legal framework and an independent (or at least predictable) judiciary
  - b. The project approach has its limitations in a field such as forestry, where the policy environment is often unsupportive. REDD strategy needs to move beyond the isolated project-based approach of the CDM which has doubtful impact on policy reform. National and nested REDD approaches offer potential for a more radical 'green growth' approach.
16. *Impact assessment and learning:* Given the lack of evidence surrounding new approaches to forest conservation (particularly market-based mechanisms) and the new international facilities being developed to support carbon forestry, rigorous approaches need to be developed for monitoring and evaluation. In most of the proposed initiatives currently in the pipeline, there are tend to be few details relating to how their effectiveness will be assessed or how this will feed back into the evolution of such systems. The EU could play an important role in promoting such rigorous monitoring and evaluation processes for both its own initiatives and others.

## **B. Policy Recommendations for the UNFCCC process**

Many of the recommendations outlined in the previous section are also applicable to the UNFCCC process. This section outlines key recommendations for ensuring UNFCCC processes support carbon forestry initiatives that meet the three objectives in this report.

17. *Type of REDD approach:* The different options for the design of REDD mechanisms have both technical and political roots. Satisfying these two criteria is the overarching requirement of the UNFCCC process. However, the analysis of current 'design options' for REDD in the three dimensions indicates that:
  - a. Market mechanisms offer enormous potential in financing terms, but come with a number of caveats in terms of efficiency-equity trade-offs. Fund-based approaches have generally received less attention than market-based approaches because of the lower levels of funding they imply. With the possibility of significant new international funding (e.g. from ETS auction revenues) fund-based options may be less efficient but more suitable in meeting the needs of many LDCs and would merit being explored in more depth

- b. Cap and trade schemes are likely to be politically unacceptable and too complex for many LDCs; historic baseline and credit systems raise international equity issues, that will need to be compensated for
  - c. The current negotiations indicate that highly projectized approaches are likely in the early years, with the strengths and weaknesses that these imply. If positive environmental effects are to be maximised, it is important that project experiences feed effectively into international and national policy development (most obviously in those countries with the most problematic policy environments). Nested approaches and sectoral crediting approaches would appear to offer some potential to move beyond the project-orientated approach of the CDM
  - d. Permanence, leakage and liability management: The use of credit buffers and no-lose targets for dealing with risks such as permanence and leakage would appear to be the most promising options. These would avoid options such as temporary crediting which has proven problematic with the CDM.
  - e. A mixture of different mechanisms will probably be needed in order to meet the requirements of different Parties. Therefore better understanding of the co-existence of different approaches (e.g. fund-based and market-based; regulated and voluntary markets) will be required
  - f. Even if market mechanisms are established, additional funding is also likely to be required to ensure wide geographic coverage of REDD and international equity. The UNFCCC needs to consider carefully the options for raising such funds. Extension of the Adaptation Fund levy to other areas of emissions trading is one option that should be explored
17. *Preoccupation with market and incentive-based approaches:* Discussions over securing the Post-2012 agreement and the possibilities of scaled up market-based carbon forestry initiatives are in danger of eclipsing the core issue – finding ways to preserve forests or enhance forest cover which are feasible ‘on the ground’. With the mechanisms leading in this way, there is a danger that instruments will be found that fit the mechanism rather than the problem. The debate must focus firmly on the considerable experience that already exists, rather than reinventing old and often ineffective wheels.
18. *Co-benefits in REDD:* Current provisions for ensuring co-benefits are achieved in REDD are weak within the Bali Roadmap, especially as they relate to social issues. Options for increasing the co-benefits associated with REDD need to be factored into the international negotiations process in the following ways:
- a. The design of REDD mechanisms, particularly in relation to the areas defined above
  - b. More explicit links to other international processes and recognition that these are likely to be insufficient to meet social co-benefit requirements
  - c. Design of social co-benefit assessment methodologies for demonstration activities
19. *Demonstration activities:* Demonstration activities will be key to understanding the effectiveness of REDD mechanisms from an effectiveness, efficiency, and equity perspective. Clear criteria and indicators will need to be developed in order to give a rigorous assessment on which to base future funding decisions.



### C. For developing country policy makers

For developing country policy makers, the potential benefits of climate change finance are great, but the challenges may be substantial. Appropriate policy architecture is often completely lacking, both in terms of the incentives structure for forest management and the inter-sectoral coordination needed to address the underlying causes and drivers of deforestation and degradation. The challenges are likely to be greatest in countries where no single causes or drivers can be easily identified. In such instances, the whole policy environment may need overhaul.

1. *Tenurial security* (land and tree tenure) of the immediate farm and forest managers is likely to be a fundamental requirement in many situations if:
  - a. carbon market development is to stimulate local development and governance reform
  - b. community forest-users are not to be marginalised by carbon market developments;
  - c. communities are to be incentivised to conserve carbon.

In many instances this is likely to require very significant tenurial reforms.

2. *Legal reform*: Tenurial reform may well need to be accompanied by legal reform, with the accent strongly on public access to justice. The legal framework should not only grant tenurial rights to the poor (perhaps through collective rights), but should also enable the poor to defend their legitimate rights through institutional means. Legal frameworks may require considerable strengthening.
3. *Governance and accountability*: There are indications that private carbon finance investors will be unlikely to invest in countries with high perceived corruption indices. There is also a danger of much increased rent-seeking by officials due to AR and REDD, in the name of 'environmental management' but with limited (if any) positive effects on the condition of natural resources. To stimulate investment, countries will therefore have to demonstrate robust and accountable financial and technical management systems.
4. *Human rights legislation*: Areas of high forest cover are frequently inhabited by indigenous populations and others with long-standing claims over the land. Project appraisal should therefore be informed by appreciation of international and national legislation on indigenous peoples' rights and human rights more generally.
5. *Technical assistance* will be required for both CDM AR and REDD. Policy makers need to push for adequate support in this area through long-term processes that can add value in terms of building country potential for designing broader low carbon growth strategies.
6. *Using national resources to support the sector*: There may be potential to tap into carbon markets, for example through domestic taxes on projects. Such an approach has been used in China. Whilst this may raise additional public revenue, policy makers should be aware of the potentially negative impacts it can have on the sector (i.e. by reducing competitiveness and attractiveness to investors) and should channel the resources raised into pro-poor sector development.
7. *Stimulating CDM take-up in LDCs*: Action will need to be taken in many LDCs to create a more enabling environment for AR investment, even if the global market is stimulated by relaxation of ETS rules after 2017.

- a. Plantation development may not be problematic where private ownership of land is long established (including private ownership by communities), land markets are fluid and uncontroversial, and job opportunities are widely available outside of the smallholder sector; it is likely to be much more problematic where customary rights are unclear, where communities have effectively been reduced to squatters on public lands, where there is high investment interests in the private sector and where wealth is widely polarized in society;
  - b. Without significant tenurial and legal reforms, it is unlikely that CDM investments will achieve very wide coverage in LDCs, even if eligibility in the ETS is accepted, post 2017.
8. *Mitigating risks of AR carbon forestry development in tropical environments:* Uncontrolled AR investments could be very damaging to the poor in many LDC environments:
  - a. *land availability:* ‘wastelands’ and ‘marginal lands’ are highly ambiguous categories, and such derogatory terms may disguise the heavy dependence on them by the poorest sections of the population. Great care is therefore needed in converting such areas to industrial plantation development, lest other, significant benefits are suppressed. Governments are encouraged to devise national strategies for wastelands and to carefully research and monitor trends in their use.
  - b. *private sector involvement in plantation development:* where the private sector (particularly the banking sector) is involved heavily in plantation development, then the conditions may favour gradual erosion of community rights and marginalisation of communities in general. The legal framework merits review in such cases, with a view to championing the interests of the communities who are most dependent on the resources in question, and guaranteeing their tenurial rights.
  - c. *Finance and credit facilities* need to be extended to rural communities in a carefully managed way, if AR development is to bring poor rural communities into the development process.
  - d. *Recent history of AR:* There is a need to critically examine recent experience (post 1975) of woodlot and plantation schemes, to minimise the risk of elite capture of lands which are crucial to the wellbeing of the poor.
9. *Voluntary carbon schemes:* Voluntary forest carbon schemes offer potential for investment, particularly in small-scale and innovative types of projects. However, standards can be lower and the lack of a central regulatory body (as in the CDM) means that investment should be handled carefully:
  - a. There is a case for national standards to be formulated, along the lines of national C & I for sustainable forest management. The social dimensions will often be critical, particularly in LDCs.
  - b. Voluntary schemes may need to be brought within the purview of a single national authority, to ensure that national standards are effectively applied to all operators, and high levels of comparability assured.
  - c. Partner local communities need to be sure of their capacity to review their agreements on a regular basis, so that they do not get locked into unsatisfactory long-term arrangements with external investors.

10. *Realising the opportunities of REDD*: REDD offers major development opportunities to forest-rich societies that are able to address the governance challenges in the forest sector and more broadly.
- a. Measures to be identified and implemented by governments will be conditioned by the position of the country in question on the forest transitions curve. Countries with high rates of deforestation and dwindling forest areas may need to adopt rather different policies from those with high forest cover and low deforestation or, alternatively, increasing forest cover (and in all probability, less interest in REDD than in AR).
  - b. Due to the differing needs of countries, policy makers will need to push for the existence of a range of approaches to meet REDD objectives. Non-market based instruments are likely to be crucial in many instances, especially for countries with low deforestation rates and/or LDCs
  - c. Governments should seek to coordinate REDD finance with existing poverty reduction strategies (as well as NAPAs and other internationally supported national policy instruments), and avoid over-atomised project delivery; in the long-term the greatest prospects for forest conservation lie in decreased forest dependence.
  - d. Where projectized approaches are the preferred delivery mechanism, then institutions need to be in place to feed experiences into the policy and legal milieu; care will also be needed to avoid a situation where the promotion of projectized approaches will undermine government capacity.
  - e. Transparent mechanisms to transfer funds from centre to periphery will be required to incentivise the immediate resource managers, reward performance, enhance accountability and promote forest conservation. REDD will thus require strong and effective local government, and will in many contexts offer new potential for democratic local government reforms to be achieved.
11. *Mitigating the risks associated with REDD*: REDD systems of all types are likely to entail new risks, especially for the poor. These will require policy makers to:
- a. Take a sceptical stance on the likely effectiveness of schemes. Before developing any firm implementation strategies, it may be advisable to commission independent assessments of the effectiveness of previous ‘triple benefits’ schemes implemented to diminish pressure on the forest
  - b. Take a sceptical stance as to the over-emphasis on public awareness measures, particularly in situations where forest users have few alternative livelihood options; focusing on industrial users is likely to be more productive.
  - c. Develop a better understanding of forest uses that figure negatively in national and international policy discourse – for example cyclical cultivation systems (‘shifting cultivation’).

#### **D. For NGOs and civil society**

Interventions in the arena of climate change and forests are also likely to be very demanding for NGOs and civil society. This is a highly knowledge-intensive field, in both technical and financial terms, and the levels of intervention that are required are unlikely to favour non-specialist, independent actors. Activities that are familiar and practicable for NGOs are not necessarily ones that will have high impact at the scales necessary for climate change to be addressed. The greatest opportunities may be for NGOs that are able to translate the experiences of civil society, and maintain high pressure on the national and international level operators to deliver adequately on the claimed co-benefits.

1. *Social and environmental co-benefits:* NGOs and civil society should continue to press for high social and biodiversity standards to be incumbent on investors in relation to all three forestry foci (CDM, voluntary schemes and REDD). The Climate, Community and Biodiversity Standards (CCBA) and Voluntary Carbon Standard (VCS) could be built upon in this area.
2. *Project-level interventions:* NGOs should be extremely sceptical of project-level solutions to the problem of reducing high forest dependence, particularly small-scale 'alternative income generating activities', however attractive these may appear to small, non-governmental operators. More emphasis should be given to learning from past experiences in such areas, and making links into public policy (particularly where the policy environment is not yet 'enabling').
3. *Imperfect markets and price distortions:* NGOs need to be cognizant of the implications of imperfect markets for projects which depend on cash transfers to poor people in isolated environments, and the high potential for market distortions and price inflation, and perverse effects. Particular caution is advised where project initiatives interfere seriously in community structures and dynamics.
4. *NGO role in monitoring carbon forestry initiatives:* There is an important role for NGOs in monitoring the effects of international carbon mitigation instruments on the well-being of the poor, and in ensuring that these are not just efficient and efficient in their application but also equitable in their distribution.
5. International indigenous rights and human rights legislation provides important standards for pro-poor forestry.

#### **E. For the private sector**

The forest sector is a high-profile one internationally and strongly in the eye of the media. Private sector investors need to be aware of the risks inherent in this field, and willing and able to address them through recourse to appropriate expertise. Investors need to concern themselves with all three dimensions of forest carbon investment: climate change mitigation; conservation of biodiversity and the wider environment; and social co-benefits. A balanced approach to all of these dimensions is the most promising way to achieve long-term sustainability of projects.

1. *Application of a cautionary approach:* Private investors should adopt the same cautionary approach as the UNFCCC and host governments in areas such as financial liability, where it may be both unethical and infeasible to attribute liability to the lowest levels of forest management. Risk mitigation measures should not put at risk the welfare of the poor. Great caution should be exercised in any scheme which seeks to use agricultural and forest land as collateral.
2. *Commitment to high social standards:* Investors should commit themselves to high social standards, independently defined and monitored, in advance of investing in community carbon projects of any type.
3. *Third party involvement in project design:* Independent and professional expertise should be employed in project identification and design, to counter the dangers of CSR-led top-down narratives being imposed over smallholder interests; independent inspection and monitoring should also be built into project management cycles.

4. *Evaluating projects beyond project boundaries:* There are few provisions within existing standards for monitoring the wider impacts of projects. Broader sector development (as opposed to single project development) within developing countries could benefit from the private collaborating with governments in areas such as training. This would also provide a basis for understanding the wider impacts of project investment on national economies.
5. *Transparency of information:* Clear information on project design and implementation processes is often poorly communicated by investors. Such an asymmetry of information can disadvantage project participants in consultations over projects.
6. *Use of existing standards and CDM methodologies:* A range of independent standards already exist for CDM, voluntary and REDD projects. These provide a good basis for project design that is rigorous in all three dimensions. However, there are a few areas where standards need to be built upon;
  - a. *Ongoing monitoring and evaluation:* Few existing standards contain provisions for ongoing project monitoring particularly in terms of social impact assessment. Projects should include clear provisions for such monitoring and processes for feeding such information back into projects.
  - b. *Participatory approaches:* Healthy participatory processes require time to be developed, particularly in environments where the poor lack clear and binding property rights.
7. *Human rights legislation:* Areas of high forest cover are frequently inhabited by indigenous populations and others with long-standing claims over the land. Project appraisal should therefore be informed by appreciation of international and national legislation on indigenous peoples' rights and human rights more generally.

## ANNEXES

### ANNEX A Finance Facilities - Comparison Matrix

Initiative	Summary/History	How they plan to use carbon finance to achieve mitigation aims	Financial scale	Geographic scope	Potential emissions reductions scale (or sequestration potential) in tonnes of carbon	Governance arrangements	Financial mechanisms	Sources of finance
WB FCPF	The FCPF has the dual objective of (i) B6 (REDD) and (ii) actually signing contracts with a separate group of countries for such verified emissions reductions in return for remuneration.	(1) Support 'Reddiness' for REDD by building capacity (2) 'Pump prime' REDD carbon markets by purchasing credits from countries	USD165 million, 91 million of which Readiness Fund and 74 million, Carbon Fund (Porter et al. 2008)	Borrowing Member Countries of the IBRD or IDA that are located in a Subtropical Area or Tropical Area. Global but targeting about 20 main countries depending on country submissions.	Cannot be calculated until funds are awarded	Policy and project decisions will be made by a 'Participants Committee', to include all public and private entities that have made a minimum contribution. The initial proposal is that the committee will have twelve members representing governments to be divided equally between REDD country members and donor country members.	UK and Germany have contributed to both the Readiness Fund and the Carbon Fund; the Nature Conservancy only to the Carbon Fund, and six other countries only to the Readiness Fund. Grant-based funding.	Bilateral aid contributions to multilateral fund; also private sector purchase of emission reductions

Initiative	Summary/History	How they plan to use carbon finance to achieve mitigation aims	Financial scale	Geographic scope	Potential emissions reductions scale (or sequestration potential) in tonnes of carbon	Governance arrangements	Financial mechanisms	Sources of finance
GEF Tropical Forest Account	<p>Financial incentive mechanism associated with the existing GEF Sustainable Forest Management Program, aimed at motivating tropical forest countries to invest country resources allocated through the Resource Allocation Framework to projects dealing with sustainable forest management (SFM).</p> <p>The rationale for the TFA is that the existing GEF system for allocating resources to all eligible countries in the SFM Program, the RAF, does not take into account the LULUCF (Land Use, Land Use Change and Forestry) aspect of greenhouse gas emissions and the actions necessary to mitigate them.</p>	<p>Ultimate aim is to focus more investments in three GEF focal areas (CC, biodiversity and land degradation) on forests in regions where biodiversity and carbon stocks are high and forest conversion is taking place at a high rate.</p>	<p>USD 60 million: GEF Global and Regional Exclusion funds (\$30 million from the biodiversity allocation, \$10 million from the climate change allocation and \$20 million from the land degradation allocation).</p>	<p>The initial targets for the Tropical Forest Account (TFA) are the three regions with large intact tropical forests: Amazonia, the Congo Basin and Papua New Guinea/Indonesia.</p>	<p>Cannot be calculated until funds are awarded</p>	<p>Decisions on the use of resources under the TFA will be made under the overall GEF governance mechanism.</p>	<p>The TFA creates an investment framework for a portion of the GEF global resources in biodiversity, climate and land degradation and will foster convergence of investments in high tropical forest cover regions. It will reinforce the RAF system while keeping its integrity.</p>	<p>Bilateral contributions</p>

Initiative	Summary/History	How they plan to use carbon finance to achieve mitigation aims	Financial scale	Geographic scope	Potential emissions reductions scale (or sequestration potential) in tonnes of carbon	Governance arrangements	Financial mechanisms	Sources of finance
Global Initiative on Forests and Climate	The Australian GIFC aims at facilitating global action to address emissions from deforestation by providing incentives to developing countries to reduce deforestation. Its specific objectives include reducing forest destruction, increasing forest plantation cover and supporting sustainable forest management practices. (Porter et al. 2008)		USD 173 million	Mainly Asian countries	Cannot be calculated until funds are awarded			Bilateral aid
NORAD Rainforest Fund	The Norwegian NORAD Rainforest Initiative is not a fund as such, but a pledge of earmarked funding to be allocated through the national budget. It will support the conservation of rainforests by promoting large-scale forest protection and the development of forest based carbon management. More general measures will include support for adaptation and promoting clean energy in Africa. (Porter et al. 2008)	Supporting REDD projects through readiness, provision of upfront financial support and through support of other initiatives (e.g. FCPF)	USD 3.5 billion (500 million per year)	Focus on Africa	Cannot be calculated until funds are awarded		Bilateral fund with some money going through FCPF, some through UN Collaborative and some spent bilaterally	Bilateral aid additional to ODA contributions



Initiative	Summary/History	How they plan to use carbon finance to achieve mitigation aims	Financial scale	Geographic scope	Potential emissions reductions scale (or sequestration potential) in tonnes of carbon	Governance arrangements	Financial mechanisms	Sources of finance
Japan Cool Earth Partnership	The Japanese Cool Earth Partnership has three priorities: (i) establishing a Post-Kyoto Framework that will ensure the participation of all emitters and aim at fair and equitable emission targets; (ii) strengthening international environmental cooperation, under which Japan will provide assistance to help developing countries achieve emissions reductions and to support adaptation in countries suffering from severe CC impacts; and (iii) supporting innovation – this will focus on the development of innovative technology and a shift to a low carbon society. (Porter et. al. 2008)	Mainly supporting investments in energy technology. Activities related to REDD/forest carbon are unclear	USD 2 billion as grant aid and technical assistance to support adaptation activities. Bulk of the fund (US\$ 8 billion) will be made available as concessional loans to support mitigation activities. Unclear what proportion will be spent on forest protection	Probably Asia, but unclear	Cannot be calculated until funds are awarded	Unclear as yet	Unclear but mainly loans	Bilateral aid

Initiative	Summary/History	How they plan to use carbon finance to achieve mitigation aims	Financial scale	Geographic scope	Potential emissions reductions scale (or sequestration potential) in tonnes of carbon	Governance arrangements	Financial mechanisms	Sources of finance
UNDP/UNEP/FAO	<p>The collaborative programme grew out of requests from governing bodies and rainforest countries to address issues related to forests and climate change. The rationale is to assist forested countries and the international community to test risk management and payment structures. The immediate goal is to assess whether carefully structured payment systems and capacity support can create the incentives to ensure actual, long lasting, achievable, reliable and measurable emission reductions while maintaining the other ecosystem services that forests provide. The programme will have two components: 1) assisting developing countries prepare and implement national REDD strategies and mechanisms and 2) supporting the development of normative solutions and standardised approaches based on sound science for a REDD instrument linked with the UNFCCC. (UNDP-FAO-UNEP 2008).</p>	<p>Mainly supporting capacity building 'Readiness' activities, focussing on testing risk management and payment structures</p>	<p>Not decided yet</p>	<p>Global</p>	<p>Not applicable as this is a capacity building fund</p>	<p>Policy Advisory Board including UNDP, UNEP, FAO, World Bank and representation from key groups, organisations and other donors. A Technical Secretariat to service the Policy Body which ensures that policies and strategies are adhered to and has overall monitoring and evaluation function. National REDD Steering Committee and National REDD Office (UNDP-FAO-UNEP 2008)</p>	<p>Proposes use of the multidonor 'pass-through' modality including as for existing modalities for Joint Programmes and in-country UN structures</p>	<p>Bilateral aid channelled through the UN system</p>

Initiative	Summary/History	How they plan to use carbon finance to achieve mitigation aims	Financial scale	Geographic scope	Potential emissions reductions scale (or sequestration potential) in tonnes of carbon	Governance arrangements	Financial mechanisms	Sources of finance
GCCA	<p>The European Commission's GCCA will address mitigation, adaptation and poverty reduction via a proposed partnership with developing countries that will include the provision of both technical and financial assistance. In addition, it aims to provide an informal forum that will facilitate negotiations for a post-2012 climate agreement. The GCCA also plans to add value by acting as a 'clearing house' mechanism to coordinate the international adaptation initiatives of EU Member States. (Porter et. al. 2008) REDD is one of five thematic areas to be funded by the GCCA</p>		USD 89 million as of 2008. Unclear what percentage allocated for forestry+D10	Unclear	Cannot be calculated until funds are awarded		Looking into providing grant aid, disbursed via projects or programme support at the national level (raising the possibility of using budget support arrangements). Also considering using a mechanism similar to the International Finance Facility for Immunisation	Bilateral aid and possibly some finance from EU ETS allowance auctions

Initiative	Summary/History	How they plan to use carbon finance to achieve mitigation aims	Financial scale	Geographic scope	Potential emissions reductions scale (or sequestration potential) in tonnes of carbon	Governance arrangements	Financial mechanisms	Sources of finance
Biocarbon Fund	A public/private initiative administered by the World Bank, aims to deliver cost-effective emission reductions, while promoting biodiversity conservation and poverty alleviation. The Fund is composed of two Tranches: Tranche One started operations in May 2004; Tranche Two was operationalized in March 2007.	Pump priming' forestry carbon markets by supporting project development and buying credits. Supports AR, REDD and is exploring other land use sources (e.g. agriculture)	Tranche One total capital of USD53.8 million; Tranche Two has a total capital of \$38.1 million.	Global - 34% of portfolio was in Africa in 2007	As of August 2007, LULUCF projects at the World Bank made up 6.3 million tons of carbon dioxide equivalent	Biocplus website provides technical assistance in project design and implementation	Buyers or co-financing partners include Annex 1 governments and large corporations	Public and private sector

Initiative	Summary/History	How they plan to use carbon finance to achieve mitigation aims	Financial scale	Geographic scope	Potential emissions reductions scale (or sequestration potential) in tonnes of carbon	Governance arrangements	Financial mechanisms	Sources of finance
Congo Basin Forest Fund (CBF)	The rationale behind creating the CBF is to have a fund which can support innovative and transformational approaches geared to: (i) developing the capacity of the people and institutions in the countries of the Congo Basin to enable them manage their forests; (ii) helping local communities find livelihoods that are consistent with the conservation of forests; and (iii) reducing the rate of deforestation through new financial mechanisms and appropriate models.	No specific carbon finance mechanism but it explicitly aims to support innovative mechanisms including REDD	USD D202 million	Congo Basin	Cannot be calculated until funds are awarded	The Fund will be run by a Governing Council chaired by Professor Wangari Maathai and the Rt Hon. Paul Martin; and managed and disbursed by a Secretariat based at the African Development Bank (AfDB). Also local civil society representative and president of COMIFAC. Links to regional COMIFAC 10 year 'Convergence Plan'	Grant delivery mechanism to projects ranging from \$250,000 to \$10 million. Projects go through competitive proposal application process	Bilateral aid delivered through multi-donor trust fund

## ANNEX B Case Study: Small Group and Tree Planting, TIST

‘Small Group and Tree Planting’ (TIST) is a pilot carbon forestry programme currently being implemented in East Africa (Kenya, Tanzania and Uganda) and in India. The project was initiated by the Clean Air Action Corporation (CAAC) in the USA, after the company President visited Tanzania in 1998. He used a series of community seminars to identify what he felt to be the most appropriate type of project for the area, and TIST provides a vehicle for the implementation of this vision. The approach was later consolidated with the involvement of Dow Chemicals and USAID, among others. Since 2003, a for-profit organization, TIST Ltd, has been created to manage the business operations of the TIST program.

The programme focuses on the ‘Small Groups’ (SG) method of planting trees, based on groups of 6-12 individuals voluntarily coming together to plant trees. The SGs not only choose the types of trees they plant, but decide where and how to take care of them. They are provided with training and advice through TIST staff, but retain decision making powers provided they follow certain TIST recommended practices.

The motivations behind TIST include:

- i. direct benefits to poor people;
- ii. philanthropic/CSR motivations;
- iii. financial gains through carbon credits from tree planting; and
- iv. business advantages for the corporations from insights into undeveloped markets and new product needs.

**Positive outcomes** of the project are said to include:

- The opportunity given to small farmers for planting trees and improving livelihoods, and gaining tenurial rights over what has hitherto been state land.
- Additional long term financial gains for farmers have been achieved through TIST’s “eco-benefit payment” system. The farmers plant trees for which CAAC ‘buys’ the future credit values. CAAC then sells the credits once the trees have become established. Each SG earns an annual payment for the living tree, but loses this income stream if the trees are cut down, or if the farmers in question fail to apply the conservation farming techniques extended by the programme.
- CAAC believes that it will regain its investment through the sale of future GHG credits.

The project website points to the significant successes that the programme can claim<sup>25</sup>. That said, there are **concerns** as to the very top-down way in which it has been implemented; the assumptions made about the validity and rationale of former farming practices; the element of conditionality in the ‘conservation farming practices’ that farmers are required to follow; and the limited harmonisation of this voluntary initiative with official tree-planting and development programmes. The interest, in the present context, relates to the strengths and weaknesses of voluntary CSR-motivated programmes when compared with compliance-based AR. *Source:* ODI research; TIST website.

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<sup>25</sup> See <http://www.tist.org/index.php>.

## **ANNEX C Example of an early REDD Scheme in the Voluntary Sector: The Noel Kempff Project in Bolivia**

The objective Noel Kempff Mercado Climate Action Project (NKMCCAP) is to conserve the Noel Kempff National Park in north-eastern Bolivia, with an area of over 1.5 million hectares. There are three main components:

- payments to buy out forest concessionaires and private land-owners;
- support to the Park budget to secure its boundary and ensure permanence of carbon protection; and
- a 10-year allocation of funds to promote community development and thus prevent leakage at the community level.

The community component was intended to compensate community members for loss of employment in the timber industry as well as for loss of access to the forest for subsistence oriented extraction activities.

Assessing the carbon, biodiversity and community benefits of the project is challenging methodologically (for example, the closure of timber operations may well have had a positive effect on timber prices outside the park, while it also increased transport costs for those still living within it, as the roads to the area had previously been maintained by the timber companies). It was made more difficult by the lack of good baseline studies, and by the failure to invest in monitoring. Relatively little is known about the effects of the project on livelihoods in the forest, or on its consequences for the timber companies (which agreed not to transfer their operations elsewhere, though this was not followed up).

However, positive effects on biodiversity (which are, to some extent, unaffected by concerns with leakage, as consolidation of the forest land mass was a benefit in itself) and on carbon sequestration are reported. The community benefits are less clear, however, and according to one assessment, successes have been limited (Boyd, 2003). The Project has recently redesigned its community support strategy to promote more sustainable outreach projects.

The NKMCCAP was one of the first projects to be implemented specifically as a forest carbon project, though somewhat similar approaches were tried throughout the 1990s, under guise of biodiversity conservation projects. Its value lies in the model that it provides for implementation of mitigation policy 'on the ground'.

*Source:* Robertson and Wunder, 2005.

## ANNEX D Comparison of six different proposals for financial mechanisms to reduce deforestation and degradation

	<b>Papua New Guinea (and Coalition of Rainforest Nations)</b>	<b>Brazil</b>	<b>Central Africa (COMIFAC)</b>	<b>Latin American countries</b>	<b>CISDL</b>	<b>Nested approach</b>
<b>Reference scenario / level</b>	Historic with development adjustment factor	Strictly historical	Historical with development adjustment factor	Historical with development adjustment factor taking past efforts into account	Negotiated target (stock based)	Negotiated target at national level and project reference scenario (baseline)
<b>Scope of accounting</b>	Deforestation and degradation	Deforestation	Deforestation and degradation	Deforestation and degradation	Deforestation and degradation	Deforestation and degradation
<b>Framework</b>	Open, preferably within Kyoto	Separate Protocol but within UNFCCC	Open	Kyoto Protocol		
<b>Finance</b>	Market-based	Voluntary Fund	Mixed financing, market and fund based	Mixed financing market and fund based	Market-based	Mixed financing market and fund based
<b>Fungibility</b>	Tradable credits for Annex 1 Countries' reductions	No, credits are non-substitutable for Annex 1 countries' reductions	Tradable credits for Annex 1 Countries' reductions	Tradable credits for Annex 1 Countries' reductions	Tradable credits for Annex 1 Countries' reductions	Tradable credits for Annex 1 Countries' reductions
<b>Liability</b>	Banking and borrowing	Commitments transferred to subsequent commitment periods			Banking and borrowing; Temporary credits	National buffer; Commitments transferred to subsequent periods; adjust target for force majeure
<b>Spatial scale</b>	National	National	Open: national or local depending on country circumstances	Open: national, local or sector specific, depending on country circumstances	National	National and project



## List of Acronyms

AFOLU	Agriculture, Forestry and Other Land Uses
AIGAs	Alternative income generating activities
AR	Afforestation/Reforestation
AZE	Alliance for Zero Extinction
CCB	Climate, Community and Biodiversity Alliance
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
GCIAR	Consultative Group on International Agricultural Research
CISDL	Centre for International Sustainable Development Law
CoP	Conference of the Parties (UNFCCC)
COMIFAC	Central Africa Forests Commission
CSIRO	Commonwealth Scientific and Industrial Research Organisation, Australia
CSR	Corporate social responsibility
DD	Deforestation and degradation
DNAs	Designated National Authorities (UNFCCC)
DOEs	Designated Operational Entities
DRC	Democratic Republic of the Congo
EC	European Commission
ERPA	Emission Reduction Purchase Agreement
ETS/EU ETS	EU Emissions Trading Scheme
FAO	Food and Agriculture Organisation of the UN
FESP	Forest and Environment Sector Programmes
FCPF	Forest Carbon Partnership Facility (World Bank)
FDI	Foreign Direct Investment
FESP	Forest and Environment Sector Programme
FLEGT	Forest law enforcement, governance and trade
FSC	Forest Stewardship Council
GCCA	Global Climate Change Alliance (EU)
GFP	Global Forest Partnership
GEF	Global Environment Facility
GHGs	Greenhouse gases
GIFC	Global Initiative on Forests and Climate
GOFC-GOLD	Global Observation of Forest and Land Cover Dynamics
HCVF	High Conservation Value Forests
ICDPs	Integrated conservation with development projects
ICERs	Long-term certified emissions reduction credits
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
LDC	Least developed countries
LICUS	Low Income Countries Under Stress
LULUCF	Land-use change and forestry
NIP	National Indicative Programme (EU and ACP partner)
NTFP	Non Timber Forest Products
MDG	Millennium Development Goals
MoP	Meeting of the Parties (Kyoto Protocol)
NGO	Non-governmental organisation
ODA	Official development assistance
PA	Protected Area

PAMs	Policies and Measures
RIL	Reduced Impact Logging
RIP	Regional Indicative Programme (EU and ACP partners)
NKMCAAP	Noel Kempff Mercado Climate Action Project
PES	Payment for environmental services
PRSP	Poverty Reduction Strategy Paper
REDD	Reduced emissions from deforestation and forest degradation
R-PIN	Readiness Project Idea Note
RS	Remote Sensing
SFM	Sustainable Forest Management
tCERs	Temporary emissions reduction credits
TFA	Tropical Forest Account (of the GEF)
TFAP	Tropical Forestry Action Plan (World Bank, UNDP, FAO and World Resources Institute)
TIST	International Small Groups and Tree Planting Program (Voluntary Project Tanzania)
ToRs	Terms of Reference
UNCCD	UN Convention on Combating Desertification
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
USA	United States of America
VCS	Voluntary Carbon Standard
VER	Verified Emission Reductions

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