

**IMPERIAL COLLEGE LONDON**

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**Reducing Emissions from Deforestation**

**By**

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**A report submitted in partial fulfilment of the requirements for  
The MSc and/or the DIC**

**September 2007**

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### **Reducing Emissions from Deforestation**

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## Abstract

Despite international conservation efforts, deforestation continues to be a major problem and approximately 13 million hectares of tropical rainforest are lost yearly. Emissions from deforestation are equivalent to approximately 25% of anthropogenic fossil fuel emissions. Additionally deforestation is the major cause of biodiversity loss and contributes significantly to land degradation and desertification.

The Clean Development Mechanism (CDM) of the United Nations Framework Convention on Climate Change (UNFCCC) prevents the funding of avoided deforestation. Negotiations under the UNFCCC to review this decision have been taking place for the last 2 years but have met a number of obstacles.

This research has found that some of these issues are very much more substantive than others and that progress can be made on a number of fronts. Critically, major developing countries cannot agree amongst themselves on whether conservation should be funded by the carbon market or an ODA type fund. It is recommended that *both* ODA *and* the carbon market are needed. ODA is recommended to be applied to both capacity building and to ‘smooth’ issues of equity, such as offering compensation for stabilised levels of deforestation.

For the carbon market to be engaged successfully in this way, it is recommended that deeper cuts in developed country emissions are committed to. Additionally, a long-term policy framework is needed to give greater visibility for private sector investment decisions to be taken. It is recommended that participants in the carbon market create global institutions and governance structures that encourage greater confidence over time.

These actions will contribute to the carbon market being able to supply the long-term replacement income that tropical landholders will require as compensation. In addition to the sale of carbon sequestration, it is also recommended that markets in biodiversity and other environmental services are developed further to finance forest conservation.

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# **Contents**

<b>List of Figures and Tables</b>	12
<b>Abbreviations and Acronyms</b>	13
<b>Chapter 1 - Introduction</b>	15
1.1 Overview	15
1.2 Aims and objectives	15
1.3 Report Structure	16
<b>Chapter 2 - Background and Issue Definition</b>	17
2.1 Objectives	17
2.2 Climate change	17
2.3 Unequivocal	17
2.4 Carbon dioxide	18
2.5 Fossil fuels and land-use change	18
2.6 Land-use change	19
2.7 Deforestation	20
2.8 The three conventions	20
2.9 The UNFCCC	21
2.10 Forests, deforestation and the carbon cycle	21
2.12 Binding targets and the carbon market	21
2.13 The potential of CDM	21
2.14 But deforestation excluded	22
2.15 ‘Offsetting’	22
2.16 Leakage, non-permanence, additionality and monitoring	22
2.17 A coalition	23
2.18 Conservation approach	23
2.19 Political, economic and environmental	23
<b>Chapter 3 – Methodology</b>	24

<b>Chapter 4 - UNFCCC compliance negotiations</b>	<b>26</b>
4.1 Objectives	26
4.2 Papua New Guinea's proposal	26
4.3 Formal submission	27
4.4 Santilli's 'compensated reduction'	27
4.5 Santilli in context	28
4.6 PNG and Costa Rica show political deftness	28
4.7 The 'rebranding' of RED...	28
4.8 ...and sets the agenda	29
4.9 The UNFCCC process is mapped out	29
4.10 The first batch of submissions	29
4.11 Brazil's 'line in the sand'	29
4.12 India and China silent...so far	30
4.13 The first workshop	30
4.14 Three policy proposals...	30
4.15 ...but largely a fact-finding exercise	31
4.16 Recommendations and a 2 <sup>nd</sup> workshop	31
4.17 SBSTA25 representations	31
4.18 SBSTA25 concludes	33
4.19 The second set of submissions	33
4.20 Submission analysis	33
4.21 The second workshop	35
4.22 Areas of agreement	36
4.23 "Main issues for further consideration"	36
4.24 The SBSTA26 negotiations	36
4.25 Contact group meetings	36
4.26 Differences	37
4.27 No consensus	37
4.28 Observations	38
4.29 Conclusions: Key issues for discussion in Chapter 5	39
 <b>Chapter 5 - Negotiation issues discussion and assessment</b>	 <b>40</b>
5.1 Rationale	40

5.2 Objective	40
5.3 Definitions and differences	40
5.3.1 Deforestation	40
5.3.2 Degradation	40
5.4 Historical perspective, principles and political will	41
5.4.1 A mirror image	41
5.4.2 Historical context	42
5.4.3 Political will	43
5.5 Future emissions, baselines and heterogeneity	43
5.5.1 Baselines	44
5.5.2 Equity	45
5.6 Market forces	45
5.6.1 Individual landholders	45
5.6.2 Payments for environmental services and the carbon market	46
5.7 Costs of RED, assumptions and funding implications	46
5.7.1 Opportunity costs	46
5.7.2 Unrealistic assumptions	47
5.7.3 Cost implications	48
5.7.4 Market concerns	48
5.7.5 Market impact	49
5.7.6 Early action	49
5.7.7 Carbon market and ODA	49
5.7.8 Brazil	50
5.8 LULUCF issues, past and present	50
5.8.1 Uncertainty and monitoring	50
5.8.2 Non-permanence	51
5.8.3 Leakage	51
5.9 Timing, commitment and progress	52
5.10 Conclusion	52
 <b>Chapter 6 - The carbon market</b>	 54
6.1 Introduction	54
6.2 Objective	54



6.3 Market size and growth	54
6.4 Different components	54
6.5 The compliance market	56
6.5.1 LULUCF issues in both major components	56
6.5.2 The EU ETS	56
6.5.3 Linking EU ETS, CDM and JI	56
6.5.4 But EU ETS linking excludes LULUCF, and CDM excludes RED	56
6.5.5 Resulting in low LULUCF demand, despite RED's merits	57
6.5.6 A number of barriers	58
6.5.7 A closer look at the EU ETS linking directive	58
6.5.8 The original assessment	58
6.5.9 The debate continues	58
6.5.10 Increased compliance demand from EU policy	59
6.5.11 The EU addresses CDM and RED	60
6.6 The voluntary carbon market	60
6.6.1 Different scale, rapid growth	61
6.6.2 Different composition	61
6.6.3 Pricing and standards	61
6.6.4 Defra's review	61
6.6.5 The UK voluntary carbon market	62
6.6.6 The carbon disclosure project	62
6.7 Interviews and discussions	63
6.8 Discussion of key issues	64
6.8.1 A developing market	64
6.8.2 Post-2012	64
6.8.3 Different markets	65
6.8.4 International markets	65
6.8.5 The voluntary market	65
6.8.6 The CDM market	66

<b>Chapter 7 - Case study: The World Bank Forest Carbon Partnership Facility</b>	<b>68</b>
7.1 Objective	68
7.2 Background	68
7.3 The FCPF	69
7.3.1 The FCPF structure	69
7.3.2 Readiness	70
7.3.3 Carbon fund investment	70
7.3.4 Criteria	71
7.3.5 Pricing and risk	71
7.4 Private sector comments on the WBFCPF	71
7.5 Next steps	72
7.6 Discussion	72
7.6.1 A ‘hybrid’ approach	72
7.6.2 Public private partnerships	72
7.6.3 Stern’s opportunity cost assumption questioned	73
7.6.4 Non-permanence and risk	73
7.6.5 National versus project	74
7.7 Conclusion	74
 <b>Chapter 8 - RED Payments for Environmental Services</b>	 <b>75</b>
8.1 Objective	75
8.2 Context	75
8.3 Key issues	76
8.3.1 Capacity	76
8.3.2 Baselines	77
8.3.3 Permanence	77
8.3.4 Leakage	78
8.3.5 Who to pay and equity	78
8.3.6 Transaction costs	79
8.3.7 Equity	79
8.4 Conclusion	80

<b>Chapter 9 - Conclusions and Recommendations</b>	81
<b>References</b>	84
<b>Appendix 1</b>	92
<b>Appendix 3</b>	93

## List of Figures and Tables

### List of Figures

Figure 2.1 Radiative Forcing Components	18
Figure 2.2 Annual Emissions and Absorptions from Land-Use Change Activities	19
Figure 2.3 Net change in forest area between 2000 and 2005	20
Figure 5.1 Estimated annual emissions and absorptions from LULUCF by region	42
Figure 5.2 Estimated LULUCF emissions 1950-2000 and forecast 2000-2050	44
Figure 6.1 CDM Asset Classes by Project Type	57
Figure 6.2 Global GHG emissions trajectory targeted by the EU	60
Figure 6.3 Estimated annual emission reductions by project type: current annual CDM pipeline to 2012 against maximum annual potential reductions in non-Annex1 Parties in 2030.	67
Figure 7.1 The Components of the World Bank Forest Carbon Partnership Facility	69
Figure A1 The global carbon cycle	92

### List of Tables

Table 5.1 Estimated costs of reducing deforestation	48
Table 6.1 Carbon market volumes and values, 2005-2006	55

## Abbreviations and Acronyms

<b>Abbreviation/ Acronym</b>	<b>Description</b>
BAU	business-as-usual
CANEU	Climate Action Network Europe
CBD	Convention on Biological Diversity
CCX	Chicago Climate Exchange
CDM	Clean Development Mechanism
CDP	carbon disclosure project
CO <sub>2</sub>	carbon dioxide
COMIFAC	Commission des Forêts d’Afrique Centrale
COP	Conference of the Parties
CRfN	coalition for rainforest nations
DRC	Democratic Republic of Congo
EC	European Commission
ECEIA	European Commission Extended Impact Assessment
ECEUETSR	European Commission EU ETS Review
ERPA	Emissions Reduction Purchase Agreement
ERs	Emission reductions
GHG	greenhouse gases
GtCO <sub>2</sub>	gigatonnes of CO <sub>2</sub>
GWP	global warming potential
HFC	HydroFluoroCarbon
IETA	International Emissions Trading Association
IPCC	Intergovernmental Panel on Climate Change
ITTO	International Tropical Timber Organisation
JI	Joint Implementation
LULUCF	land-use, land-use change and forestry
mha	million hectares
N <sub>2</sub> O	Nitrous Oxide
ODA	Overseas Development Assistance

PAM's	policies and measures
PES	payments for environmental services
PNG	Papua New Guinea
ppm	parts per million
RED	reduced emissions from deforestation
SBSTA	Subsidiary Body For Scientific And Technological Advice
SFM	sustainable forest management
UNCBD	UN Convention on Biological Diversity
UNCCD	UN Convention to Combat Desertification
UNFCCC	United Nations Framework convention on Climate Change
VERs	verified emissions reductions
WBFCPF	World Bank Forest Carbon Partnership Facility

# **Chapter 1**

## **Introduction**

### **1.1 Overview**

Despite international conservation efforts, deforestation continues to be a major problem and approximately 13 million hectares of tropical rainforest are lost yearly. Emissions from deforestation are equivalent to approximately 25% of anthropogenic fossil fuel emissions. Additionally deforestation is the major cause of biodiversity loss and contributes significantly to land degradation and desertification. Although novel conservation techniques suggest that direct payments to landholders to reduce deforestation may be a solution, the Clean Development Mechanism (CDM) of the United Nations Framework Convention on Climate Change (UNFCCC) prevents the funding of avoided deforestation. Negotiations under the UNFCCC to review this decision have been taking place for the last 2 years but have met a number of obstacles.

The scope of this dissertation is to review these negotiations and the role the carbon market might play in financing conservation efforts to reduce emissions from deforestation.

### **1.2 Aims and objectives**

The dissertation aims to assess the complex and interconnected environmental, political and economic aspects of deforestation, and to suggest how progress can be made.

The objectives are to:

- review the background and define the issue to be addressed
- review and assess the UNFCCC deforestation negotiations
- assess the potential role of the carbon market in funding RED

- identify the issues arising out of the World Bank's proposed RED pilot fund
- review the operation of a RED payments for environmental scheme
- recommend how progress can be made

### **1.3 Report Structure**

**Chapter 2** gives the scientific and policy background. **Chapter 3** explains the methodology employed for the research. Chapters 4 and 5 cover the negotiations, with **Chapter 4** reviewing the negotiation process and identifying issues and **Chapter 5** assessing the key issues with reference to the literature. **Chapter 6** assesses the potential role of the carbon market and **Chapter 7** uses the World Bank's pilot RED fund as a case study. **Chapter 8** reviews the key aspects of a payments for environmental services RED scheme at national level. **Chapter 9** concludes and recommends how progress can be made.



## Chapter 2

### Background and Issue Definition

#### *2.1 Objectives*

The objectives of this chapter are to review the background and define the issue to be addressed in this research.

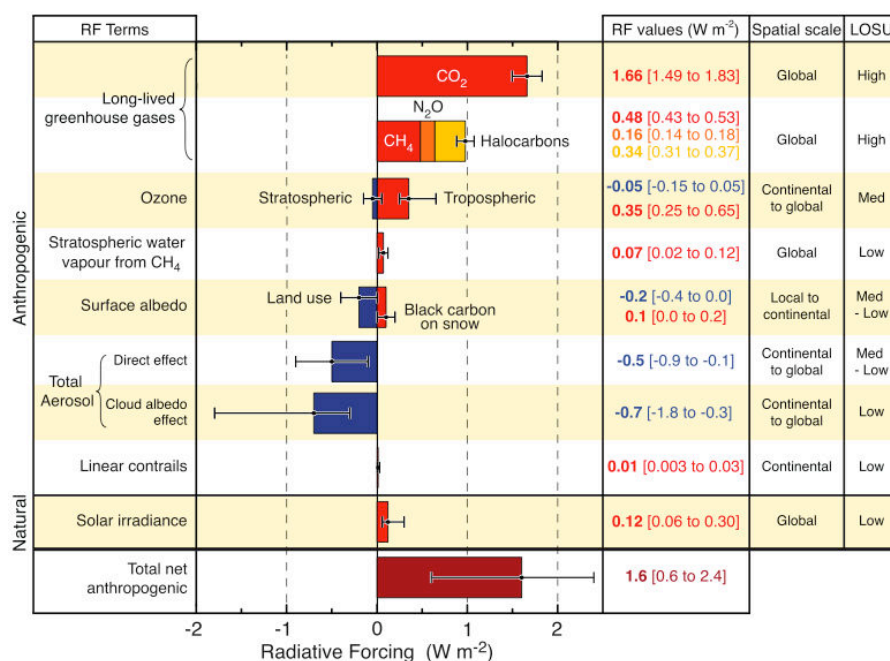
#### *2.2 Climate change*

The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) states that the understanding of anthropogenic warming and cooling influences on climate has improved, leading to very high confidence (defined as meaning at least 90%) that the global average net effect of human activities since 1750 (pre-industrial) has been one of warming (IPCC, 2007a).

A radiative forcing value of +1.6 [0.6-2.4] watts per square metre ( $\text{W/m}^2$ ) was given by the IPCC to this warming (with square brackets hereafter indicating 90% confidence intervals). The components of this radiative forcing are illustrated in Figure 2.1.

#### *2.3 Unequivocal*

Further, direct observations of recent increases in air and ocean temperatures, of snow and ice melt and of rising sea level led the IPCC to state for the first time that warming of the climate was “unequivocal”. Attributing this warming, the IPCC state that most of the observed increase in global average temperatures since the mid-20<sup>th</sup> century is very likely (>90% likelihood) due to the observed increase in anthropogenic greenhouse gases (GHGs) (IPCC, 2007a).



Horizontal bars show global average radiative forcing estimates and ranges (RF values) in 2005 relative to 1750 for anthropogenic carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O) and other agents and mechanisms, together with the typical spatial scale and level of scientific understanding (LOSU).

**Figure 2.1 Radiative Forcing Components**

(IPCC, 2007a)

## 2.4 Carbon dioxide

From Figure 2.1, it can be seen that carbon dioxide (CO<sub>2</sub>) is the most important of the anthropogenic GHGs. The concentration of CO<sub>2</sub> in the global atmosphere has increased from 280 parts per million (ppm) to 379 ppm over the pre-industrial to 2005 period (IPCC, 2007a). At 379 ppm the level of CO<sub>2</sub> substantially exceeds the natural range of the last 650,000 years (180-300ppm; determined from ice cores) and the rate of increase over the decade to 2005 was an average of 1.9 ppm per year (IPCC, 2007a).

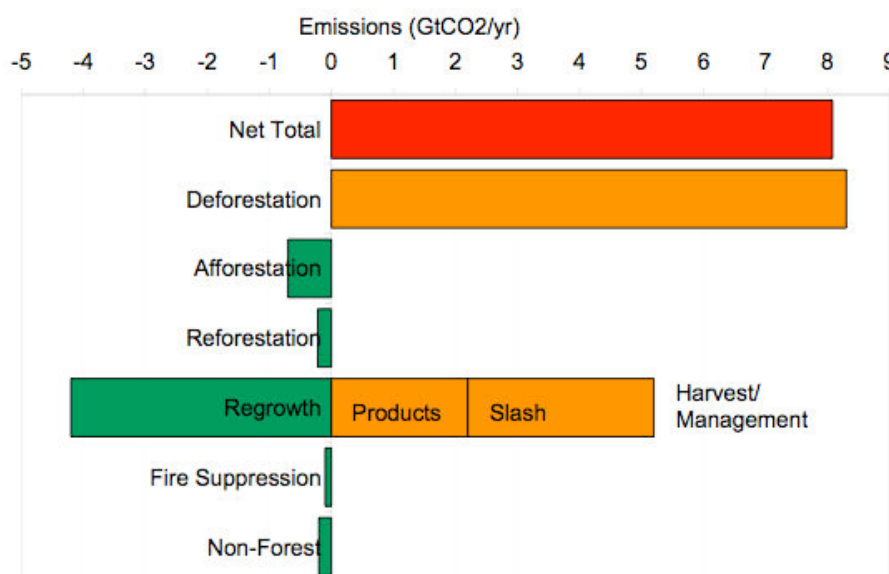
## 2.5 Fossil fuels and land-use change

The primary driver of increasing atmospheric CO<sub>2</sub> is fossil fuel use; annual CO<sub>2</sub> emissions from fossil fuels increased from an average of 23.5 [22.0-25.0] gigatonnes of CO<sub>2</sub> (GtCO<sub>2</sub>) in the 1990s to 26.4 [25.3-27.5] GtCO<sub>2</sub> per year in the period 2000-2005. A secondary but still highly significant driver of increased atmospheric CO<sub>2</sub> is land-use change, where CO<sub>2</sub> emissions are estimated at 5.9 [1.8-9.9] GtCO<sub>2</sub> per year

over the 1990s (IPCC, 2007a). Thus land-use change emissions of CO<sub>2</sub> can be seen to be broadly equivalent (noting the differing levels of uncertainty) to one quarter of fossil fuel CO<sub>2</sub> emissions over the 1990s, or one fifth of total anthropogenic CO<sub>2</sub> emissions in this period.

## 2.6 Land-use change

Land-use change emissions are relatively uncertain owing to a number of factors including scale and heterogeneity, differing methodologies and incomplete accounting (Houghton, 2003aXXX) (see Annex 1 for a fuller analysis of this issue). When the components of land-use change emissions are analysed, the impact from deforestation can be seen to be highly significant (Figure 2.2). Deforestation measurement in particular is subject to uncertainties concerning variously the true level of deforestation and degradation, the amount of carbon in the soil and biomass for differing forest types, and the spatial extent of these different forest types (Achard *et al.*, 2004).



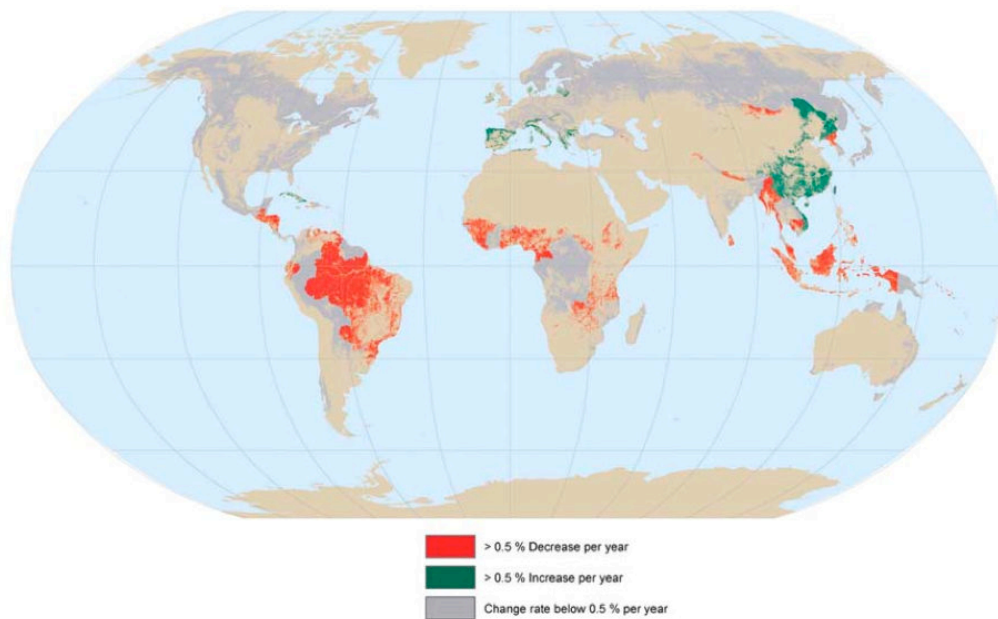
Horizontal bars show emissions to the right and absorptions to the left of the vertical axis. The figures are global estimates for the 1990s and are subject to high levels of uncertainty and incomplete data. The net total emissions shown is above the 5.9GtCO<sub>2</sub> IPCC (2007) figure, but within the 90% confidence interval. The figure illustrates the significance of deforestation in the net total.

**Figure 2.2 Annual Emissions and Absorptions from Land-Use Change Activities**

(Stern, 2006 from Houghton)

### 2.7 Deforestation

Gross deforestation is estimated at 12.9 million hectares (mha) per year for the period 2000-2005, driven by losses in the tropical forests of South America, Africa and South-East Asia, largely as a result of converting forests to agricultural land for economic gain (Chomitz, 2006). This is partly offset by afforestation (new planting), reforestation (replanting) and the natural expansion and growth of forests, to give a net deforestation rate of 7.3 mha per year for 2000-2005 (FAO, 2006). The geographical distribution of net deforestation is shown in Figure 2.3.



**Figure 2.3 Net change in forest area between 2000 and 2005**

(FAO, 2006)

### 2.8 The three conventions

In addition to its substantial contribution towards climate change (Nabuurs *et al*, 2007), deforestation directly drives biodiversity loss and fragmentation, and promotes soil erosion and nutrient loss (Kiss, 2002; Cowie *et al*, 2007). Climate change, biodiversity loss and desertification are all recognised to be significant problems by the global community. These concerns are enshrined in international treaties: the United Nations Framework convention on Climate Change (UNFCCC, 1992), the UN Convention on Biological Diversity (UNCBD, 1992) and the UN Convention to Combat Desertification (UNCCD, 1994).

## *2.9 The UNFCCC*

The ultimate objective of the UNFCCC is the “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”, though this level was not defined. Further, Parties agreed to the principle that “policies and measures” to “minimise the causes of climate change” should “cover all relevant sources, sinks and reservoirs” of GHGs and “lack of full scientific certainty” should not postpone such action (UNFCCC, 1992).

## *2.10 Forests, deforestation and the carbon cycle*

Forests play a major role in the carbon cycle, accounting for slightly below one third of land area but containing almost one half of terrestrial carbon (IPCC, 2000). As a sink, they sequester carbon. In terms of vegetation, it is estimated that forests contain about 75% of ‘living’ carbon; moreover 45% of all living carbon is held in the vegetation of tropical forests (IPCC, 2000). As a source, through deforestation, degradation and decomposition, they release carbon.

## *2.12 Binding targets and the carbon market*

Notwithstanding the difficulties of negotiating binding commitments from all nations, global concern over climate change has resulted in legally binding emissions reductions. Although it was commonly accepted that emissions had to be stabilised at an environmentally sustainable level, the UNFCCC differentiated between developed (Annex 1) and developing countries for reasons of equity. Subsequently, only Annex 1 countries assumed legally binding reduction targets for emissions. However, for reasons of environmental equivalence and cost efficiency, the flexible mechanisms of emissions trading, the Clean Development Mechanism (CDM) and Joint Implementation (JI) were introduced, through which Annex 1 parties could also achieve their targets. Thus was born the carbon market.

## *2.13 The potential of CDM*

Given that the CDM project mechanism allows for Annex 1 Parties to implement emissions reductions projects in developing countries, that these have to meet sustainable development criteria, and that the cost of avoiding deforestation is

estimated to be relatively low (Stern, 2006), there is clear potential for the CDM mechanism to be used to finance reduced emissions from deforestation (RED).

#### *2.14 But deforestation excluded*

However despite this potential, and the apparently clear mandate from the UNFCCC for deforestation to be included, deforestation is *excluded* from the CDM for 2 principle reasons:

#### *2.15 'Offsetting'*

The first is that the science, definitions and accounting processes for land-use, land-use change and forestry (LULUCF) were not agreed within the UNFCCC context until after the establishment of the Kyoto Annex B targets (in which UNFCCC Annex 1 targets are defined). This led to some Parties being concerned that allowing additional removals from the LULUCF sector would in effect be a renegotiation downwards of the fossil fuel sector emission commitments that had already been agreed for UNFCCC Annex 1 parties in Annex A of the UNFCCC's Kyoto Protocol (Schlamadinger *et al*, 2007). This issue of UNFCCC Annex 1 countries potentially 'offsetting' their Kyoto commitments against reduced deforestation emissions remains a key issue.

#### *2.16 Leakage, non-permanence, additionality and monitoring*

The second is that the Marrakech Accords to the Kyoto Protocol also excluded avoided deforestation projects under the CDM owing to a number of specific methodological and technical concerns of some Parties. These included 'leakage' of deforestation outside of the project boundary, the potential 'non-permanence' of the emission reduction, difficulties in quantification of the 'additionality' of reductions against a business-as-usual (BAU) 'baseline' and uncertainties in quantification and monitoring (Schlamadinger *et al*, 2005; Skutsch *et al*, 2007).

Gullison *et al* (2007) also suggest that issues of sovereignty, a fundamental principle of the UNFCCC whereby nations maintain the right to self-determination, contributed to RED's exclusion.

### *2.17 A coalition*

A coalition of rainforest nations is attempting to renegotiate the inclusion of a methodology to reduce emissions from deforestation in the UNFCCC compliance framework (UNFCCC, 2005c). These negotiations have now been in progress for over 2 years.

### *2.18 Conservation approach*

Recent conservation theory has emphasised the effectiveness of paying directly for environmental services (Ferraro and Kiss, 2002). Given the scale of deforestation, this approach is hampered by the exclusion of deforestation from the CDM mechanism and associated carbon market.

### *2.19 Political, economic and environmental*

This research will review the political negotiations and the role the carbon market might play in financing conservation efforts to reduce emissions from deforestation.

## **Chapter 3**

### **Methodology**

The research is wide ranging and a number of techniques have been used to collect material. A literature review was conducted to identify and scope the research, and is the basis for the background chapter (Chapter 2).

Research for the negotiations process was conducted both by an extensive review of archived UNFCCC reports, webcasts and submissions from Parties, and also by attending the latest UNFCCC negotiations on RED. Attendance enabled direct observation of the negotiations and interaction with Parties. These interactions were not formal interviews given the nature of political negotiations, but did allow insight to be gained. However it is accepted that access to Parties was limited and the majority of the discussions (rather than formal proceedings) went on ‘behind closed doors’ (Chapter 4). The assessment of the findings of these negotiations was made with reference to an extensive literature review (Chapter 5).

Research for the carbon market (Chapter 6) was gained from recent market reports for both the compliance and voluntary markets, from anonymous interviews and meetings with market practitioners, and from a collaboration with an environmental investment business. Access to Defra’s library was obtained to review the individual submissions to Defra’s consultation on voluntary standards.

For the World Bank section, a presentation was attended in Bonn during the negotiations and a subsequent meeting was attended at the bank’s offices in Paris. Official World bank material was also sourced online. The purpose of this meeting was not to conduct formal interviews, but the meeting allowed interaction with investors, negotiators from rainforest nations and NGOs. Again all these interactions are anonymous, and to a limited extent confidential, but helped inform the research.

A literature review and anonymous interviews were used for the PES section.



The research covers a wide area and there was an inevitable trade-off between conducting in-depth research into a more narrow field, or attempting to cover the broader picture. Given the range of environmental, economic and policy issues evident in this area, it was felt that significant value was to be gained from making the connections between these areas such that the issue of deforestation could be considered in the whole.

In this context, one of the difficulties experienced was that there were very few sources with 'cross-sector' information; to generalise, participants in the carbon market were not well informed on the LULUCF sector, and environmental NGOs were not well informed on the carbon market. Further, given the relative youth of the carbon market, many of its participants appeared very focussed keeping up-to-date on their own particular segment within it.

## Chapter 4

### UNFCCC compliance negotiations

#### *4.1 Objectives*

To review the negotiations on RED and identify the critical issues raised by Parties. These issues will be discussed and assessed in Chapter 5.

#### *4.2 Papua New Guinea's proposal*

The present dialogue and negotiations within the UNFCCC framework on reducing emissions from deforestation has its origins in a presentation by HE Ambassador Aisi, of the Permanent Representative Mission of Papua New Guinea (PNG) to the UN, at a UNFCCC Seminar of Governmental Experts in Bonn in May 2005 (UNFCCC, 2005a).

Noting PNG's biodiversity, vulnerability to climate change and large rainforests (the island of New Guinea has the world's third largest rainforest after Amazonia and the Congo), Ambassador Aisi claimed that Kyoto unfairly excludes and discriminates against developing nations in the world carbon market by not allowing reductions in deforestation to earn credits. He asked for market access and to be fairly compensated for reductions in deforestation. Further, he noted various options as to how to proceed both politically (modifying Marrakech and/or Kyoto, developing an additional protocol, or developing countries electing to switch to Annex B status within Kyoto) and technically (on additionality, leakage, permanence and trading). His position was that the solution to lasting climate stability needed the inclusion of developing nations and that PNG was "prepared to be accountable". He also ventured that the monetisation of environmental resources through the carbon market could replace aid finance for truly sustainable development (UNFCCC, 2005a). Ambassador Aisi called upon others present to join with PNG in the formation of a coalition for rainforest nations (CRfN) and for the issue to be tabled at the UNFCCC Conference of the Parties (COP) later that year (UNFCCC, 2005a).

#### *4.3 Formal submission*

Subsequently PNG formally requested that an item entitled “Reducing emissions from deforestation in developing countries: approaches to stimulate action” be placed on the agenda of COP11 (November, 2005) and a detailed submission was made for consideration at COP11 in conjunction with Costa Rica (UNFCCC, 2005c).

#### *4.4 Santilli’s ‘compensated reduction’*

Although not referenced directly, the submission can be seen to be closely related to a paper by Santilli *et al* (2005) proposing the then novel concept of “compensated reduction”, whereby countries reducing national level deforestation below an agreed baseline would receive compensation in the form of carbon credits. In what has subsequently become to be seen as a seminal work in this area, Santilli *et al* addressed each of the principal technical concerns as follows:

**4.4.1 baselines** would be agreed to accommodate regional and/or national heterogeneity in historic deforestation rates, including baselines higher than recent deforestation for nations with substantial forests but little historic deforestation (citing Peru and Bolivia as examples of this);

**4.4.2 additionality** of any achieved reduction in deforestation against the baseline is in part determined by the appropriateness of the baseline, but can also be demonstrated against models that show deforestation as being an ongoing (if not worsening) problem under a business as usual (BAU) scenario;

**4.4.3 leakage** is addressed by the use of national baselines and monitoring, through which the potential for CDM-style project leakage is overcome at national level and the risk of supranational leakage (which exists in any event for the fossil fuel sector) is countered through greater regional engagement in the compensated reduction scheme;

**4.4.5 permanence** of emission reductions would be “assured” by the adoption of any increase in deforestation emissions over the baseline as a mandatory target to be achieved by the rainforest nation in the subsequent commitment period; further, it was proposed that this solution could be enhanced both by a

system of “banking” credits earned (as a ‘buffer’ to ‘guarantee’ already issued credits) releasing some in the following commitment period and still more thereafter, and by the development of “insurance mechanisms”.

#### *4.5 Santilli in context*

The authors observed that if deforestation emissions in Brazil and Indonesia continued at current levels, together those emissions would equate to four-fifths of the annual GHG emissions reduction targets for Kyoto Annex 1 nations. Given the significant and growing GHG emissions from developing countries, the stark assessment was made that the emission reduction regime could not succeed without meaningful developing country reductions. The potential for compensated reductions to further the goals of the Convention on Biological Diversity (CBD) was also highlighted (Santilli *et al*, 2005).

#### *4.6 PNG and Costa Rica show political deftness*

The PNG/Costa Rica submission was carefully constructed. It made the political argument that the UNFCCC was bound by its own principles and objective (UNFCCC, 1992) to consider the inclusion of a RED mechanism, and in doing so would engage developing countries and lower the costs of stabilization. The substantive aspects of the submission contained very similar proposals to Santilli *et al*, albeit the phraseology was more politically delicate and accommodating in places. For example, the assumption by developing nations of contentious mandatory targets (as described by Santilli *et al*) was replaced by less onerous sounding “credit” and “debit” terminology. The submission was also more flexible in envisaging RED being positioned either within the Kyoto Protocol (as per Santilli *et al*) or separately, thereby allow the ‘offsetting’ issue to be negotiated. The submission contained an Annex of letters of support from Bolivia, Central African Republic, Chile, Congo, Costa Rica, Democratic Republic of the Congo, Dominican Republic and Nicaragua. This was a clear demonstration of the potential of this issue to engage developing countries.

#### *4.7 The ‘rebranding’ of RED...*

The apparent intention was for RED to be ‘rebranded’, to be seen not as a ‘problem child’ that had to be excluded from the CDM, but as: enabling substantial emissions

cuts; catalyzing the meaningful participation of developing countries beyond the first commitment period; and providing significant environmental co-benefits.

#### *4.8 ...and sets the agenda*

Not only was PNG politically adept in both putting RED on the UNFCCC COP11 agenda and in such a compelling way, but the scope and emphasis of both the submission and the paper of Santilli *et al* determined the course of much of the ensuing debate and remain highly relevant to the UNFCCC negotiations on RED that continue to this day. That is not to say, however, that there were and are not substantial hurdles to be overcome within the UNFCCC negotiations on RED.

#### *4.9 The UNFCCC process is mapped out*

The COP11 decision was to invite submissions from Parties and accredited observers (by end March, 2006) for discussion at SBSTA24 (May, 2006). Additionally, a workshop was to be organised prior to SBSTA25 (November, 2006), with a SBSTA report and any SBSTA recommendations to be made at SBSTA27 in December, 2007 (UNFCCC, 2005d).

#### *4.10 The first batch of submissions*

In total 21 submissions were made representing the views of 68 Parties (UNFCCC, 2006a; UNFCCC, 2006b). Analysed by UNFCCC Annex, 39 were from Annex 1 (largely EU) and 29 from non-Annex 1 Parties. The submissions also revealed various ‘alliances’ of Parties in that several were made on behalf of, or supported by, other nations (UNFCCC, 2006c). They contained much general comment on the process to be followed and on the technical and policy issues to be considered at the forthcoming workshop. Given that this was near the start of a two-year negotiation process, many of the submissions were preliminary in nature, preferring to comment widely on a range of technical and policy issues rather than present firm stances.

#### *4.11 Brazil’s ‘line in the sand’*

An exception to this was the submission of Brazil, who could “not envisage any mechanism” whereby Annex 1 nations could use RED to offset their Kyoto commitments. For this reason Brazil proposed that the negotiation should be within the UNFCCC framework exclusively (as opposed to Kyoto/Marrakech) and further

that any RED actions by developing countries would only ever be voluntary and should be funded by contributions from industrialised nations (UNFCCC, 2006a). By proposing such funding, Brazil was in effect ruling out access to the compliance carbon market.

#### *4.12 India and China silent....so far*

There were notable absences of submissions from India and China, both considered pivotal nations in the future success of the UNFCCC process, albeit with stable and increasing net forest areas respectively (FAO, 2006). The treatment of ‘stabilized’ countries such as India was, however, set to emerge as a critical issue later.

#### *4.13 The first workshop*

The workshop took place in Rome from 30<sup>th</sup> August to 1<sup>st</sup> September, 2006 and a UNFCCC report covers the proceedings and main outcomes (UNFCCC, 2006d). In summary there appeared to be reasonable consensus on a number of technical areas, such as the progress made in monitoring technology and estimation of emissions from deforestation. For tropical nations to utilise these technologies and methods, the need for on-the-ground capacity building was widely noted. The heterogeneity of many aspects of deforestation experienced by Parties and the relevance and application of UNFCCC principles such as common but differentiated responsibilities and sovereignty were also commented upon.

#### *4.14 Three policy proposals...*

In terms of policy proposals presented at the workshop, **Brazil** was consistent with its submission outlining a voluntary approach funded by Annex 2 countries, giving rise to no future obligations. Funds would be allocated amongst participating countries in proportion to the emissions reductions achieved relative to a “reference emission rate” (itself a product of a previously agreed deforestation rate and carbon content). The Central African Republic presentation, made by the regional body Commission des Forêts d’Afrique Centrale (‘COMIFAC’), outlined the regional “convergence plan” that had been formed with an emphasis on conservation and sustainable forest management (SFM). **COMIFAC’s** proposal centred on payments for certified SFM and a “climate regulation grant” (dependent on the rate of deforestation) financed out of a fund. **PNG’s** presentation continued to promote the flexibility needed and the

importance of considering a wide range of options (in part to accommodate the heterogeneity present in RED, in part perhaps to maintain consensus). PNG emphasised the need for immediate international funding for capacity building and pilot programmes but also suggested that markets were the most likely source of long-term, certain and sustainable RED incentive programmes (UNFCCC, 2006d).

#### *4.15 ...but largely a fact-finding exercise*

Other than Brazil's stance, there appeared to be a high degree of commonality in accepting the potential role of markets in providing a suitable source of funds, though the documentation suggests that this workshop was very a 'fact finding' exercise rather than a forum for hard proposals and stances from all Parties. Potential pitfalls with markets were acknowledged, such as the marginalising impact that a market based approach could have on local communities, whose "livelihoods are dependent on the informal sector" and the importance that ODA may have to play in capacity building (UNFCCC, 2006d). Potential conflicts of incentive schemes with other multilateral agreements such as WTO were flagged.

#### *4.16 Recommendations and a 2<sup>nd</sup> workshop*

The workshop concluded with a number of recommendations on RED and on the proposed approaches: they should be considered under the UNFCCC's remit; their means of achieving RED, financing and methodologies should be assessed and compared; capacity building should be considered; and that submissions should be made on these issues to be considered at a second workshop (UNFCCC, 2006d).

#### *4.17 SBSTA25 representations*

The workshop and its recommendations were considered at SBSTA25 in Nairobi (November, 2006). Review of the web cast formal proceedings (UNFCCC, 2006e) allows identification and discussion of several emerging issues raised by Parties:

The **European Community** (EU) acknowledged the important role that RED could play in mitigating climate change and hoped for substantive progress "consistent with the broader 2012 negotiations", demonstrating the Em's apparent linking of RED negotiations with the wider post-2012 agreement still to be negotiated (analogous to the contingent offer by the EU of 30% emissions cuts in a second commitment period

in return for widespread participation in reduced emission commitments from other parties);

**India** noted “nations that have implemented strong conservation measures and regulations should also be compensated in the proposed modalities”. This was supported by **Democratic Republic of Congo (DRC)**, indicating that the inclusion of such an allowance was likely an important component of a negotiated agreement (though not highlighted in the original PNG/Costa Rica submission). DRC added that in capacity building the area of carbon stocks needed substantial resource, supporting the assessment that progress in forest area change analysis has outpaced carbon stock knowledge (Defies *et al*, 2007).

**Colombia** “strongly felt” that a “broad portfolio of approaches” was needed that would be able to accommodate individual country needs, and that innovation would be needed to allow the equitable participation of all. Additionally, a “continuous capacity building effort” should be started as soon as possible to address what was a “complex as well as economically and socially challenging” issue. Colombia was not prepared to “take the risk of engaging in short term inadequate or unsustainable solutions”.

This intervention is important for two key reasons. Firstly in crystallising the recognition that any negotiated RED framework will require policies and methodologies within it suitable to suit a range of country needs; this is fundamentally different to the current CDM generic methodology that projects need to ‘fit’. Secondly, that given the economic and social linkages of the forest to a nation’s people and economy, rainforest nations were assuming other risks in seeking to contribute to the mitigation of climate risk. Thus not only are sufficient funds required to at least match the opportunity cost of not deforesting locally, but also national governments need assurance and visibility that such funds are sufficient and sustainable prior to engagement;

**Tanzania** proposed that market mechanisms “would not work” to provide the funds needed, using Africa’s poor CDM experience as an illustration of why markets cannot be relied upon to deliver. This is instructive in showing how the near exclusion of



CDM funds from Africa may influence African nations in their attitude towards a market solution to deforestation, despite the logic that whilst Africa's energy emissions are low relative to Asia's (thereby minimising Africa's potential to participate in the early stage of 'concentrated' energy dominated CDM), Africa does have substantial forest assets that provide an opportunity for RED funding and associated sustainable development dividends.

#### *4.18 SBSTA25 concludes*

SBSTA25 concluded and the mandate of the second workshop was agreed to continue discussions with an emphasis on policy approaches and positive incentives, technical and methodological requirements and assessment (UNFCCC, 2006f). Where relevant, Parties were also requested to consider provisions of other conventions (such as UNCBD) and also the workings of multilateral organisations (such as the WTO and the World Bank).

#### *4.19 The second set of submissions*

The submissions for the second workshop (largely made by end February, 2007) were substantially representing the same Parties, though there were several submissions from Parties who had not submitted previously (most notably India). They were generally of a more precise nature in terms of policy requirements, proposals and incentive mechanisms and were made with the benefit of knowledge gained from the SBSTA discussions, previous RED submissions and the RED workshop. They are also the most recent available formal submissions from Parties and have not yet been assessed in the published literature on RED. For these reasons they represent a valuable source for analysis and discussion.

#### *4.20 Submission analysis*

The value of analysing these submissions is to gain a direct understanding of Parties' views, preferences and negotiating 'bottom lines'. The detailed analysis and discussion of the submissions is included in Appendix 2. Excerpts from this analysis from countries judged to be making particular negotiation 'demands' are highlighted below:

### **App. 2.1 ‘CRfN group’**

The submission highlights the importance (and concern over source of funding) of the Stabilisation Fund with a reference to it possibly being “not sustainable” in the absence of such funding.

### **App. 2.3 ‘Central African group’**

Supplemental to the CRfN submission in order to “put special emphasis on avoided degradation” and to introduce the “distribution key” to share the proceeds of the Stabilisation Fund. The emphasis on the “distribution key” suggests that the existence, funding and distribution of a Stabilisation Fund will be a key component of the Central African group’s bottom line in the negotiations.

### **App. 2.4 The EU**

The key point is that both the structure and content of the submission underline the importance that the EU place on linking the ultimate ‘deal’ on RED to the post-2012 negotiations.

### **App. 2.5 Brazil**

Brazil’s ruling out of fungibility, and the suggestion of a contracted price, would likely compromise the ability of the mechanism to generate demand from commercial sources, relying therefore solely on ODA type funds. Further, the apparent insistence on only real reductions in actual emissions (rather than an improvement against a trend or model) rules out the participation of historically low deforestation nations where deforestation pressures may be set to increase, or stable countries with ongoing funding needs for programmes. It also undermines the potential for the international community to anticipate future deforestation drivers and trends and thus allocate funds efficiently and proactively.

### **App. 2.6 India**

The compensation proposal for increased forest carbon stocks could be seen as a negotiation ‘bottom-line’ along the lines of ‘if reduced forest emissions are to compensated, then forest conservation must be as well’.

### **App. 2.7 Vanuatu**

Decentralisation allows the private sector to propose and implement local solutions outside the reserve, once the initial national reserve quantum and location has been agreed upon.

### **App. 2.8 Indonesia**

There is criticism of the low volumes of A/R CDM into Indonesia, blamed in part on the overly restrictive definitions and rules in place. It is this that has led in part to the promotion of the FCRM, as a ‘catch-all’ for SFM policies that are prevented in such ways from benefiting under the current A/R CDM or any future RED mechanism.

### **App. 2.9 Tuvalu**

They would appear not to accept the premise that deforestation leakage and permanence (the two risks they cite) can be addressed with confidence and consequently are against market mechanisms, notwithstanding the fact that this stance makes funding more difficult.

#### **4.20.1 Summary of analysis:**

**Thus Brazil and Tuvalu are fundamentally against the use of market mechanisms; Brazil is against any stabilisation whilst India and Central Africa are insisting upon stabilisation.**

#### *4.21 The second workshop*

Clearly the submissions contained an array of different proposals and issues, and the Parties met to discuss these at the 2<sup>nd</sup> workshop, held in March, 2007. Other than Indonesia and the ‘Central America’ group, all of the significant proposals analysed and discussed above were presented. Additionally, other presentations were made by various organisations and Parties on various aspects of deforestation to share experiences and attempt to build a common understanding. The report of the workshop contains a summary of “main areas of general agreement” and “main areas for further consideration” (UNFCCC, 2007d) though this report does not assign views to Parties or identify the strength with which views are expressed.

#### *4.22 Areas of agreement*

On examination, these are macro issues such as the “urgent need to take meaningful action”, the importance of capacity building, the necessity of funding and taking “early action” such as pilot projects, the requirement to be flexible and a “robust system for reporting, monitoring and verifying” emissions reductions. Principles such as common but differentiated responsibility, sovereignty and sustainable development were also noted.

#### *4.23 “Main issues for further consideration”*

These include the two major issues differences highlighted in the submissions, **funding, the use of markets and fungibility, and the eligibility of conservation and stabilisation**. Additional issues are crediting early action, baselines, scale, degradation and permanence and leakage.

#### *4.24 The SBSTA26 negotiations*

Parties met two months later for the SBSTA26 meeting (May, 2007). Attendance at these negotiations enabled the most recent stage in this 2 year process to be observed and analysed at first hand. Discussions took place in ‘contact groups’ (open to both Parties and Observers), in regular UNFCCC ‘informal meetings’ (access restricted to Parties only) and in a variety of other observable informal settings (such as CRfN, EU and NGO sponsored side events).

#### *4.25 Contact group meetings*

At the first contact group, a draft SBSTA text for adoption at COP13 (December, 2007) was prepared by SBSTA Chair Kumarsingh, who had presided over the preceding workshops. The draft variously “encouraged”, “invited”, “urged” and “requested” action from Parties and the SBSTA to progress the general issues ‘agreed’ I the workshop and contained no specific proposals on methodologies or commitments. The one truly operative paragraph was a “decision” to address the issue in the future. Despite this, over the course of the 2 weeks of negotiations, the draft text passed through a total of 5 iterations, culminating in the final draft conclusions not being agreed (UNFCCC, 2007e).

#### *4.26 Differences*

From observation of contact group meetings, the key issues of contention were the weight of responsibility of future actions between developed and developing countries; the treatment of degradation (opposed by Brazil); the eligibility of stabilization and conservation (with opponents to its inclusion using the ‘semantics’ that degradation is not covered by the SBSTA mandate of “emissions from deforestation”); the use of the phrase “pilot projects”, (thought by some to be limiting in the context of sectoral or national “activities”), and the extent to which the conclusion could be more ambitious. Many Parties made reference to the flexibility of approach needed, including the need for both market and non-market approaches, but the straight opposition of Brazil and Tuvalu to the market was not raised in open session.

These issues can be seen to range from semantics (“pilots” versus “activities”), through policy and methodological detail (degradation, stabilization), to matters of higher principle (developed versus developing responsibilities). From observation, the majority of time in formal sessions was spent on semantics (which can be important in a legal context), though more substantive issues were undoubtedly discussed privately. It was also noticeable that some Parties wanted to ‘keep all options open’ (US), whilst others wanted the text to be more prescriptive. The EU suggested a more positive approach suggesting that there could be real progress at Bali, focusing on the co-benefits of RED, voluntary participation and early pilot projects.

#### *4.27 No consensus*

Despite this intensive schedule of meetings and re-drafting, and the contributions from the submissions and workshops, Parties were not able to reach consensus. The final draft for COP13 was therefore contained in an Annex to the SBSTA conclusions. The annexed draft text contained 9 preamble paragraphs of which 3 were agreed, and 8 main body paragraphs of which, again, only 3 were agreed. Paragraphs not agreed were left bracketed. From the preamble, what is agreed are the relevant provisions of the UNFCCC, an “acknowledgement” of degradation and the need to address it and recognition of the co-benefits of RED. In the main body, what is agreed

is that the COP “invites Parties to strengthen and support” RED on a voluntary basis, “encourages all Parties, in a position to do so” to support capacity building and “encourages” the use of the appropriate reporting guidelines.

To continue the process the SBSTA invited parties to submit their views on advancing RED, focusing on “approaches to stimulate action”. These submissions are not yet available.

#### **4.28 Observations**

Despite the lack of progress on these issues, observation and informal discussions with delegates provided further insight into the process. Most importantly, the UNFCCC’s need for unanimity is a ‘double-edged sword’. It is very powerful when consensus is reached, but the process of reaching it can be long and risk diluting substantially the remedy under discussion. There is clearly a risk of this with the RED negotiations. This also suggests that a RED framework that fits within the current UNFCCC/Kyoto framework, such as an extension of CDM, would be easier to achieve than a novel method.

Several delegates said that Stern was “too low” in his estimate. Some of the nuanced difficulties of national baselines also became apparent, such as Colombia’s government “not being in control of half their country, so can’t be responsible for it”. One delegate was able to provide background to the political negotiations within Brazil, where the foreign ministry and science team were said to oppose a market approach, the environment department to support such an approach, and individual state governors have been selling funds. The issues of baselines and stabilization were widely acknowledged as substantive obstacles, “which India keeps raising”. Additionally, the prospect of RED being a pilot for a ‘sectoral approach’, which more generally could be used to unlock large capital flows, was of interest to industrial developing countries (China and South Africa being specifically mentioned by one interviewee).

More generally, the level of country self-interest was very apparent, which when combined with the need for unanimity and the linkage with post-2012, suggests a long negotiation road ahead.

#### **4.29 Conclusions: Key issues for discussion in Chapter 5**

The key findings are the substantive differences that exist over funding and fungibility, and stabilization. In a second tier of difference, degradation and definitions generally, principles and further aspects of baselines and equity. The concern over the extent to which national baselines will inhibit private sector involvement appear valid and also worthy of further discussion. All the major methodological issues will be discussed, as will capacity, pilot studies and timing.

## Chapter 5

### Negotiation issues discussion and assessment

#### 5.1 Rationale

The UNFCCC has 191 Parties *and* a requirement for unanimity, what is critical in any assessment is the identification of differences where strong views are held on both sides and an assessment of how justified and substantive these differences are. This requires both reference to the UNFCCC process of submissions, workshops and negotiations, and also to the literature to examine the importance and background of particular issues in detail. Many of the issues are connected, and the approach taken is to identify topics within which the various issues and relationships can be explored.

#### 5.2 Objective

To discuss and assess the issues arising in the negotiations with reference to the literature.

#### 5.3 Definitions and differences

##### 5.3.1 Deforestation

There are clear differences between Parties over what is within the mandate of the RED process, due in part to confusion over definitions. In the context of climate change and the Kyoto Protocol, ‘deforestation’ refers to a human induced *change in land-use*, from forest to non-forest, through clearing. Definitional ranges are specified for minimum forest area (0.05-1ha), tree height (2-5m) and crown cover (10-30%) within which Kyoto Parties select single values for each parameter to define their forest area (UNFCCC, 2006c). The FAO use single values (0.5ha, 5m and 10%) for their global assessments in an attempt to ensure consistency, though their figures still rely on national data collection and interpretation (FAO, 2006).

##### 5.3.2 Degradation

‘Degradation’ refers to the human induced long-term reduction in biomass, in an area still classified as forest, through unsustainable practices such as logging or fuel wood



collection (IPCC, 2000), and is commonly regarded as more (even) more difficult to assess than deforestation. Estimates of degradation, as a percentage of deforestation, show considerable variation (ranging from 5% for global humid tropics; 25-42% for tropical Asia; up to 132% for tropical Africa) that in part stems from a lack of spatially explicit data (Houghton, 2005) but still serve to underline the importance of accounting for both processes.

Both deforestation and degradation result in substantial reductions in carbon stock, though emissions from deforestation are generally more immediate (Nabuurs *et al*, 2007). Differences in the perceived meaning and calculation of ‘forest’, ‘deforestation’ and ‘degradation’ contribute to estimation variance (IPCC, 2000). These differences have also contributed to difficulties in the negotiations in various ways. Importantly, the SBSTA mandate refers to “reducing emissions from deforestation”. In the minds of many ‘lawyer’ negotiators, that phrase can be interpreted precisely so as not to include reducing deforestation and not to include degradation, but exclusively to mean what it says (despite the original submission of PNG/Costa Rica referring to degradation within a catchall use of the word ‘deforestation’).

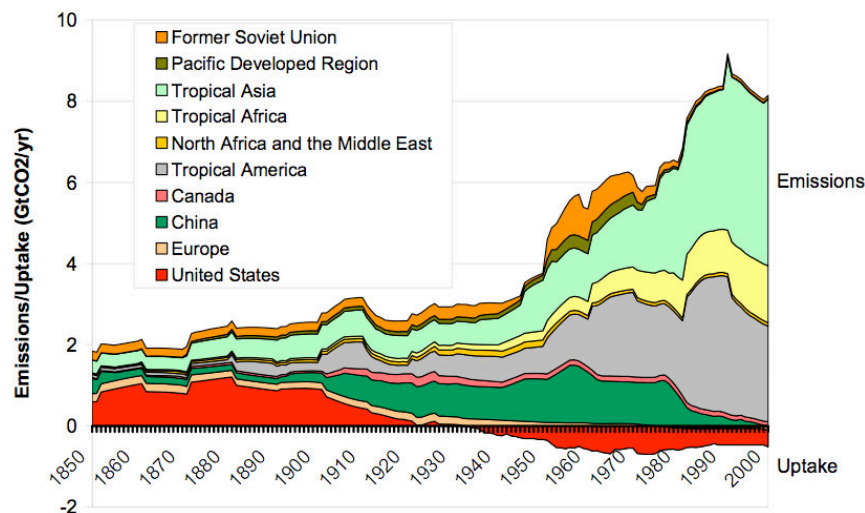
Both processes need to be accounted for, and though it is legitimate to raise the difficulties in monitoring degradation that should not be used as a reason to delay the negotiation process.

## **5.4 Historical perspective, principles and political will**

### *5.4.1 A mirror image*

An estimated reconstruction by Houghton (2003) illustrates both how LULUCF emissions have grown and also how the mix of countries responsible for those emissions has fundamentally changed (Figure 5.1). The recent growth is associated with many factors including population, economic expansion and the high carbon content of tropical forests; the scale of tropical deforestation now is contributing significantly to both climate change and biodiversity loss (Cowie *et al*, 2007). The distribution of current emissions however is unique to the LULUCF sector, in that the allocation of any reductions in emissions must fall only on *developing* countries. It can be viewed therefore as the ‘mirror image’ of the fossil fuel sector and will require

careful navigation to engage developing countries and to overcome the substantial obstacle of UNFCCC principles and mindsets designed to place the burden for emissions reductions on developed countries (UNFCCC, 1992).



**Figure 5.1 Estimated annual emissions and absorptions from LULUCF by region (1850-2000)**

(Stern, 2006 from Houghton)

#### 5.4.2 Historical context

Historical context provides further insight into the conduct of the negotiations. Simply, Annex 1 countries with large forests, such as the US and the Russian Federation have historically promoted the inclusion and linkage of LULUCF in overall targets. On the other hand Brazil, with no existing target commitments, has been wary of losing full sovereignty over the Amazon (Benndorf *et al*, 2007)).

There are many complexities related to the historical perspective outlined. Some developing country Parties have questioned the risks involved in relying on markets for RED funding, with many submissions and interventions highlighting the need for predictable, sustainable flows. The marked fall in the carbon price coincided with the 2-year process on RED, and African nations, expressing concern over the CDM ‘boycott’ of Africa, have questioned the very concept of a market approach. Developed countries have pre-existing financial commitments under the UNFCCC, and Brazil’s call for RED to be ‘funded’ is not unreasonable *in that context*. Any reliance on deforestation to fuel economic growth would be required to end, and

socio-economic changes would have to be managed. Although the proposal is for developing countries to be compensated, beyond the economics there are additional political and social risks involved.

Against the backdrop of increasing concern over climate change, however, the need to change behaviour, including reducing deforestation, is becoming apparent and China's programme to halt deforestation is illustrative of this, and of the ability to implement change if backed by political will (Nabuurs *et al*, 2007). RED is therefore seen by some Parties as a unique opportunity to engage developing countries in meaningful emissions reductions in the post-2012 era, and the EU's support is therefore conditional upon the post-2012 outcome. This 'connection' of RED to 2012 carries the risk of delaying RED, though that is by no means a near term threat. Developing countries have variously expressed caution over any voluntary engagement being construed as resulting in hard commitments. The post-2012 architecture may well be very different to Kyoto, and in that context RED might be de-linked wholly, or in part, from fossil fuel commitments, or alternative policies and measures (PAMs) rather than quantitative targets might be employed (Benndorf *et al*, 2007). The main focus of the RED negotiations at present though is on the compensation of quantitative emissions reductions.

#### *5.4.3 Political will*

The implication of this historical background is to underline that a negotiated outcome will be very difficult; success will require great political will by all Parties (Gullison *et al*, 2007). The leadership shown by the EU (historically not a major proponent of LULUCF due to environmental integrity concerns) and by PNG, is an example for others to follow.

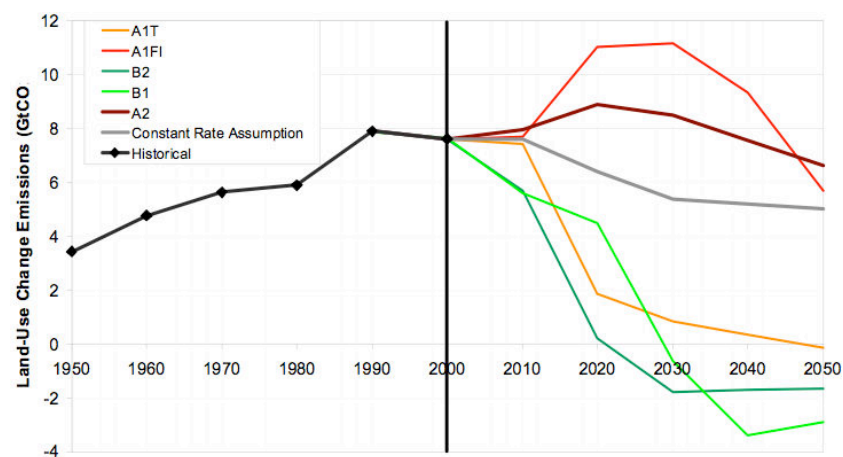
### **5.5 Future emissions, baselines and heterogeneity**

Future forecasts of LULUCF emissions are highly complex and vary widely (Figure 5.1). As a consequence the negotiations and methodologies for any RED scheme are challenged to maintain environmental integrity and appear equitable to all. Mather (1992) coined the term "forest transition" to describe the path observed in many countries (such as the US and China in Figure 5.1) of increased deforestation reversing at a point in time due to the interactions of a range of different factors

(including re-growth and environmental legislation). On the other hand, Houghton's (2005) assumption of constant deforestation until a level of only 15% of a country's forest area remains was chosen as the baseline for the Stern Review (2006) for its simplicity.

### 5.5.1 Baselines

The importance of identifying a credible BAU baseline against which to implement and monitor any RED incentive scheme is of fundamental importance to all the actors involved and gives rise to inherent conflicts in the negotiations. Developed world financiers of any such schemes will want to 'manage' their investment (thereby conflicting with the principle of host country sovereignty); developing world forest nations will require that available funds are allocated equitably *amongst themselves*; 'in-country' implementation programmes will depend upon meaningful but achievable baselines at local, regional and national levels; and the global community as a whole needs to ensure environmental integrity.



Forecasts shown are scaled from the IPCC SRES projections (coloured) and modelled for the Stern Report based on Houghton's 'constant rate assumption' (grey) in which national emissions continue at the 20-year average historic rate, with deforestation halting when only 15% of national forest area remains. Emissions of 7.5GtCO<sub>2</sub> are forecast yearly to 2012, reducing to 5GtCO<sub>2</sub> at 2050 and 2GtCO<sub>2</sub> by 2100. The SRES projections above include A/R activities.

**Figure 5.2 Estimated LULUCF emissions 1950-2000 and forecast 2000-2050 (GtCO<sub>2</sub>)**

(Stern, 2006 from Houghton and IPCC)

### 5.5.2 Equity

The equitable issues of compensating past conservation or of compensating on the basis of modelled future deforestation raise similar baseline issues, and Brazil's stance that only reductions in 'emissions from deforestation' are compensated is directly at odds with the principled positions of India and COMIFAC. The original compensated reductions proposal was to calculate the baseline from historic rates (Santilli *et al*, 2005) though there was recognition of a requirement to address other scenarios. However, there is a risk of 'hot air' being created in the event that deforestation rates would have declined anyway, either under 'forest transition', or any other factor. Modelling future scenarios has shown some success at predicting deforestation (Skutsch *et al*, 2007), though again this is specifically ruled out by Brazil.

These issues are substantive and will be difficult to negotiate to the immediate satisfaction of all Parties. This highlights the importance of additional financing through non-UNFCCC processes, such as ODA and private sector funded pilots. The World Bank pilot scheme is discussed in Chapter 7.

## 5.6 Market forces

There is wide agreement that in order to reduce deforestation, it is essential first to understand and then to address its causes. The drivers of deforestation are complex and vary both geographically and over time (Lambin *et al*, 2003). Distinction is made between proximate causes (such as conversion to agriculture, wood extraction and road network expansion), and underlying causes (such as economic, demographic and the legal status of land tenure). The literature reviewed by the IPCC, and the ongoing high levels of deforestation, suggest that national and international policies and efforts to address these drivers and reduce deforestation have had "minimal impact on slowing deforestation" (Nabuurs *et al*, 2007).

### 5.6.1 Individual landholders

Chomitz (2006) shows that both a lack of clarity over forest ownership and perverse economic incentives are fundamental. He encourages analysis at the level of the individual landholder, where the decision to deforest and change land-use is taken on the basis of economic rationale. Analysis of the net present value of land under

alternative uses shows widely varying values, but generally if the land is amenable to high value cash crops such as oil palm or soy, the landholder has a significant incentive to deforest. Such analysis derives the ‘opportunity cost’ of not deforesting, which in turn can form the basis of a compensation payment to the landholder for the continued carbon sequestration ‘service’ provided by the standing forest.

#### *5.6.2 Payments for environmental services and the carbon market*

To scale up such efforts, funding is needed to provide the institutional framework for implementation and for the direct compensation payments to landholders. The carbon market could play a significant role in raising finance to provide these incentives (Stern, 2006). The development of the carbon market is a potential breakthrough in such an approach, as developed world ‘buyers’ can be matched to developing world ‘sellers’ directly, allowing the failed ‘command and control’ approach to be replaced. It raises the issue though of market access to the sellers, and the needs of the market from the sellers, and this can be seen to conflict with the principle of sovereignty. The mechanics of delivering funds to the individual agents of deforestation are however untested on this scale and will be assessed in Chapter 8.

### **5.7 Costs of RED, assumptions and funding implications**

Notwithstanding the challenges of the derivation of BAU baselines, there is broad agreement that tropical deforestation will continue at high levels for the short to medium term and that significant levels of emissions could be prevented in this period by reducing deforestation. In order to assess funding approaches, it is necessary to comprehend what the costs of RED are likely to be. The theoretical mitigation costs of reducing deforestation have, however, been found to vary widely with differing assumptions and approaches being taken. Variables include the future rates of forest loss, potential income from non-forest uses by area (itself a product of many factors including assumed agricultural prices) and transactions costs (Nabuurs *et al*, 2007).

#### *5.7.1 Opportunity costs*

The Stern Review (2006) concluded that the costs of reducing deforestation appeared relatively low, basing these comments on a detailed bottom-up assessment of the opportunity cost of ceasing deforestation in 8 countries (with net forest loss of

6.2mha) that collectively account for 70% of LULUCF emissions (4.9GtCO<sub>2</sub> currently falling to 3.5GtCO<sub>2</sub> in 2030 under BAU as per Figure 5.2). The net present values of revenues foregone ranged from approximately \$2000/ha (for oil palm and soya) down to \$2/ha. The estimated total opportunity cost ranged from \$3bn to \$11bn depending on alternative use and logging assumptions. Additionally administration costs of \$4-15/ha were estimated (Grieg-Gran, 2006). Thus an annual opportunity cost of “\$5-10bn” has achieved prominence due to the Stern Review’s global marketing reach; the findings represent costs of \$1-2/tCO<sub>2</sub> on average.

#### *5.7.2 Unrealistic assumptions*

However, it should be noted that assumptions of 100% additionality and no leakage are made in the underlying analysis (Grieg-Gran, 2006). In effect this means that the implementing government is able to identify only the area that would have been deforested in any year, compensate those and only those landholders, and experience no leakage into other un-compensated areas. These appear unrealistic assumptions for a developing country with limited resources. Additional costs for implementation, incentivisation and monitoring will also be needed. There is a clear risk that the future cost of compensation exceeds these estimates.

A recent study undertaken by the UNFCCC used opportunity costs for the major alternative uses of forest land to derive the total cost of compensating all 12.9mha of estimated annual deforestation (Table 5.1). Of note is that 53% of the total conversion has an opportunity cost of less than \$400/ha (or less than \$1tCO<sub>2</sub> on assumed tropical carbon content). The total of \$12.2bn/yr is broadly in line with that implied by Grieg-Gran (2006) (though using similar methodology and assumptions). This study notes too the wide range to be found in the literature.

Main direct drivers	Rate of Deforestation/Degradation (percentage)	Area of Deforestation/Degradation (million ha per year)	Opportunity cost of forest conversion (USD per ha)	Financial flow required to compensate the opportunity costs (USD million per year)
<b>Commercial agriculture</b>				
Commercial crops	20	2.6	2 247	5 774.18
Cattle ranching (large-scale)	12	1.6	498	801.35
Subsistence farming				
Small scale agriculture/shifting cultivation	42	5.5	392	2 148.13
Fuel-wood and NTFP gathering	6	0.75	263	196.95
Wood extraction				
Commercial (legal and illegal)	14	1.8	1 751	3 187.4
Fuel-wood/charcoal (traded)	5	0.7	123	85.96
<b>Total</b>	<b>100</b>	<b>12.9</b>		<b>12 193.97</b>

**Table 5.1 Estimated costs of reducing deforestation**

(UNFCCCi, 2007)

### 5.7.3 Cost implications

As noted previously, such global estimates are premised on simplifying assumptions and must be regarded with caution. The value they have, however, is to allow consideration of where funding on this scale might be sourced. Stern (2006) concludes that existing schemes such as debt forgiveness and multilateral agency finance are not sufficient but that the carbon market could play an important role, whilst noting also that specialist funds could also be developed (and have specific advantages such as being able to ‘target’ proceeds and provide *ex ante* funding for capacity building). The potential role of the carbon market is assessed in Chapter 6.

### 5.7.4 Market concerns

At a straightforward level, the problems identified with a market approach to RED funding concern anxiety over ‘relying’ on the carbon market given the political and social aspects of avoiding deforestation, the flooding of the market with cheap credits and a consequential reduction in prioritising a switch away from fossil fuel usage. Of fundamental importance however, is that previous approaches to reduce deforestation *have not worked*. As above, the two the major reasons highlighted by the IPCC were that the “profit incentive” of individual landholders conflicts with conservation, and that governments were restrained by a lack of resources (Nabuurs *et al*, 2007). In



theory the opportunity cost calculation addresses the first and the market's disciplines may also help address the second.

#### *5.7.5 Market impact*

Market impact, or the issuance of large numbers of 'cheap' credits flooding the market, can be seen as an opportunity (Chomitz, 2006). Conceptually, this issue is as much about demand as it is about supply, and the political will recently demonstrated by Europe unilaterally to commit to deeper emission reductions is an indication that to focus only on supply is misplaced given that demand is also a 'moving part' (EC, 2007). The 'transferability' of such 'European' demand across to supply originating out of 'tropical' RED is however critically governed by the extent to which domestic (EU) action (to meet deeper targets) can be supplemented through internationally fungible mechanisms such as CDM (known as 'supplementarity').

#### *5.7.6 Early action*

There are many other related market issues, such as whether early action could be market funded, through the issuance of credits fungible in a post-2012 framework. Clearly this cannot be confirmed at this stage, but there is an opportunity for 'voluntary' carbon market funds to take a 'bet' on this if sufficient arbitrage opportunity is present. The theoretical low cost of RED implementation (\$1-2/tCO<sub>2</sub>e; Stern, 2006) compares favourably with the market price of CERs (\$20) in this respect.

#### *5.7.7 Carbon market and ODA*

The key funding issue is that the amounts of finance needed are uncertain but substantial. Other than being a likely source, the carbon market is also acknowledged to bring associated discipline to the process that would facilitate implementation. On the other hand, ODA and equivalent funding has an advantage in that it could be used in a specialist, targeted way (such as to make good a perceived inequalities in baselines or conservation), though the overall scale of funding would be a serious challenge to such sources. Both mechanisms therefore are assessed to have value, and are *not* mutually exclusive. ODA funding is a well-trodden route; the ability of the carbon market to deliver the scale of funding where and when it is needed is far from proven and needs further analysis given the reliance that many Parties are placing on it.

#### *5.7.8 Brazil*

There are further recent signs that Brazil's resolve may weaken, in part due to the State approach but as importantly due concern over local environmental issues (NYT, 2007). This force of 'people power' is very real in matters of climate change, and politicians will be uncomfortable being too far removed from their electorate without a *very* good reason. Additionally, the Amazonas Initiative (Viana, 2005), designed to protect the still 98% forested Brazilian State, is in large part predicated on raising finance to mitigate the 40% deforestation that is forecast to occur by 2050 (Soares-Filho *et al*, 2006).

A number of market related issues were raised by Parties, ranging from strong support, through scepticism to straight opposition. Brazil's opposition may wane, and there is sound rationale for believing that the market can play a significant role. The mechanics of delivering market funding to the individual agents of deforestation will, however, be a major challenge.

### **5.8 LULUCF issues, past and present**

Past negotiations over the treatment of LULUCF activities within Kyoto, and the CDM framework in particular, involved much deliberation over the 'risks' involved, including those of leakage, non-permanence, uncertainty, additionality against BAU baselines, and monitoring (Hohne *et al*, 2007). The end result was a restricted and tightly defined regime for A/R activities and the exclusion of avoided deforestation due particularly to leakage and market impact concerns (Schlamadinger *et al*, 2007). Given this backdrop, concerns over these issues need to be addressed by any proposal for RED for the post-2012 climate regime, though technical and methodological progress has been made in some areas. To date some of these issues have not been high profile in the negotiations, as their relevance and importance varies depending on specific policy approaches, but their importance for future work and negotiation has been highlighted (UNFCCC, 2007d).

#### *5.8.1 Uncertainty and monitoring*

Uncertainty reduces, and the ability to monitor increases, with advances in science and technology. Remotely sensed data, supported by ground observations, is far

advanced in only a handful of developing countries (for example Brazil) but is considered to be a “feasible goal” for others (DeFries *et al*, 2007). Issues remain over the capacity to gauge degradation, but IPCC generic guidelines allow a conservative approach to be taken in the absence of data. An important aspect to the development of RED approaches will be the agreement of standard protocols for the use of remotely sensed data (Nabuurs *et al*, 2007), but this should not be a substantive obstacle.

#### *5.8.2 Non-permanence*

The possibility of non-permanence is a particular aspect of the LULUCF sector and was a particular issue in the A/R discussions (being resolved through the issuance of temporary credits which trade at a large discount). Non-permanence can conceptually be argued to be much more applicable to A/R (where carbon is being sequestered, but possibly only temporarily) than to RED (where carbon is already sequestered and held as a ‘stock’, more similar to a coal mine) (Skutsch *et al*, 2007). In any event, the temporary crediting route devised for A/R could be used, or the implicit ‘stocks’ of carbon represented by the standing forest could be used to guarantee the credits issued in some way (such as holding back a ‘contingency reserve’ or maintaining a separate ‘bank’ of uncredited forest). It is also argued that RED can be viewed as an immediate affordable measure bridging the ‘time gap’ to affordable clean energy, notwithstanding longer-term permanence risks (including forest die-back as a negative feedback from climate change) (Stern, 2006), though this analysis is ‘pure economics’.

#### *5.8.3 Leakage*

Whilst there is widespread acceptance that the issue of baselines and additionality still pose significant obstacles, the proposals made to consider RED on a national basis are widely acknowledged to address the issue of leakage (notwithstanding the continuing risk of international leakage, though this a problem common to many sectors) (Nabuurs *et al*, 2007). There is a risk, however, that the ability of the private sector autonomously to seek out, develop, finance and manage innovative RED projects will be compromised by the implicit reliance on national level RED performance, notwithstanding the success or otherwise at the project level. This would be a greater risk in countries that lacked infrastructure; it might prompt a flow of RED capital only

into the subset of tropical nations known to benefit from an existing level of resource (analogous to CDM capital flowing largely to China to the anguish of Africa). Such concerns have led to the proposal of a ‘nested’ approach, whereby RED projects can be credited prior to the development of a national level scheme (Pedroni and Streck, 2007). This is a good example of the tension between the forces of environmental integrity, political negotiation and the private sector where, in a way similar to the components of sustainable development, these forces must ideally be aligned and in balance. Such issues may well be ‘surfaced’ in the early action pilot phase that is proposed, such as via the WBFCPP, though the Bank’s initial proposal on this is not promising.

### **5.9 Timing, commitment and progress**

The EU submission underlines the co-dependency of the RED and post-2012 processes. Problems in either negotiation stream could delay the other; equally the level of commitment by rainforest nations to the RED process appears bound to influence the level of commitment (in terms of deeper cuts and greater involvement) of developed countries to the post-2012 process. The potential for RED to engage developing countries in terms of firm targets for action (even if voluntarily assumed initially) is one of the most alluring co-benefits (in political terms) of this form of emissions reduction (alongside substantial environmental co-benefits). The linkage does however mean that progress *cannot* be fast, thereby underlining the importance of non-compliance forms of funding for pre-2012 capacity building and implementation.

### **5.10 Conclusion**

The issues discussed represent a complex mix of factors, which apply differently to the many nations concerned. Some are relatively easy to opine on: the case for including degradation seems compelling and standard definitions and protocols are needed to reign in what are clearly diverse practices globally. Issues of equity and baselines are more difficult and suggest that a combination of market forces and ODA will be needed, at least in a transition phase.

Given the scale and complexity of deforestation, the market’s contribution could be significant and is assessed in greater detail in the following chapter. There is a

legitimate concern that the market will be restricted by the proposal to operate on a national crediting basis, and the risk of leakage needs to be weighed carefully against this.

Brazil is a unique nation in terms of tropical forest, and their negotiation position to date has been unconstructive in terms of the greater good. The indications that this stance may be shifting reflect in part the pressures that are felt by politicians when they are unjustifiably out of line with what people feel needs to be done.

Notwithstanding a possible shift in Brazil's stance, it also appears that the UNFCCC process may not be best suited to addressing deforestation. Aside from unanimity, the institution is designed (understandably) to deal with reductions and commitments in developed countries. It appears essential that the market is allowed to lead when politicians may feel prevented from doing so.

## Chapter 6

### The carbon market

#### 6.1 Introduction

The fundamental proposition in the compensated reduction proposal (Santilli *et al*, 2005) is that RED action by developing countries can be financed through the issue of fungible RED credits. In their UNFCCC RED submissions, many of the Parties discussed the potential role that market mechanisms could play in providing funding, with access to the carbon market stated as a particular option or objective of all the grouped submissions, though concerns were raised by several individual Parties (UNFCCC, subs). In particular, many Parties suggested the carbon market as the likely, or only, source of sufficient and sustainable funds.

*To what extent will the carbon market be able to deliver?*

#### 6.2 Objective

The objective of this chapter is to assess the potential role of the carbon market in funding RED.

#### 6.3 Market size and growth

The carbon market has grown rapidly from inception, with the total size of market transactions estimated at having almost trebled to a value in excess of \$30bn in 2006 (Figure 6.1).

#### 6.4 Different components

The ‘carbon market’ is not one homogenous market. It represents instead a mix of allowance-based ‘cap and trade’ mechanisms taking place in different regions of the world, operating under different targets (or ‘caps’) and methodologies; and geographically unconstrained project-based mechanisms.

The vast bulk of the allowance market falls within an international ‘compliance’ policy framework driven by the UNFCCC process, designed and implemented at

nation state level (with regional aspects in the case of the EU) to deliver contributions towards achieving UNFCCC and Kyoto commitments.

	2005		2006	
	Volume (MtCO <sub>2</sub> e)	Value (MUS\$)	Volume (MtCO <sub>2</sub> e)	Value (MUS\$)
<b>Allowances</b>				
EU ETS	321	7,908	1,101	24,357
New South Wales	6	59	20	225
Chicago Climate Exchange	1	3	10	38
UK-ETS	0	1	na	na
<b>Sub total</b>	<b>328</b>	<b>7,971</b>	<b>1,131</b>	<b>24,620</b>
<b>Project-based transactions</b>				
Primary CDM	341	2,417	450	4,813
Secondary CDM	10	221	25	444
JI	11	68	16	141
Other compliance	20	187	17	79
<b>Sub total</b>	<b>382</b>	<b>2,894</b>	<b>508</b>	<b>5,477</b>
<b>TOTAL</b>	<b>710</b>	<b>10,864</b>	<b>1,639</b>	<b>30,098</b>

The analysis divides the market by ‘allowances’, predominantly from the EU ETS and New South Wales compliance markets (but also from the Chicago Climate Exchange, or ‘CCX’, voluntary market), and ‘project-based’ transactions, largely the Clean Development Mechanism (CDM) but also with some Joint Implementation (JI). Volumes and values reflect total transactions, rather than underlying issuance. To illustrate this, the total annual ‘shortfall’ in EU ETS allowances is approximately 300mtCO<sub>2</sub>e, though trades in the year totalled 1,101mtCO<sub>2</sub>e. It is the cap shortfall that represents reduced emissions rather than trading (though trading does facilitate price discovery and liquidity). High trading volumes are due in part to the relative volatility in the carbon price. Average prices per tCO<sub>2</sub>e for 2006 were \$22 for EU ETS, \$18 for secondary (guaranteed) CDM and \$11 for primary CDM; the variation is due to the differing levels of risk and compliance value. CCX average was \$4.

**Table 6.1 Carbon market volumes and values, 2005-2006**

(Capoor and Ambrosi, 2007)

The project-based market is implemented largely by the private sector where funds are invested in emission reduction projects, selling the resulting credits to meet compliance demand through ‘links’ to the allowance-based market.

There are also developing state initiatives in the US and Australia (where at Federal level Kyoto was not ratified but at State level the legislature has acted) and a small but rapidly growing ‘voluntary’ market where organisations and individuals ‘offset’ emissions through funding emission reduction projects elsewhere, and/or voluntarily

assuming obligations under a self-imposed allowance cap and trade (such as the Chicago Climate Exchange CCX in Table 6.1).

## **6.5 The compliance market**

### *6.5.1 LULUCF issues in both major components*

The major components at present in the carbon market are the European Emissions Trading Scheme (EU ETS) and the Clean Development Mechanism (CDM) (Table 6.1). For the LULUCF sector, and for RED specifically, particular issues and restrictions exist within both the EU ETS and CDM components of the carbon market. These restrictions have to date hindered the financing and development of LULUCF sequestration and RED activities.

### *6.5.2 The EU ETS*

The EU ETS is the EU's emission reduction trading scheme and is at present the EU's primary channel for achieving its reduction targets. It covers high-energy installations (such as power generation, oil refining and cement) that were estimated in its design to account for 46% of EU total emissions in 2010 (ECEIA, 2003). The 50 or so largest installations (mainly power and heat generation) account for approximately 60% this figure, in excess of one quarter of total EU emissions.

### *6.5.3 Linking EU ETS, CDM and JI*

The EU ETS was amended by the 2004 'Linking Directive', allowing for the compliance use of CERs (from CDM projects) and ERUs (from JI) to meet emission reductions mandated within the EU ETS (DEFRA, 2007). The policy objective achieved through linking was both the promotion of cost effective, environmentally equivalent emission reductions that could be used by EU member states to meet their obligations, and the promotion of sustainable development overseas. Their use was subject to the existing Marrakech Accords complementarity provisions, specifying that domestic action should constitute a significant element of the overall emission reduction effort (though importantly the actual level remains undefined).

### *6.5.4 But EU ETS linking excludes LULUCF, and CDM excludes RED*

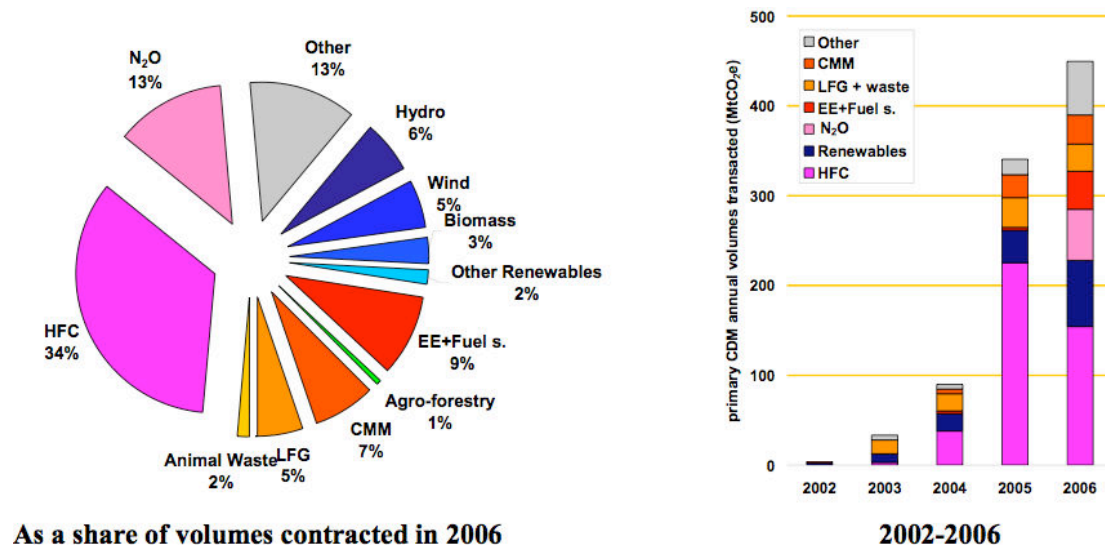
However, the linking directive did not include CERs and ERUs generated through LULUCF activities, thereby excluding LULUCF credits from the EU ETS, currently



the carbon market's largest trading platform. Additionally, the Kyoto Protocol restricts the methodologies eligible for CDM to tightly defined afforestation and reforestation (A/R) projects (the situation which the current RED negotiations are addressing for post-2012), and limits the use of LULUCF CDM and JI compliance credits (CERs and ERUs) up to only 1% of a country's baseline 1990 emissions for each year of the commitment period (UNFCCC, 2007f). Further, due to potential non-permanence, A/R projects generate 'temporary' credits, reducing the attraction and fungibility of LULUCF projects even further.

#### 6.5.5 Resulting in low LULUCF demand, despite RED's merits

The consequence of the various restrictions and complexities applying to LULUCF has been to limit the compliance market's demand for such projects. As a result, capital has not been deployed in this area in scale and LULUCF represents only 1% of volumes transacted by type in the CDM market (Figure 5.2), despite deforestation effectively representing approximately 20% of total emissions and RED being identified as a low-cost mitigation priority for early action (Stern, 2006).



Projects reducing the industrial gases HydroFluoroCarbon (HFC) and Nitrous Oxide (N<sub>2</sub>O) dominate CDM activity due to their high global warming potential (GWP) and the economic returns that such GWPs enable, whereas 'agro-forestry' accounts for only 1% due in large part to the restrictive regulations covering the LULUCF sector.

**Figure 6.1 CDM Asset Classes by Project Type**

(Capoor and Ambrosi, 2007)

#### *6.5.6 A number of barriers*

Thus a number of barriers exist at present to the compliance carbon market being able to fund RED activities in the way proposed, *even if* the existing exclusion of RED from CDM (or any post-2012 equivalent) was reversed by a successful outcome in the ongoing negotiations. Furthermore, a resolution of these issues that facilitated RED funding would have to be associated with a significant increase in demand for credits to address the ‘market flooding’ issue (Stern, 2006).

#### *6.5.7 A closer look at the EU ETS linking directive*

One of the perceived drivers of future LULUCF demand is whether the EU ETS will allow LULUCF credits to be linked post-2012. Given the current significance of the EU ETS in the carbon market, the rationale for the original omission is assessed to gauge the likelihood of future policy change.

#### *6.5.8 The original assessment*

The original European Commission Extended Impact Assessment (ECEIA) addressed the issue of whether all CDM and JI project activities should be universally recognised, and it was considered that unconditional linkage would not be allowed (ECEIA, 2003). Concerns included non-sustainable projects and “activities that achieve only temporary removals of emissions” (ECEIA, 2003). LULUCF “sinks” were said to suffer from scientific uncertainty and non-permanence, and the related difficulties of this in a trading system were highlighted. It was also thought to be inconsistent to promote sinks when the objective of the EU ETS was to be “a technological driver to achieve permanent emission reductions”. The ‘removals’ aspect of this criticism could be regarded as being more directed at A/R than RED, but the strategic objective aspect would appear to relate equally to RED.

#### *6.5.9 The debate continues*

The debate over the exclusion of LULUCF from the EU ETS is ongoing and recent submissions to the current European Commission EU ETS Review (ECEUETSR) indicate that there are strongly held beliefs on both sides (ECEUETSR, 2007). Against including LULUCF from 2013, for example, Climate Action Network Europe’s (CANEU) joint submission with Greenpeace, World Wildlife Fund and

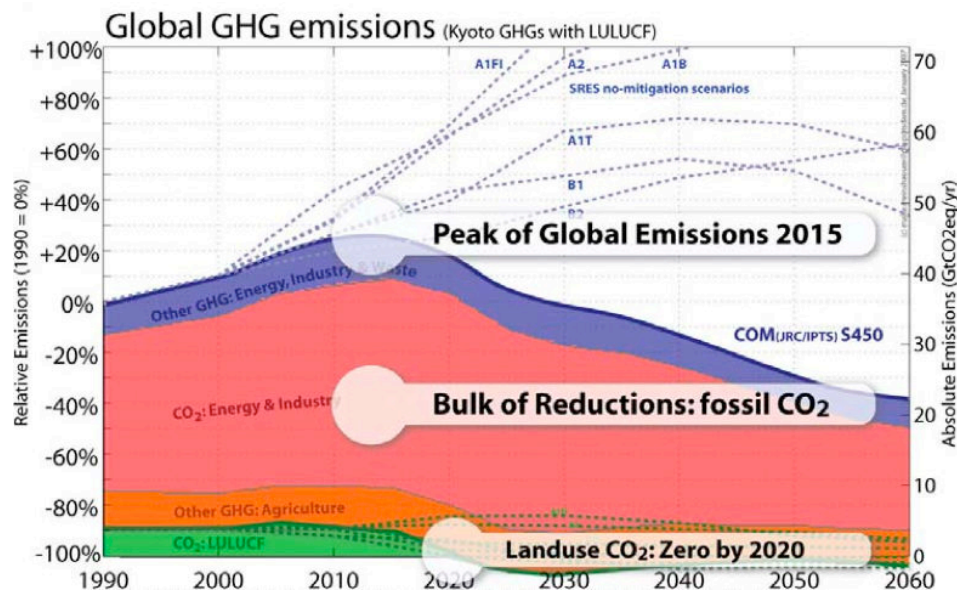
Friends of the Earth Europe, cited problems with detracting investment away from long-term emission reductions in power and heavy industry (“the main purpose” of the EU ETS) and the “major difficulties” in accounting and verification for LULUCF (CANEU, 2007). Conversely, the recognition of the ability of LULUCF to provide cost-efficient, sustainable investments in geographically diverse developing countries is recognized in the International Emissions Trading Association’s (IETA) submission (IETA, 2007).

#### *6.5.10 Increased compliance demand from EU policy*

In January, 2007 the European Commission (EC) set out its policy recommendations for the EU to take the lead in ensuring that global average temperatures do not exceed 2°C (relative to pre-industrial), thereby in the EC’s view, restricting the likelihood of significant climate impacts and disruption (note that the level at which to ensure this is not defined by the IPCC/UNFCCC process) (EC, 2007).

The EU has subsequently adopted the policy; globally the aim is for a stabilization of CO<sub>2</sub>e at 450ppm (though with a short-term overshoot), requiring *global* emissions to peak by 2025 and fall by 50% by 2050 (against 1990 levels). It identifies cuts for developed countries of 30% by 2020 and 60-80% by 2050 as necessary. The key EU policy is a unilateral cut of 20% by 2020, increasing this to 30% in the event that major developed country emitters join in making similar commitments (EC, 2007).

In a document that demonstrates a coming together of environmental and energy policy, the ambitious environmental goals outlined are achieved in part by targeting a 20% energy contribution from renewables and a 20% improvement in energy efficiency. Amongst a range of other policy initiatives, 12 carbon capture and storage (CCS) plants are to be constructed by 2015. The direct relevance of this to funding RED, is that whilst EU policy requires a strong carbon price signal to incentivise appropriate investment decisions through the EU ETS, the policy blueprint also sets a long-term context that specifically includes RED (Figure 6.2). These proposals will form the basis of the EU’s negotiating position at Bali.



**Figure 6.2 Global GHG emissions trajectory targeted by the EU**

(EU, 2007)

#### 6.5.11 The EU addresses CDM and RED

Alongside recommending deep, concerted cuts in emissions from developed countries, the EU approach identifies the importance of engaging developing countries. Given relative growth rates, emissions from developing countries are expected to exceed 50% of global emissions shortly after 2020 under BAU. The policy options proposed include the “expansion” and “streamlining” of the CDM and that a post-2012 international agreement includes options to “tackle deforestation” by “effective international and domestic forest policies coupled with economic incentives” (EC, 2007). LULUCF net emissions of zero by 2020 are targeted (Figure 6.2).

### 6.6 The voluntary carbon market

The voluntary market is not bound by any of the restrictions that apply to the compliance market and it is already actively engaged in LULUCF. The growing consumer and corporate focus on climate change suggest that its growth could continue to be very rapid. It could also be a source of RED funding both in the 2008-2012 period and beyond.

#### *6.6.1 Different scale, rapid growth*

The voluntary market is on a different scale to the compliance market. In 2006, in addition to the 10mtCO<sub>2</sub> transacted through the CCX at a value of \$38m (Table 6.1), it is estimated that an additional 13.4mtCO<sub>2</sub> transacted in the voluntary over the counter (OTC) market at a value of \$54.9m. The total value of the voluntary market is therefore estimated at in excess of \$90m though because of difficulty in “capturing all the transactions” it is suggested that the actual numbers may be “considerably larger” (Hamilton *et al*, 2007). As a proportion of the total carbon market, the voluntary market represents approximately 1% of CO<sub>2</sub> by volume and 0.3% by value, which indicates both the relative scale and also the average price discount that applies. Notwithstanding the difference in scale, the voluntary market is a powerful representation of “active demand” for action in the absence of regulation. Growth in the OTC market was 200% in 2006; the CCX has reported that the first 7 months of 2007 is up 155% over the whole of 2006 (Hamilton *et al*, 2007).

#### *6.6.2 Different composition*

The composition of the voluntary market is also quite different in some respects. The US (in part due to the non-ratification of Kyoto) rather than the EU is the focus (68% of end customer demand comes from the US and 28% from the EU) and in terms of sector mix, forestry accounts for 36% of the total market (against 1% CDM), with renewable energy at 33% and industrial gases at 30% (Hamilton *et al*, 2007).

#### *6.6.3 Pricing and standards*

The average price of \$4 (Table 6.1) conceals a wide spread from \$0.45 to \$45/tCO<sub>2</sub>e; the highest prices were achieved for high quality verified reductions and for projects with a sustainable ‘marketable’ component. The lack of a common standard allows the voluntary market flexibility but is seen as compromising the perceived quality of non-compliance grade voluntary offsets (Hamilton *et al*, 2007). The regulatory threat to the global voluntary market from a failure to agree upon a set of consistent, high quality standards is illustrated by UK review below.

#### *6.6.4 Defra’s review*

In the UK, following significant debate and controversy over the quality of voluntary offsets (for example Monbiot, 2006), Defra launched a consultation on establishing a

code of best practice for the UK voluntary carbon market. The key proposal within the code was that only certified credits from the compliance market should be approved as “best practice” (Defra, 2007b). The 166 responses showed 92% support for a code, but there was a strong debate over the merits of including or excluding verified emissions reductions (VERs). Subsequent analysis of the responses determined from the comments that there was, “on balance”, a majority in support of the inclusion of good quality VERs (Defra, 2007b). Defra’s decision has yet to be announced.

#### *6.6.5 The UK voluntary carbon market*

The individual survey responses are available for inspection in Defra’s library and provide valuable insights into many aspects of the voluntary market in the UK. In particular, a selection of responses from the largest multinational corporations headquartered in the UK were reviewed with key points as follows:

**Barclays** offsets its UK operations only using 60% CERs and 40% VERs (VERs are used for “sustainability and employee engagement purposes”);

**BP** supports a voluntary standard and the use of VERs and CERs;

**British Airways** supports the use of VERs and CERs;

**F&C Investments** (managing £100bn investments) supports VERs;

**HSBC** supports VERs and notes increasing interest in the voluntary market;

**Marks & Spencer** has estimated a “total” carbon footprint (from supply chain to customer use) of 6mtCO<sub>2</sub> per year and has targeted carbon neutrality for their own operations and a plan to help suppliers and customers reduce their emissions;

**Shell UK** does **not** support VERs, believing that they will slow the development of a single global carbon market;

**Vodafone** believes that VERs are needed to “capture consumer market needs”.

#### *6.6.6 The carbon disclosure project*

The developing attitude of large corporates towards voluntary engagement with the carbon market is further illustrated by the carbon disclosure project (CDP). The world’s largest businesses are asked for information on GHG emissions and the risks and opportunities faced by the business from climate change. As importantly, the ‘ask’ now comes on behalf of 280 institutional investors managing \$41trillion of assets. Response rates have increased to 91% (CDP, 2007). Whilst ‘best practice’

suggests that in-house efficiencies should be sought first, the role of offsetting residual emissions is widely acknowledged.

## **6.7 Interviews and discussions**

A wide variety of views on the potential role of the carbon market in RED were expressed. The **carbon brokers** had little or no knowledge of the RED negotiations, and regarded forestry as “problematic” given its exclusion from the EU ETS and the confusion over temporary credits. Their views on the voluntary market were mixed: “lack of agreed standards was plaguing the voluntary market” though another observed that ‘voluntary’ was becoming “un-voluntary, as there was now so much political and social pressure to act”.

**Carbon analysts** displayed better macro awareness. Forestry was “a large source of supply...and important for the US and Australia”. The EU was said to have “tempered their purity on LULUCF...wanting developing country engagement”; “if RED is the price to get others in...so be it”. RED was also described as a “groundswell issue around the world”. VERs and standards were noted as a concern and there was a need for demonstrable “best practice”. The change in the US position was noted, engaging through the UN, and the market expected to “mushroom” on US entry. Investment banks were said to be “targeting” the carbon market. The regulatory reliance on “clobbering” the utilities in the EU ETS to achieve the EU’s targets “could not go on forever”, and other sectors “more exposed to international competition” were expected to be “hit” post-2012.

**RED/LULUCF project developers** displayed a high degree of frustration and cynicism over the politics of the UNFCCC and Kyoto, but regarded the voluntary market’s prospects with enthusiasm. Measurement, standards and verification were described as critical to enabling the funding of RED projects. The recent KLM voluntary 4mtCO<sub>2</sub> deal with WWF was used to illustrate the voluntary demand that developers were experiencing (KLM, 2007). One developer blamed Greenpeace for “indoctrinating the EC against overseas projects in favour of domestic action” over the previous 15 years; this dogma “was hard to turn around , though opinion now was back to 50:50”. Another appeared reassured “that whatever was not included in Kyoto would go into the voluntary market”.

## **6.8 Discussion of key issues**

The factors influencing the likely role of the carbon market in the future financing of RED appear varied and complex and are discussed under a number of unifying themes.

### *6.8.1 A developing market*

The market is still young but a lot is being expected of it. Whereas other parts of the world's capital markets have developed processes and institutions that enable them to deliver the right amount of capital where and when it is needed, that is not yet the case with the carbon market. The EU ETS price has been highly volatile, liquidity in the project-based market is lacking and RED/LULUCF is starved of capital. Crucial advances in information availability, standards and governance appear to be much needed generally, and the historic confusion and uncertainty that has 'plagued' LULUCF specifically can only be addressed by excellence in standards, implementation and third party verification. Accounting must be seen to be conservative and an alternative solution to non-permanence appears much needed.

### *6.8.2 Post-2012*

The efficient working of the market needs long-term visibility and the various uncertainties surrounding 2012 need to be replaced by a new 'hard' agreement *and* a longer-term policy context. For RED these needs are profound. The compliance market's current opinion of LULUCF is low, and awareness of RED is poor to non-existent. A decisive UNFCCC approval of RED as a methodology would clearly spur its reappraisal for post-2012, and the EC's 2°C strategy is a good example of what needs to be achieved on a global scale to give the long-term context. RED clearly has particular need of such a long-term policy context. The product is not a 'quick fix' to a chimney, but rather involves the origination of a stream of funds, with an 'up-front' investment component but also an 'annuity stream' of funding distributed to the many and varied stakeholders involved. The 're-branding' of RED that has occurred in negotiation circles now needs to happen in the carbon market.



### 6.8.3 Different markets

At present the focus in the compliance market is very EU ETS centric because that is the focus of policy. It is a market designed to drive investment decisions in power generation capital equipment, and future carbon capture and storage facilities, where asset lives of decades require forward visibility of all costs. The cost of CO<sub>2</sub> is being used as a lever to influence those decisions and it is highly likely that LULUCF will *not* be a part of that framework. The key point is that as deeper cuts are required, they will not fall so exclusively on the EU ETS and the supply of RED credits will be financed by demand that will not be dependent upon EU ETS approval, which is so determined by more strategic factors such as energy security. The EC 2°C strategy clearly does not conceive there to be a conflict between the EU ETS objectives and RED, so this aspect of concern over RED funding should dissipate.

### 6.8.4 International markets

The future development of international demand is also needed to ensure RED funding through the carbon market. RED is said to be favoured by the US and combining that with the low cost of RED, it is probable that the US will be actively involved in the determination of the UNFCCC RED structure. The concept and definition of supplementarity is also relevant in this context. Should the development and growth of an international project/programme based mechanism be restricted by a defined cap in relation to domestic cuts? The global environmental equivalence of such actions suggest not, though the ‘Greenpeace’ lobby is powerful. Surely the answer is both deep domestic cuts and maximum (high quality) project/programme reductions.

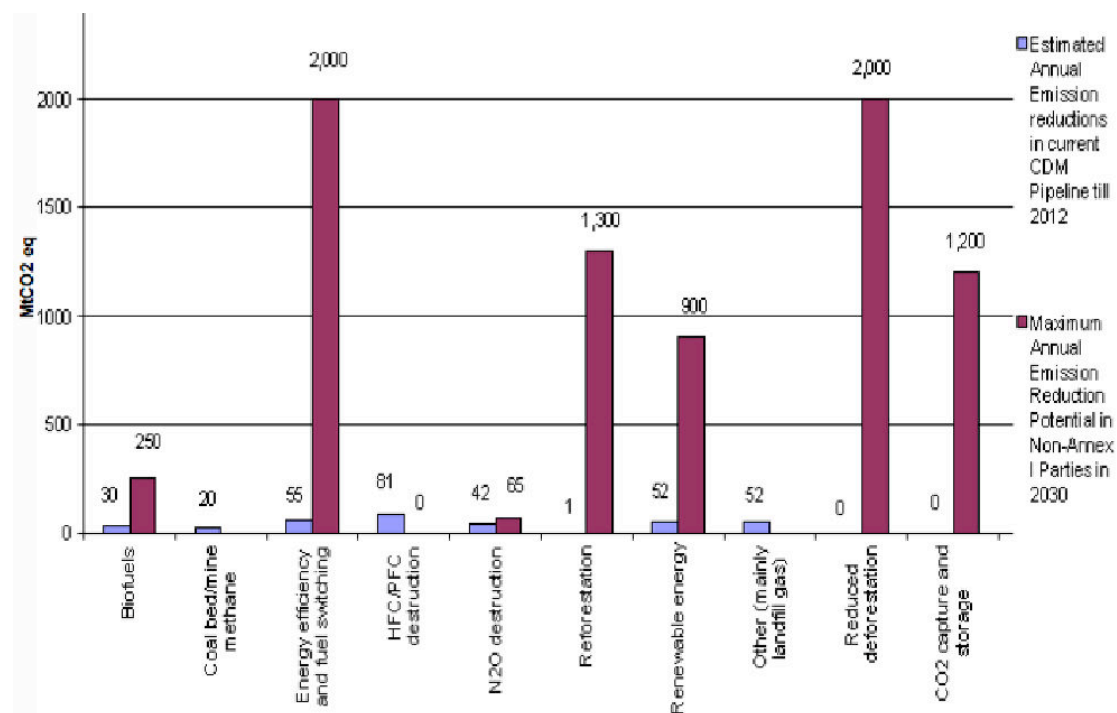
### 6.8.5 The voluntary market

The picture emerging is of a flexible market, unbound by bureaucracy, enjoying stellar growth. It is however highly dependent upon sentiment, given the ‘voluntary’ nature of the transactions, and the need for uniform excellence in standards is clear. There are several issues to note in addition to the points already made on standards. The voluntary market is in part responding to a need that is not at present being met in the compliance market. Where organizations and individuals believe that they *should* do something, they will (providing they can afford it). As the interviewee observed, if individuals believe that corporates *should* do something, deciding not to act could be

costly for the corporate, making their action a necessity (in effect equivalent to a compliance edict in financial terms). Given the strengthening science and the increasingly tangible manifestations of climate change, this driver of demand looks set to increase. The question then is, to what extent will policymakers enshrine what *should* happen in the compliance space? Given the risks of global climate change, it is probable that little will be left to chance *eventually*. In the meantime the voluntary market will play a vital role doing what needs to be done, and given the environmental co-benefits and the low cost, RED looks a prime target for such funds, once the technical methodologies are finalized. Additionally, from an investment perspective, there is an arbitrage opportunity of a low cost emissions reduction policy that might achieve significantly higher value compliance grade status in the short term.

#### *6.8.6 The CDM market*

The ultimate potential of the CDM market is highly relevant in respect of future RED funding. It appears a potentially ‘perfect’ global commodity market. The commodity in question is a ton of CO<sub>2</sub>e *not* emitted; given the environmental equivalence of any such non-emission, the resulting value has equal value anywhere in the world. Given the scale of reductions in global emissions envisaged as necessary by the EU, the potential demand for such certificates could be a multiple of the current market. The scale of what may be possible is demonstrated by a UNFCCC report into potential annual CDM activity by sector in 2030 (Figure 6.3). Whilst based on a myriad of assumptions, this analysis clearly presupposes the approval of RED as a CDM vehicle and the scope for significant RED and A/R activity. Under this analysis, combined LULUCF activities would represent over 50% of the future profile of CDM.



**Figure 6.3 Estimated annual emission reductions by project type: current annual CDM pipeline to 2012 against maximum annual potential reductions in non-Annex1 Parties in 2030.**

(UNFCCC, 2007g)

## **Chapter 7**

### **Case study: The World Bank Forest Carbon Partnership Facility**

#### **7.1 Objective**

The objectives of this chapter are to identify and discuss the key issues arising from an analysis of the World Bank's proposals to launch a RED pilot fund.

#### **7.2 Background**

The World Bank is a fund, owned by 185 member countries, with a mission of global poverty reduction and the improvement of living standards. It has an annual budget in the order of \$20bn (World Bank, 2006). A recent review highlighted that it was not delivering adequately in the forest sector for a number of reasons (such as Bank concerns over foreign institutional capacity and governance) and as a result forestry investments averaging only \$135m per year were made over the Bank's fiscal years 2001-2005, representing 0.7% of World Bank spend (World Bank, 2007a).

The Bank consequently reassessed the importance of deforestation and its relevance to their mission, citing 1.2bn poor people affected, 20% of global emissions and 80% of total biodiversity in forests. A new forest structure was developed, within which the FCPF targets RED specifically. Given the relevance to the UNFCCC process, the Bank's FCPF proposals were presented in May, 2007 alongside the SBSTA RED negotiations in Bonn.

In June, 2007 the FCPF initiative received unequivocal support from world leaders at the G8 summit in Heiligendamm, Germany. The G8 stated a "determination" to assist in RED, identifying RED as a "significant and cost-effective" mitigation action that conserved biodiversity, promoted SFM and enhanced livelihoods. Further, the G8 "encouraged" the World Bank to develop the FCPF "as soon as possible" (G8, 2007). As a consequence of this clear mandate to proceed, and presumably an assurance of significant 'seed' funding, meetings were held in Paris in July with representatives of rainforest nations, potential donors and potential investors. The agenda was to gauge

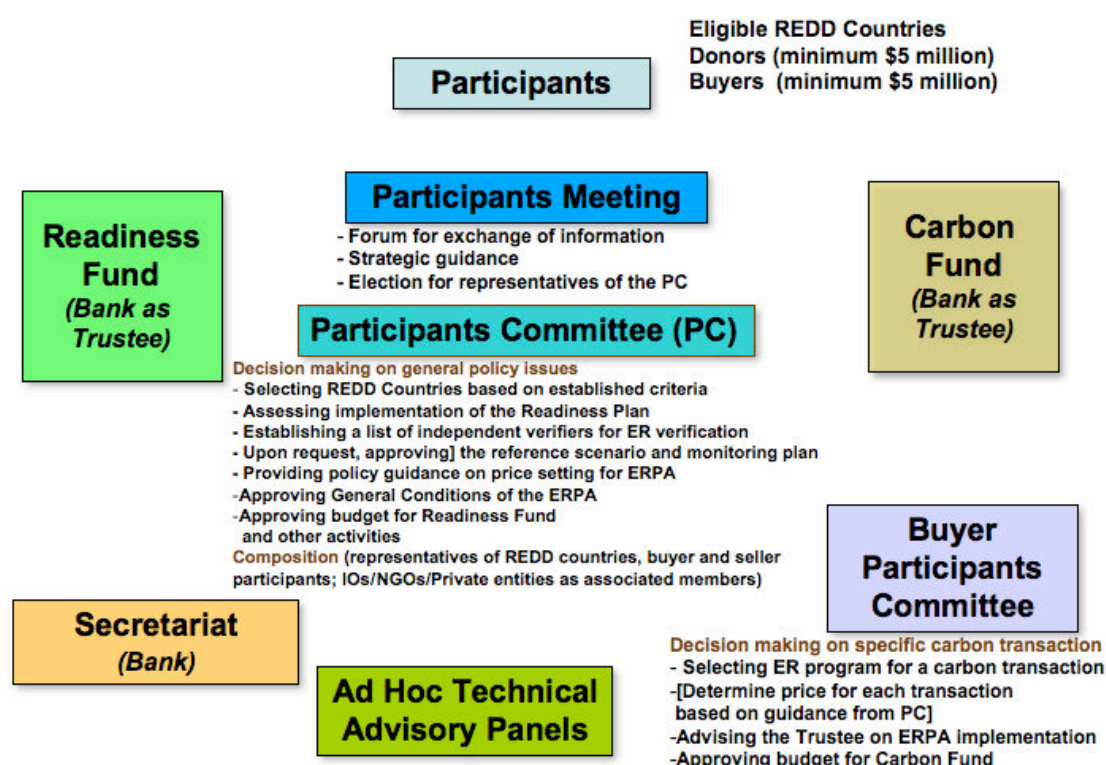
the reaction of all participants to the proposed structure and mechanics of the partnership.

### 7.3 The FCPF

The objectives of the facility are both to build capacity and to pilot performance-based payment schemes. The Bank anticipates raising financing of \$300m, and deploying \$100m of this in capacity building and \$200m in direct RED project financing.

#### 7.3.1 The FCPF structure

The structure of the FCPF is relatively complex; the principal components are shown in Figure 7.1.



**Figure 7.1 The Components of the World Bank Forest Carbon Partnership Facility**

World Bank, 2007b

The ‘participants’ comprise RED countries (on a voluntary basis), ‘donors’ and ‘buyers’. The donors can be viewed as representing ODA type backing and their contributions into the ‘readiness fund’ will be used to finance capacity building. The buyers equally are representative of private sector investors in the carbon market; their investments go into the ‘carbon fund’, and are used collectively to finance RED schemes (similar to the role such private capital plays in the financing of CDM projects).

### *7.3.2 Readiness*

Readiness is defined as having developed 4 key criteria: a reference scenario, a RED strategy (specifically including degradation), a monitoring and verification program and cost estimates. The detailed work plan to achieve readiness is phased and includes stakeholder consultations, database compilation, strategy development and the identification of appropriate methodologies (such as PES, fire retention and protected area enforcement). It is a considerable undertaking: in total, readiness is expected to take “2+ years” and cost \$3.2m per country (ex in-country costs). The intention is that on completion of this process, the participants committee will approve the readiness plan. As the UNFCCC negotiation process should have achieved greater clarity on the details of the post-2012 architecture (including any approved RED modalities within that) it may also be possible that the readiness plan becomes UNFCCC approved at this stage. To date, the proposals have come from the following nations/states to be involved in this stage: Bolivia, the Brazilian *States* of Amazonas and Mato Grosso, Colombia, Costa Rica, DRC, Ecuador, Gabon, Ghana, Indonesia, Mexico, Panama, PNG, Congo and Vanuatu.

### *7.3.3 Carbon fund investment*

The buyer participants committee takes the investment decision (Figure 7.1). It is anticipated that only a minority selection of the proposals exiting the readiness phase successfully will be selected for investment. The criteria will in part be based on costs and in part on a more qualitative assessment of the probability of success. Following the decision, further due diligence is completed prior to the signing of an Emissions Reduction Purchase Agreement (ERPA). In this agreement the carbon fund undertakes to purchase *ex post* emissions reductions on verification. Again it is possible that this stage is UNFCCC verified/approved.

#### *7.3.4 Criteria*

The Bank highlighted that representatives of the national government were required to authorize that nation's participation *and* that a credible consultation process must be conducted. In the case of a project within a nation seeking funding, not only must the project complete all the necessary approvals but also the national government must guarantee the project against leakage at a national level.

#### *7.3.5 Pricing and risk*

The Bank was "open to suggestions" on pricing. Various alternatives were proposed: a set or indexed price, price guidelines related to market prices or costs involved, or a straight negotiation. On risk, it was stated that the credits arising would be permanent credits and that non-permanence risk would be borne by the RED nation through maintaining a reserve.

### **7.4 Private sector comments on the WBFCPF**

In an open exchange at the end of the World Bank presentation, the following points emerged as a result of questions and observations from the private sector investors:

- The importance of simplicity was emphasised, along with transparency in pricing.
- Future fungibility was described as the biggest risk in the investment, which would need to be reflected in price. RED country representatives understandably wanted to maximise price, suggesting that too low a price would be immoral. Price was left an open issue, with a suggestion that one avenue of price discovery would be quotes from the voluntary market.
- On non-permanence risk residing with host government, it was pointed out that the private sector had a more efficient solution: a medium term credit risk with a developing sovereign could be better managed (and priced) through a pooling (insurance) arrangement.
- Buyers do not have to invest in the readiness fund, though a proportion of their investment may go towards it (2% was mentioned in this respect).
- Emission reductions (ERs) are verified on reduced emissions, not on the implementation of the ER plan. However the ER plan is relevant in as much as it forms a part of the buyers' decision as to which of the RED proposals to back.

- The government of the RED country needs to have a prominent role and (most probably) sign the transaction. Incentive money, however, does not all have to go to the central government; it needs to go where it is needed. For protected area enforcement this may be to the central government; for PES it could go locally.
- The 5-year cycle of UNFCCC commitment periods was thought to be at odds with the long-term nature of RED.

## **7.5 Next steps**

The FCPF will seek approval from the Bank's board in late September, 2007 and it is expected to launch at the COP in Bali in December, 2007.

## **7.6 Discussion**

There are several pertinent issues that relate directly to the FCPF and some fundamental inferences and connections that can be made more generally.

### *7.6.1 A 'hybrid' approach*

Conceptually, the proposed facility represents a 'hybrid' between ODA and private sector investment. In aggregate, ODA has not been successful to date in reducing deforestation, but it is being used differently in this context. Through sponsoring the FCPF in the proposed way, G8 governments are effectively underwriting both the development of a RED protocol, but also a level of 'artificial' demand for RED credits, which at present cannot be used for UNFCCC compliance. The purpose is to provide pilot projects to 'test drive' certain approaches, to encourage developing countries to apply for readiness processing, and to take early action to reduce deforestation. It is hoped that 'subsidizing' the facility in this way will also 'crowd in' private sector funding, whose involvement would be needed for any roll out. The ultimate strategic goal behind the ODA funding that promoting RED in this way may help coax developing tropical nations into the post-2012 architecture.

### *7.6.2 Public private partnerships*

With such strategic objectives, the ODA donors are quite distinct from the private sector investors, who are motivated largely (if not exclusively) by profit (whilst recognizing that private sector actors in the environmental space are choosing to make



that profit in a sustainable way through financing emission reduction projects). The importance of this distinction is that there is a possibility that very little private sector capital is attracted into the FCPF, and that it ends up as predominantly a public sector exercise. If that were to be the case, a concern would be that the price negotiation would become between developed and developing nation states, which could become compromising given the political priority given to encouraging participation. Against that, by choosing 5 proposals from 14, it might be expected that some form of ‘internal market’ develops to achieve an efficient, rather than political, level of price. Additionally, if the facility does not generate an attractive return through bearing undue costs and paying too high a price, the pilot study will not be the beacon for private sector investment that is also needed.

#### *7.6.3 Stern’s opportunity cost assumption questioned*

The issue of price negotiation has far reaching consequences in terms of the global costs of RED. The assumption made by Stern (2006) and others is that opportunity cost would be adequate to compensate individual landholders. When calculated, figures equivalent to \$1-2/tCO<sub>2</sub> were derived. However that methodology does not account for how the ‘gatekeeper’ role that tropical governments will be given under the ‘national’ methodology could be used to engender a ‘cartel’ approach to price negotiation. If RED credits were not for sale at \$1-2/tCO<sub>2</sub>, but rather the price was \$5-10/tCO<sub>2</sub> then global cost estimates for RED would increase fivefold. This is merely illustrative, but the issue suggests further the upside risk to Stern’s cost estimates.

#### *7.6.4 Non-permanence and risk*

The Bank’s forthright view that the credits generated should be permanent was refreshing and interestingly the RED countries present seemed ‘proud’ to bear the risk. Their view was that they were “best placed” to manage it (and that the price discount of temporary credits was not acceptable). The suggestion from the private sector that an insurance pooling arrangement might be more efficient for risk mitigation was a perfect example of the value added to be gained from private sector involvement.

#### *7.6.5 National versus project*

In maintaining that projects require national level leakage guarantees the Bank is not acting in the best interests of promoting the private sector's involvement on a 'nested' project basis (Pedroni and Streck, 2007); especially as one of the pilots could trial such an approach for assessment. There remains a serious concern that the flow of private sector capital and expertise into the RED sector will be hampered by such a requirement, notwithstanding the environmental integrity rationale of the anti-leakage measure. The Bank may be asked to reconsider this criteria at least in part if either of the Brazilian States that have put themselves forward use political leverage to remove this condition (and in the event that the Brazilian Federal government chooses not to underwrite the risk).

### **7.7 Conclusion**

The FCPF has the support of the G8 and will be launched at Bali and it will provide a 'blue chip' pilot phase that will develop methodologies alongside the UNFCCC process. The facility undoubtedly enhances the prospect of RED becoming an approved UNFCCC methodology, thereby enabling RED funding through either the voluntary or the compliance markets. Within the approach, the Bank has already indicated that the temporary crediting approach to non-permanence is to be abandoned.

Concerns are that the negotiations over price may become political and that the prospect of this might prove a disincentive to private sector participation, and would have macro-economic implications for the global costs of RED. Additionally, the Bank is apparently choosing not to trial a phased project/national approach that has been proposed to enhance the capacity of the private sector to engage in RED funding and implementation.

Crucially, no mention was made of the risk of funding not being able to achieve the goal of RED. This is explored further in Chapter 8.

## Chapter 8

### RED Payments for Environmental Services

#### 8.1 Objective

To identify, illustrate and discuss the principle factors that will influence the outcome of a national level RED PES scheme.

#### 8.2 Context

In response to the general inadequacy of existing forest conservation approaches, recent developments in conservation theory and practice include the promotion of direct payments to landholders for the provision of environmental services (Ferraro and Kiss, 2002). Such schemes have proved highly effective in the developed world at specific water catchment levels, for example, with both New York City and Vittell mineral water paying farmers to adapt their practices, such that a clean water supply is assured and substantial costs are avoided (Appleton, 2002; Perrot-Maitre, 2006). If the efficiency and potential of this direct approach could be combined with carbon market finance, direct payments to landholders could be used to compensate them for the carbon sequestration of standing forests.

A payments for environmental services (PES) scheme is defined as a *voluntary* transaction, where a *well-defined* ES is *purchased* from a *provider* on the *condition* that the provider secures the provision (Wunder, 2005). Conceptually, the RED negotiations as a whole can be viewed as attempting on a global scale to *define* the level of carbon sequestration services *provided* by tropical nations, and the *conditions* of their provision under a global scale PES *purchase* by the developed world, through a CDM or equivalent market based scheme. Associated complications are many, such as the extent to which this transaction offsets other pre-existing domestic obligations of the purchaser (supplementarity) and the extent to which the provider has any pre-existing duty or ability to provide such service in the absence of payment (such as through UNFCCC or UNCBD).

The focus of the negotiations to date has been on these high level issues, as without a UNFCCC resolution compliance demand will not be available to meet any issuance of RED credits. The voluntary market is not held back by this process, though at present lacks scale. In these global negotiations, the achievability of RED at a national (meaning ‘in-country’) level has not been a focus. Additionally, the ‘climate-only’ mandate of the UNFCCC, and the principle of sovereignty, precludes the consideration of such ‘local’ issues in the international forum. The WBFCPPF proposals are sensitive to this issue, with the *how* RED is achieved at national level not being any part of the *ex post* verification, though importantly it was noted as being a key part of the ‘buyers’ decision when selecting which country readiness plans to back. The ‘market’ thus exerts its influence in the politics of the FCPF.

### **8.3 Key issues**

#### *8.3.1 Capacity*

Of fundamental importance to all aspects of implementing any PES is a nation’s capacity to do so. Key capacity requirements include data (past, present and modelled), adequate human, financial and technical resource and a legal framework encompassing tenure, PES and protection. The scale of the challenge of operating a national system is well illustrated by the necessary ability to distribute funds from the nation’s central treasury, through multiple layers, down to an individual landholder. An interviewee noted the associated problem of rent extraction by state authorities, and the need to incorporate land-use planning given the impact that road building, for example, can have on the opportunity costs of conservation.

Capacity building may also include the establishment and empowerment of new institutions to set and enforce environmental targets, independent of national or local politics, to place these decisions and processes beyond the realm of politicians. Such a move might send a powerful signal of intent, akin to the UK government’s delegation of interest rate setting to the Bank of England in 1997. Beyond an improved prospect of delivery, such political will might also enhance the valuation of a nation’s RED credits through an improved prospect of permanence. The advent of increasingly sophisticated remote sensing will allow a fundamental change in data collection and management. Ground-truthing will be required as a part of this, and well-coordinated and trained community teams could undertake this cost efficiently.

### 8.3.2 *Baselines*

Credible baselines are critical at all scales. Additionality in the Costa Rica's PES scheme has been questioned; at the national level forest transition had reversed the declines prior to the scheme's implementation (Wunder, 2005) and at local levels absentee holiday cottage owning landlords are found to be in receipt of PES funding (Miranda *et al*, 2003). Alternatively an interviewee with experience in Indonesia suggested that in time "everything will be lost", such that any programme that secures forest should be regarded as additional. Such extremes indicate the range of perceptions that need to be addressed in determining, communicating, monitoring and enforcing a credible baseline. Equity issues come to bear as previously discussed, though the efficient allocation of PES funds would distribute only where there was an imminent risk. Existing sustainable stewardship might in that case be seen to be penalised, thereby suggesting a risk of perverse incentives.

The key issue to manage is how to deal with scale in a credible manner; at what level should baselines and targets go down to? Should historic deforestation/degradation rates be used? At what scale are historic numbers available? The advantage of RED against other PES schemes such as water or biodiversity is that it can be accurately measured and observed at small scale, but the costs of doing so would be high. Alternatively an averaged regional baseline could be used, but that threatens credibility and suggests 'hot air' for some and unachievable targets for others. A theoretical alternative might be some type of auction system, similar in a way to the Australian Bush Tender or Eco Tender initiatives, though this level of sophistication might be unrealistic for some developing countries.

### 8.3.3 *Permanence*

The risk of non-permanence has certain implications for the operation and likely success of a RED PES scheme. It is important that land users are encouraged to maintain the forest over time by a continued revenue stream that is contingent; this will require ongoing monitoring, enforcement and distribution. The benefit to the land users could be in kind, though it must be communicated that the service or benefit received is contingent on the health of the standing forest. An excellent example of such practice is the provision of educational, medical and religious services to

indigenous people in Amazonas, all of which is ‘branded’ to ensure that the connection to the standing forest is recalled (Viana, 2005).

The longevity of the annuity payment is an interesting issue. Interviewees suggested that such a payment would need to be “forever”, which is beyond the realm of any market. Risk over the future price of carbon could be mitigated through developing markets for the other environmental services of standing forests, such as biodiversity.

#### *8.3.4 Leakage*

Leakage has been a key concern in past negotiations, now seemingly resolved at UNFCCC level by RED accounting at national level. The sub-national issue remains however and will need expert management. One of the key issues concerned is the incentive of a landowner or project manager. If efforts in one location are successful in achieving RED, but are offset elsewhere such that the nation shows no net gain, what should happen? To maintain incentive for the next year, successful projects/areas should be rewarded. If the state undertakes this, should there be a corresponding sanction against failing projects? If there is a sanction, would that act as a disincentive to join the scheme in the first place?

The WBFCPF proposal that projects can be considered so long as the host country underwrites national leakage addresses this point. It is to be hoped that host countries see the potential of granting such a guarantee to project proponents that commit capital and expertise to innovative solutions to RED. Such an approach has clear synergies given that some of the measures to combat RED will involve national scale (and state level in the case of Brazil), such as fiscal measures and protected area enforcement. Notwithstanding these synergies, the proposal of the WBFCPF is disappointing in that the ‘nested’ approach (Pedroni and Streck, 2007), whereby private sector projects can be credited without any such guarantee, is not being piloted.

#### *8.3.5 Who to pay?*

Wunder’s (2007) discussion of who to pay includes a forestry example illustrating well the “value chain” involved. He suggests that payments to the different stakeholders need to be sufficient “to form a politically resistant conservation

alliance”. “Activity capping” and its impact on downstream employment also suggests that economic and social welfare issues need *active* management and coordination: people need to be and feel gainfully employment. The impact of policy on the most vulnerable must also be assessed in this context, where access to previously ‘free’ resources may be curtailed with no theoretical need for compensation, but a clear social need. Certainly the criteria that payments/benefits are made to resemble a regular income is valid, but there is also the psychological factor of how people spend their time.

The targeting of incentives is also raised by Wunder, who suggests that the greatest impact (with limited funds) is to be achieved through changing marginal behaviour, rather than that with the greatest opportunity cost. For RED, it is widely accepted that there is a supply curve of potential savings and the application of different policy approaches along that curve needs to be managed efficiently.

#### 8.3.6 *Transaction costs*

PES schemes are found to be more efficient, but note is made of the “establishment of an institutional context” needed for implementation, and of the need to “minimise transactions costs, design and target effective contracts and enforce property rights once they are claimed” (Ferraro and Simpson, 2002). Wunder (2007) gives transactions costs on the ‘buy side’ of 7% in Costa Rica, with participants paying 12-18% for certification. For RED schemes, there would be relatively high set-up costs, as broadly indicated by the WBFCPF balance of funding between the readiness and carbon funds. The role of ODA in funding such establishment costs can certainly be argued. RED is unusual in costs, in terms of performance payment being *ex post* and being associated with carbon credits that may be readily fungible into the carbon market (though a price risk exists). RED is also a scale operation, which mitigates the set-up costs to an extent.

#### 8.3.7 *Equity*

Any RED PES scheme must be perceived to be fair for its long-term acceptance to be assured, though Wunder (2007) does suggest that the need for efficiency will conflict at times. The issue of who to pay touched briefly on the issue of the forest poor, and considerable literature addresses this issue (Chomitz, 2006; Landell-Mills and Porras,

2002). Standards (CCBA, 2005) and specific programmes (WWF, 2006) are also being devised. The broader issue of equity, or fairness, is fundamental to RED PES given the social, political and economic implications of removing deforestation as an open access good at all scales. There are many issues involved in re-engineering a developing country 'off' a deforestation 'habit' and onto a more sustainable development path.

#### **8.4 Conclusion**

Given the economic driver of deforestation, PES appears ideally suited to address its principle cause directly and efficiently. It cannot be *assumed* to be successful, however, and will require capacity and active management at all levels, with local knowledge particularly important. Many of the issues that nations are struggling with on the international stage are repeated, though greater political will might be expected to be exerted within one nation's boundaries.

Although this review has focussed on PES, all of the different policies and measure available must be used as appropriate; expansion and enforcement of protected areas can be expected to be enhanced with the prospect of carbon finance, just as individual private lands and their stakeholders can be targeted by PES.



## Chapter 9

### Conclusions and Recommendations

This dissertation aimed to assess the complex and interconnected environmental, political and economic aspects of deforestation, and to suggest how progress can be made.

Deforestation is a global problem; it is especially harmful to the atmosphere, to biodiversity and to the fragile landscape exposed by clearing. Although this has been acknowledged for many years, the policies and measures employed have not been successful, as they have not addressed the root cause of the problem. Simply, it is often more profitable to change land use than to conserve tropical forest.

The issues surrounding deforestation involve a complex mix of economic, political, social and environmental factors, and difficulty in aligning these issues across many diverse nations was identified.

With the advent of the carbon market, it is realised that a solution may be at hand. It has been proposed that developing nations volunteer to undertake to reduce deforestation, in return for carbon credits that can be sold in the carbon market. Negotiations on this proposal have been ongoing for 2 years and a number of obstacles have been identified by various different parties to the UNFCCC.

This research has found that some of these issues are very much more substantive than others and that progress can be made on a number of fronts.

Critically, major developing countries cannot agree amongst themselves on whether such a conservation approach should be funded by the carbon market or an ODA type fund. It is recommended that *both* ODA *and* the carbon market are needed. The carbon market has been found to offer both the scale of finance and the level of implementation expertise that is required. ODA is recommended to be applied to both

capacity building and to ‘smooth’ issues of equity, such as offering compensation for stabilised levels of deforestation.

For the carbon market to be engaged successfully in this way, it is recommended that deeper cuts in developed country emissions are committed to. Additionally, a long-term policy framework is needed to give greater visibility for private sector investment decisions to be taken. A degree of scepticism over the role that the carbon market can play was found, and it is recommended that participants in the carbon market create global institutions and governance structures that encourage greater confidence over time. These actions will contribute to the carbon market being able to supply the long-term replacement income that tropical landholders will require as compensation. In addition to the sale of carbon sequestration, it is also recommended that markets in biodiversity and other environmental services are developed further to finance forest conservation.

The global potential of both the CDM market and the voluntary carbon market was identified. It is recommended that deeper emissions cuts are used to justify the rapid expansion of the CDM market; notwithstanding arguments by some that efforts should be concentrated on domestic developed cuts. It is recommended that *both* CDM and domestic cuts are needed. The voluntary market is expected to be a source of significant investment flows and it is recommended that policymakers take into account the practicalities of private sector investment when setting policies. The value of the innovation of private sector voluntary funds was identified with reference to the WBFCPF.

It was found that the UNFCCC negotiations are struggling to reconcile the principles that protect developing countries from commitments with the urgent need to reduce deforestation. Given the environmental damage that is now observed to be happening, it is recommended that policymakers from all countries exert greater political will to save the global commons.

The issue of allocating capital within developing countries was identified as challenging. It was recommended that the processes involved would benefit from the assistance and scrutiny of external investors. It was agreed that PES schemes look

ideally suited as a mechanism but recommended that the scale of this challenge be recognised and preparations be made. In particular, it is recommended that payments to landholders be made in a way as to replicate income, rather than a capital ‘windfall’. Further, it is recommended that payments to landholders are ‘branded’ as being linked to the standing forest. It is also recommended that PES schemes are monitored and adapted to address current and anticipated pressures to deforest. It is also recommended that the appropriate mix of policies be employed to suit both the external pressures to deforest and the land ownership and stakeholder structure.

The political and social risks that developing countries will be assuming by re-engineering deforestation out of their economies was identified. It is important that the commitment being asked of developing countries is matched by a reliable revenue stream. At the same time, it was identified that price expectations for RED carbon credits might be based unreasonably on the current EU ETS price, which more resembles the value of strategic energy switching in Europe. A level of misinformation was found to exist in this way and it is recommended that greater awareness of the carbon market be promoted to address these issues and avoid political issues over price. The development of the non-EU ETS carbon market is a priority, achieved through broader cuts in the EU and relaxing restrictions on the use of CERs (alongside deeper cuts as above).

The importance of the 2012 negotiations for RED policy was highlighted. There exists the potential to engage meaningfully the developing world in the post-2012 architecture. Simultaneously, deforestation could be reduced. This prospect is truly enticing, and it is recommended that this opportunity is seized by all.

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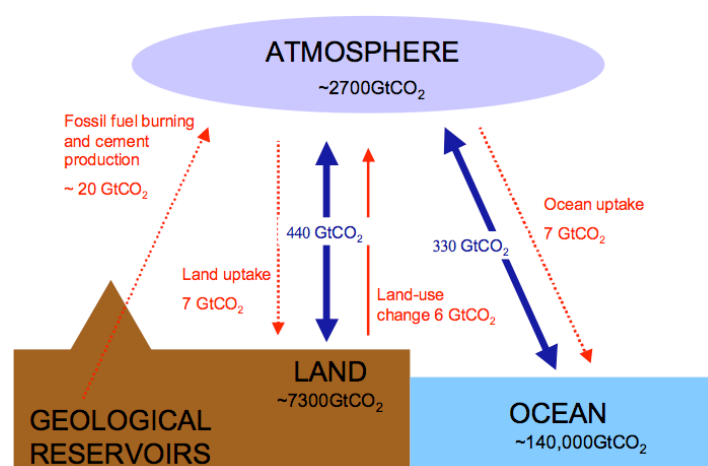
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## Appendix 1

### *The carbon cycle, forests and carbon accounting*

The storage and cycling of carbon is an important biogeochemical cycle (Figure, 4.1). “Full carbon accounting” looks at all flows and net changes, whereas the Kyoto Protocol’s scope considers only human induced changes (IPCC, 2000). There is a general level of agreement over fossil fuel emissions, atmospheric uptake and oceanic exchange. There is however continued uncertainty (despite recent progress in remote monitoring) over the scale and attribution of, and between, the land/atmosphere flux and LULUCF emissions (IPCC, 2007; UNFCCC, 2006c). This uncertainty over ‘residual’ flows is an important difference between LULUCF and fossil fuel emissions (which are *only* human induced) and it contributed to the delayed and more restrictive compliance regime for LULUCF (Schlamadinger *et al*, 2007). As scientific knowledge improves, the compliance regime may move at some point in the future from a “human induced basis” to a “full carbon accounting” basis capturing all LULUCF flows.



Carbon, shown as CO<sub>2</sub>, is stored in and exchanged between the atmosphere and terrestrial ecosystems through the natural processes of photosynthesis, respiration and decomposition, and also through anthropogenic fossil fuel burning and LULUCF activity. The natural processes, represented in blue, are seen to be in broad balance. Approximately half of the anthropogenic releases are absorbed back through ocean and land uptake, in part through the enhanced ‘fertilisation’ effect of a CO<sub>2</sub> enrichment, increased forest area and currently increasing carbon stock densities in the middle and higher altitudes (IPCC, 2000). The overall net effect human activity is an increasing concentration of CO<sub>2</sub> in the atmosphere. To achieve atmospheric stabilisation of GHGs, releases and uptake must be in balance.

**Figure A1 The global carbon cycle**

(Stern, 2006; derived from IPCC)

## Appendix 2

### Submission Analysis

The value of analysing these submissions is to gain a direct understanding of Parties' views, preferences and negotiating 'bottom lines'. These in turn allow a clearer understanding of the likelihood, nature and timing of the eventual outcome of the RED negotiations.

The previous 'groupings' of submissions had rationalised to an extent, with the 'CRfN group' submission now representing 17 nations, a 'Central American group' submission representing 9 nations, a 'Central African group' submission representing 6 nations and the 'EU group' submission (though it is noted that some nations supported more than 1 proposal) (UNFCCC, 2007a; UNFCCC, 2007b). This grouping process could be viewed as both a 'settling down' over time as nations established and discovered their respective positions and also the adaptation of submissions, by accommodating the views of others, in order to gain broader support for a particular way forward. An example of this is the adoption and promotion of a 'stabilisation fund', to support nations with low deforestation rates, by the CRfN group. The group and other significant individual proposals are analysed and discussed below:

#### 2.1 'CRfN group'

Jointly submitted by Bolivia, Central African Republic, Costa Rica, Democratic Republic of the Congo, Dominican Republic, Fiji, Ghana, Guatemala, Honduras, Kenya, Madagascar, Nicaragua, Panama, PNG, Samoa, Solomon Islands, Vanuatu.

##### *Substantive elements:*

- **REDD Mechanism** to incentivise emission reductions from forested areas at a national level;
- **REDD Stabilisation Fund** to support stable forests at a national level in event of low historic deforestation rates;
- **REDD Enabling Fund** for capacity building and pilot activities;
- REDD Mechanism to be market or non-market based;
- REDD Stabilisation Fund "not sustainable" in absence of funding from ERU levy, carbon tax, ODA, voluntary or other;

- “reference scenario” for REDD mechanism determined by “reference emissions rate” after a “development adjustment factor”;
- use of IPCC Guidelines and GPG; credit for early action; deeper Annex B cuts a pre-condition.

***Discussion:***

The submission is a development based on the original PNG position, expanded to accommodate both stabilisation and development processes. Enthusiasm for market mechanisms is apparent, though there is significant flexibility in the proposal to allow for sovereign rights, such as selecting a non-market approach. **The submission highlights the importance (and concern over source of funding) of the Stabilisation Fund with a reference to it possibly being “not sustainable” in the absence of such funding.** The apparent desire for broad appeal results in a reduction (or ambiguity) in detail on some issues. For example, permanence provisions from the initial COP11 submission are omitted, and a similar lack of clarity on degradation appears to have led to a separate Central African submission. There is added value in achieving the support of 17 disparate nations though perhaps a concern that any desire to be accommodative may mask intra-group differences at a more detailed level.

## **2.2 ‘Central American group’**

Submitted by Costa Rica on behalf of Costa Rica, Dominican Republic, Guatemala, Honduras, Mexico, Panama, Paraguay and Peru; supported by Ecuador.

***Substantive elements:***

- national **RED Mechanism** via both market (including CDM) and non-market mechanisms;
- **Avoided Deforestation Carbon Fund** for RED activities and to maintain stocks where current low deforestation; “fed” by ERU levy or Annex 1 carbon tax;
- **Enabling Fund** for capacity building, sourced in part from ODA;
- credit for early action.

***Discussion:***

Notwithstanding the slightly different terminology, there is clear commonality with the CRfN proposal and overlap in the Parties supporting both. It is also more succinct with fewer principles, annexes, opinions and options, suggesting that despite the

separate submission there are not substantive differences in core policy requirements from CRfN.

### 2.3 ‘Central African group’

Submitted by Gabon on behalf of Central African Republic, Cameroon, Congo, Equatorial Guinea, Democratic Republic of the Congo and Gabon.

#### *Substantive elements:*

- **REDD Mechanism** to support gross reductions in RED made nationally on a voluntary basis;
- **Stabilisation Fund** to support maintenance of forest cover where low deforestation; supported through ‘tax’ on REDD credits plus ODA, taxes on high carbon footprint products in Annex 1;
- **Enabling Fund** for capacity building;
- definition of deforestation emphasised to include degradation;
- specific proposals on mechanics of distribution from the Stabilisation Fund including recognition of total forest area and classification of areas within that (such as certified, protected)
- “constant demand” essential to match new supply; credit for early action.

#### *Discussion:*

Again there is high commonality with CRfN proposal and overlap in supporting nations. **However, it is stated as being supplemental to the CRfN submission in order to “put special emphasis on avoided degradation” and to introduce the “distribution key” to share the proceeds of the Stabilisation Fund.** This desire to emphasise the inclusion of degradation implies that the CRfN position on degradation is different, or ambiguous, despite implying its inclusion under the broad banner of deforestation in the original PNG submission (UNFCCC, 2005c). **Additionally, the emphasis on the “distribution key” suggests that the existence, funding and distribution of a Stabilisation Fund will be a key component of the Central African group’s bottom line in the negotiations.**

### 2.4 The EU

Submitted by Germany on behalf of the EC and its member states; supported by Bosnia and Herzegovina, Croatia, Serbia, The former Yugoslav Republic of Macedonia and Turkey.

***Substantive elements:***

**Up to end 2012:**

- a “preparatory scheme” is proposed to build monitoring, reporting and baseline capacity;
- positive incentives for early action to be assessed, possibly based on voluntary funding from developed countries, World Bank or on an Activities Implemented Jointly (AIJ) basis (as existed prior to, and contributed towards the development of, JI and CDM);

**Post 2012**

- “concrete policies and actions for RED depend on the development of the negotiations for an agreement on post 2012 climate change mitigation action”;
- emphasis on need for national baseline/reference period, but targets for emissions reductions against these should be “ambitious, yet realistically achievable” taking into account national circumstances;
- use of IPCC guidelines, remote sensing and ground-truthing;
- leakage minimised through use of national basis and an implication that degradation will need to be accounted for;
- non-permanence addressed by any of temporary credits, reduced future incentives, inter-period credit and debiting, or mandatory banking of a proportion of emission reductions.

***Discussion:***

**The key point is that both the structure and content of the submission underline the importance that the EU place on linking the ultimate ‘deal’ on RED to the post 2012 negotiations.** This linkage of RED to post-2012 is of fundamental importance. RED has the potential to bring about a greater level of engagement by developing countries and a flow of sustainable development funds into Africa, where CDM has so far failed. However for RED, this linkage will likely result in a significant impact on timing. Post 2012 negotiations are due to start in earnest in Bali (December, 2007) and are expected to be given 2 years to negotiate (this may well of course be longer). Thus SBSTA’s Bali recommendations to the COP on RED may



well progress RED in terms of intentions and ‘wish statements’, but concrete policies and incentives will likely not become confirmed until the post 2012 architecture is finalised. The impact of this is to increase and extend the period in which any private funding deployed in the RED will demand a higher risk premium, which in turn translates into lower RED prices for rainforest nations (in the absence of remedies such as sovereign guarantees).

There is also emphasis in the submission on ensuring that the reductions are real; underlined by the proposal of ambitious targets, suggesting that the EU’s desire for developing countries to engage meaningfully in the post-2012 architecture will not be at the expense of a ‘loose’ incentive framework. An interest in the national policies employed by to achieve RED is also expressed, albeit whilst “respecting the sovereignty of countries”. There are several references to the existing commitments of developing countries under UNFCCC though the submission accepts that existing provisions and mechanisms have not proved to be sufficient to curb deforestation. Overall the language underlines a potential frustration were RED to be viewed by rainforest nations as entirely voluntary.

## **2.5 Brazil**

### ***Substantive elements:***

- **RED Incentives** but “not an avoided deforestation” scheme distributed from a fund;
- RED must represent real additional reductions of emissions relative to a “Reference Emissions Rate” (RER) rather than “virtual” reductions based on modelled future rates of deforestation;
- no fungibility between RED credits generated and Annex 1 Kyoto commitments; participation voluntary, never giving rise to any future obligation, albeit RED debits would be deducted from future incentive payments if emissions increase against RER;
- reductions based only on *ex-post* results; RED payments based on a contracted (though reviewable) carbon price

### ***Discussion:***

Given the centrality of Brazil’s rainforest to the meaning and effectiveness of any final agreement, the fact that this proposal is both so out of line with the consensus developing around RED and so uncompromising in its language, represents

potentially a major stumbling block to the negotiations. **Brazil's ruling out of fungibility, and the suggestion of a contracted price, would likely compromise the ability of the mechanism to generate demand from commercial sources, relying therefore solely on ODA type funds.** Further, the **apparent insistence on only real reductions in actual emissions (rather than an improvement against a trend or model) rules out the participation of historically low deforestation nations where deforestation pressures may be set to increase, or stable countries with ongoing funding needs for programmes.** Having said that, the approach on modelling future scenarios is different to the approach taken by the State of Amazonas, as illustrated in the (Viana, 2005). **It also undermines the potential for the international community to anticipate future deforestation drivers and trends and thus allocate funds efficiently and proactively.**

## 2.6 India

### *Substantive elements:*

- **Compensated Conservation** proposed, whereby maintained or increased forest carbon stocks from a previously set baseline are compensated.

### *Discussion:*

The submission focussed on the achievements of the strong policy framework for forest conservation in India, rather than on fleshing out the proposal and any mechanism. Reviewing their presentation from the second workshop there appears anguish on the part of India at the “Brazilian NGO” inspired (referring to Santilli *et al*, 2005) proposal of PNG to reward “failure” (being improvements in forest loss) rather than “success” (being stable or increasing forests). **Given this context, the compensation proposal for increased forest carbon stocks could be seen as a negotiation ‘bottom-line’ along the lines of ‘if reduced forest emissions are to compensated, then forest conservation must be as well’.**

## 2.7 Vanuatu

### *Substantive elements:*

The submission contained details of 3 different incentive methodologies, each developed by a different organisation, all of which are being assessed within the ongoing **Vanuatu Carbon Credits** project (from which there are at present no findings):

**Carbon Stock Approach** *(developed by the Centre for International Sustainable Development Law)*

- Non-tradable “Carbon Stock Units” are issued equal to the assessed “Assigned Carbon Stock” (above ground carbon stock);
- a protected reserve is established, covering all forest that is not at threat from deforestation or sustainable development;
- a “Carbon Stock Mechanism” allows trading of credits issued on the approval of a project’s conservation plan for any forest area outside the reserve; permanence addressed through temporary crediting.

**Sectoral Crediting Baseline Approach** *(developed by consultancy GtripleC)*

- a sectoral approach for developing countries voluntarily to take on a LULUCF sector commitment ;
- again based on carbon stock (rather than emissions reductions) performance against a BAU stock baseline over a management period;
- project activities for defined areas are then authorised by the host country and contractually awarded credits on basis of performance (contract allows forward sale into carbon market to finance the activity); permanence addressed either by temporary crediting or host country guarantee.

**Direct Barter Approach** *(developed by Victoria University, Wellington, New Zealand)*

- a global ecosystem services exchange, with the UNFCCC acting as “Direct Barter facilitator”;
- “Direct Barter Assets” (DBA) would include both “mandatory” (a minimum, verified carbon stock with leakage and permanence provisions) and “voluntary” (encompassing additional co-benefits to enhance the overall appeal of the DBA to buyers) components;
- DBAs and DBA buyers could then be matched through a register administered through the UNFCCC, allowing bilateral national government transactions to protect the global commons as a ‘trade’ for sustainable development assistance.

**Discussion:**

Given Vanuatu’s front-line exposure to climate change, it is not surprising that a detailed, thought-provoking submission was made using ideas ‘imported’ from institutions contributing to the plight of this small island state. Each of the approaches

has interesting features and can be seen to operate at different scales. The **Carbon Stock Mechanism** is designed both to identify forest at risk and then to release sufficient up-front value to incentivise forest protection. Although based on initial ‘stock’ rather than attributed and verified ‘flow’ benefits (thereby risking ‘hot air’), the scheme has compensating conservative elements such as the non-tradability of the reserve units and the non-inclusion of soil carbon. The scheme’s main advantages over the ‘baseline and credit’ approach are the **upfront value released and the decentralisation allowed to the private sector to propose and implement local solutions outside the reserve, once the initial national reserve quantum and location has been agreed upon** (which is acknowledged as likely to be difficult, in a similar way to agreeing a baseline). The **Sectoral Crediting Baseline Approach** adopts a similar ‘stock’ approach, with the country agreeing a future carbon stock ‘target’. If this is achieved or exceeded, credits are issued at a national level. National retention efforts are augmented by private sector projects, contracted with the host government, for specific geographic areas.

Notwithstanding their methodological differences, both the above approaches recognise the importance of mobilising private sector capital towards forest retention, such that sufficient incentives can then be targeted efficiently. The **Direct Barter Approach** is quite different and is based on the premise that very large-scale transfers may lie beyond the capacity of the private sector and instead require inter-governmental transactions. In addition to scale, the emphasis on non-carbon ecosystem services is positive, and some non-market bilateral schemes could be envisaged, especially for nations where there is a close economic reliance on the ecosystem services provided by a neighbour (such as neighbouring states within Amazonia). However the efficient allocation of the scale of transfers envisaged requires a price signal and any notion of ruling out the role of the market rather than increasing it goes against the grain of Stern’s economic conclusions (Stern, 2006).

## 2.8 Indonesia

### *Substantive elements:*

- **REDD Mechanism** supported, open for both market and non-market mechanisms “depending on the readiness of each country”;

- **Forest Climate Related Mechanism (FCRM)** to reward SFM activities not captured by REDD or A/R CDM, such as policies to tackle specific national drivers of deforestation or enhance soil storage of carbon;
- the “reference case” sets a “forest fraction” by use of population density, and defines areas of undisturbed and disturbed forest;
- REDD payments are made on the basis of carbon stock in defined “targeted areas”; carbon stock may change over time in disturbed areas (for re-growth) but is assumed to be constant in undisturbed areas; leakage is addressed by monitoring forest fractions in the “administrative areas” in which the targeted areas are located.

***Discussion:***

The submission clearly supports RED within a framework that both introduces **population density** as a determining factor and accounts for **degradation** through the different classifications of forest disturbance. **There is criticism of the low volumes of A/R CDM into Indonesia, blamed in part on the overly restrictive definitions and rules in place.** It is this that has led in part to the promotion of the FCRM, as a ‘catch-all’ for SFM policies that are prevented in such ways from benefiting under the current A/R CDM or any future RED mechanism.

## **2.9 Tuvalu**

**Substantive elements:**

- **Forest Retention Incentive Scheme** established;
- within this community funding for reserves or SFM to be provided through **Community Forest Retention Accounts**, designed to provide initial funding and then an income from interest (“as a rent for environmental services”);
- **Forest Retention Certificates** (based on CO<sub>2</sub> abatement) to be issued by nation (to reduce transaction costs of CDM) after a period; redeemable in part after a further period on 3<sup>rd</sup> party verification;
- funding by an **International Forest Retention Fund**, itself funded by governments, international financial institutions, corporate donations and NGOs.

**Discussion**

Tuvalu’s vulnerability to climate change is well known and is said by them to lead to “extreme sensitivity” over any schemes that risk the creation the creation of “false” carbon credits. **They would appear not to accept the premise that deforestation**

**leakage and permanence (the two risks they cite) can be addressed with confidence and consequently are against market mechanisms, notwithstanding the fact that this stance makes funding more difficult.**

There were additionally individual submissions from Argentina, Australia, Chile, Colombia, Dominican Republic, Japan, Malaysia, Mexico, Nepal, New Zealand, South Africa, Thailand and Paraguay. From review, these submissions did not contain substantive new proposals beyond those assessed above.