

# Can money grow on trees?

Reducing emissions from deforestation and  
degradation (REDD) in developing countries

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The Australian Council for International Development (ACFID) is the peak council for Australian non-government organisations (NGOs) working in the field of international aid and development.



This report is intended to contribute to the debate about climate change and reducing emissions from deforestation and forest degradation in developing countries.

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## Glossary

AR4	Fourth Assessment Report
AAUs	Assigned Amount Units (AAUs)
ALM region	Africa, Latin America and Middle East
AOSIS	Alliance of Small Island States
AWG-LCA	Ad Hoc Working Group on Long-term Cooperative Action
CDM	Clean Development Mechanism (Kyoto Protocol)
CERs	Certified Emission Reductions
CfRN	Coalition for Rainforest Nations
CFRT Accounts	Community Forest Retention Trust Accounts
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> -e	Carbon dioxide equivalent
COMIFAC	Central African Forestry Commission
COP	Conference of the Parties
GDP	Gross Domestic Product
GEF	Global Environment Facility
GtC	Gigatonnes of carbon
GtCO <sub>2</sub>	Gigatonnes of carbon dioxide
IFIPCC	International Forum of Indigenous People on Climate Change
IFRF	International Forest Retention Fund
IPCCC	Intergovernmental Panel on Climate Change
LUC	Land-use change
LUCF	Land-use change and forestry
LULUCF	Land use, land-use change and forestry
MFCC	Multilateral Fund on Climate Change
ODA	Official development assistance
ppm	Parts per million
REDD	Reducing emissions from deforestation and forest degradation
SBSTA	Subsidiary Body for Scientific and Technological Advice
SRES	Special Report on Emissions Scenarios
UNFCCC	United Nations Framework Convention on Climate Change
UNREDD	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries

## Executive summary

The global response to climate change will likely involve developed countries financing developing countries to reduce carbon emissions from deforestation and forest degradation (REDD). Recent progress through international negotiations for an agreed forest carbon emission reduction scheme highlights the critical imperative for a political commitment to sustainable development outcomes and its potential to reduce poverty.

Changes in how forests are managed in developing countries will directly impact local (often marginalised and voiceless) communities who rely on forests for their livelihoods. REDD financing has the potential to provide opportunities for developing countries through increased employment opportunities, devolution of new revenues, and capacity building in sustainable development practices. However, significant developmental risks remain around the potential exacerbation of poverty through loss of access to land, dislocation of forest communities, deprivation of property rights, and corruption.

The Australian Council for International Development (ACFID) and supporting members are acutely aware of the need to identify both the risks and opportunities of any forest carbon emission reduction scheme from a sustainable development standpoint. This is essential to ensure that any internationally agreed scheme does not disadvantage those living in poverty and that the potential benefits are distributed equitably.

This report provides an overview of proposed forest carbon emission reduction schemes that have been put forward and discusses their benefits and disadvantages. Particular emphasis is placed on the Australian Government's proposal, which is used as the basis for analysing the opportunities and risks associated with market-linked REDD schemes. Key findings are presented to indicate how Australia's role in developing an international REDD scheme could address sustainable development and be accountable to affected communities.

### *What is REDD?*

The basic premise of REDD is to financially compensate developing countries that reduce carbon emissions from deforestation and forest degradation. This definition has been extended to include the maintenance and enhancement of forest carbon stocks (collectively known as REDD-plus).

### *Current situation*

Over the past few years, increasing attention has been paid by policymakers to ways of reducing emissions from deforestation and forest degradation and of maintaining and enhancing forest carbon stocks in developing countries. This is partly due to the fact that deforestation currently accounts for 12 per cent of annual global carbon dioxide (CO<sub>2</sub>) emissions. Without measures to reduce these emissions, there are concerns that it will be impossible to prevent human-induced warming exceeding 2°C above pre-industrial levels, a commonly cited threshold for dangerous climate change. Reducing deforestation and forest degradation emissions is also considered to be a cost-effective mitigation strategy. In addition, REDD-plus programs could generate a number of incidental benefits, including biodiversity conservation and the promotion of sustainable development in developing countries.

## What would an international REDD-plus scheme look like?

### *Activities that would be covered*

An international REDD-plus scheme is likely to cover five types of activities:

- reducing emissions from deforestation
- reducing emissions from forest degradation
- conservation of forest carbon stocks
- sustainable management of forests
- enhancement of forest carbon stocks.

These activities can be broken into two broad groups:

1. those concerned with the reduction of emissions (deforestation and forest degradation)
2. those concerned with the maintenance and enhancement of forest sinks (conservation and enhancement of forest carbon stocks and sustainable forest management).

### *Type of REDD scheme*

A REDD-plus scheme would provide incentives to actors in developing countries to undertake emission reduction and sink maintenance/ enhancement activities. Proposals to achieve this can be viewed on a spectrum – at one

end purely market-based schemes, at the other fund-based mechanisms and in between the two hybrids that combine various aspects of the market-based and fund-based approaches.

Under a market-based scheme, countries that reduce REDD emissions below a pre-set baseline (or reference level) would receive credits that could be sold in carbon markets and used by purchasing nations to meet their international mitigation obligations. These credits could be used to offset emissions from other sectors and therefore would not normally result in a net reduction in global emissions; they would merely redistribute them.

Fund-based schemes involve the establishment of one or more international funds to finance REDD activities or to provide incentives for countries to address REDD issues. The resources needed to operate these funds could be derived from a number of sources, including direct transfers from developed countries and taxes/levies on polluting activities, for example international transport. The key difference between market- and fund-based schemes is that the latter would not generate tradeable offset credits that could be used by developed countries to meet their international mitigation obligations.

A hybrid scheme would mix attributes of both the market- and fund-based approaches. At this point it appears likely that any future REDD scheme will be a hybrid, using direct funding for capacity building and demonstration projects and, over time, evolving into a market-based scheme supported by national-level accounting. While the market-based scheme would cover most REDD-related activities, some may be advanced through direct funding, for example forest carbon-stock conservation and enhancement.

### Australian proposal

The Australian Government has proposed the establishment of a hybrid REDD scheme. When fully operational, the scheme would see a national forest-emission level agreed for each participating developing country. The national forest-emission level is intended to be 'a conservative projection of future anthropogenic net emissions' from the forestry sector (i.e. emissions in the absence of additional mitigation measures). The level would be set having regard to historical emissions, pre-existing emission reduction measures, population growth, drivers of deforestation and other factors.

The forest-related activities covered by the scheme would include deforestation, forest degradation, and afforestation and reforestation, with activities relating to forest carbon stocks presumably dealt with through another mechanism. Participating developing countries able to bring their forest emissions below the national forest-emission level would be allocated tradeable forest carbon credits. This market-based scheme would be complemented by financing for readiness and capacity building; how this element of the proposal would operate is unclear, although it is likely to involve bi- and multi-lateral funding arrangements.

## Opportunities and risks associated with market-linked REDD schemes

Table ES1 summarises the main opportunities associated with market-linked REDD schemes. The crucial attribute is that these schemes could potentially lower abatement costs for developed countries while simultaneously providing developing countries with access to the resources necessary to reduce REDD emissions. A well-designed and administered REDD scheme also offers several 'incidental' benefits, namely the preservation of the ecosystem services provided by forests and the promotion of sustainable development and improved governance in developing countries.

**Table ES1: Opportunities associated with a market-linked scheme**

Opportunities	
Lower abatement costs for developed countries	Market-linked REDD schemes provide developed countries with access to cheap forms of abatement, which lowers the cost of reducing greenhouse gas emissions.
Greater access to financial resources	A major weakness of fund-based approaches is the fact that they are unlikely to generate sufficient resources to significantly reduce REDD emissions. A market-linked scheme has the potential to provide greater access to resources.
Sustainable development benefits	In order for a REDD scheme to succeed, it will need to address the underlying drivers of deforestation, including poor governance, fragile systems of land tenure, poverty and a lack of education. If the scheme makes inroads into these issues, it will assist in promoting sustainable development in developing countries.
Complementary environmental benefits	An effective REDD scheme offers the potential to simultaneously generate climate benefits and other broader environmental benefits related to the preservation of the ecosystem services provided by forests, for example biodiversity, soil stability, regional rainfall regulation, and flood defence.

While market-linked REDD schemes offer a number of benefits, they also come with several risks, summarised in Table ES2.

**Table ES2: Risks associated with a market-linked scheme**

Risks	
<b>Climate</b>	<b>Additionality:</b> describes the risk that REDD credits will be generated for reductions that would have occurred in the absence of the REDD scheme. If this occurs, it could result in additional emissions.
	<b>Measurement:</b> due to the difficulty of measuring REDD emissions, there is a risk that the data used to determine REDD credit allocations may over- or under-estimate actual emissions. If there is an over-allocation, it could result in additional emissions.
	<b>Leakage:</b> leakage refers to either an increase in emissions or a reduction in sinks that occurs outside the national, regional or project boundary attributable to the REDD scheme. If this happens, it could result in additional emissions.
	<b>Permanence:</b> refers to the risk that the carbon stored in forested areas will be fully or partially released as a result of future events. If this occurs, it could result in additional emissions.
<b>Economic</b>	<b>Scheme failure:</b> reducing deforestation and forest degradation emissions is difficult. If the scheme fails to significantly reduce REDD emissions, it could threaten the sustainability of the international climate regime with detrimental social and environmental impacts.
	<b>Reduction in non-forest abatement:</b> refers to the risk that REDD credits could flood the international carbon market, driving down the carbon price and removing the incentive for abatement in other areas.
	<b>Exacerbation of poverty and dislocation:</b> poorly designed and administered REDD programs could exacerbate poverty and cause dislocation as direct actors and related communities are forced to pursue alternative investment and employment opportunities.
	<b>Currency risk:</b> the sale of REDD credits could result in an appreciation in the value of relevant developing-country currencies, thereby diminishing export competitiveness. In turn, this could harm domestic industries and potentially slow development in poor countries, a form of Dutch disease.
<b>Governance and law enforcement, sovereignty, and property rights</b>	<b>Governance:</b> there is a risk of corruption, fraud and misappropriation of revenues in the operation of REDD programs.
	<b>Sovereignty:</b> REDD schemes could threaten the sovereignty of developing countries by exerting undue influence on their ability to determine governance arrangements and land-use patterns.
	<b>Property rights:</b> there is the potential for REDD schemes to harm the interests of Indigenous peoples and other landholders by unjustly depriving them of property rights.

### Critical development issues

While any proposed REDD scheme presents a range of environmental and economic issues, there are a number of critical development factors.

- There is a risk that a REDD-plus scheme could threaten the rights and interests of Indigenous peoples and local communities. It is essential that these rights and interests be given appropriate consideration and protection in international and domestic decision-making processes.
- There is an associated risk that the potential benefits of REDD-plus will not reach the most vulnerable or affected communities. It is essential to ensure not only that those living in poverty are no worse off by any REDD-plus scheme, but that the potential benefits are equitably distributed.
- Demands for REDD financing risk placing pressure on donor government aid budgets, resulting in the potential redistribution of funds from existing programs that may jeopardize progress made in reaching the Millennium Development Goals (MDGs).
- The political imperative for rapid progress on a REDD-plus scheme has the potential to undermine the effectiveness and equity of any agreed international scheme. The continued investment in conception phase projects is critical to ensure any scheme is well designed and administrated.

- Although a market-based approach has the potential to bring significant benefits, we must remain cautious of the associated developmental risks if it is not designed and administered properly. This highlights the need for a staged and gradual approach to the introduction of a market-based scheme based on evidence that the risks can be appropriately managed.

Key findings:

**1. REDD schemes should not exacerbate poverty and should equitably distribute benefits to vulnerable communities.**

Australia should support participating developing countries to ensure that the poorest communities in these countries are not negatively affected by any REDD scheme. This could include by requiring appropriate consultation with affected communities, appropriate devolution of revenues, access to resulting employment opportunities and fair compensation for any foregone benefits at the local level.

**2. The rights of local communities must be supported by social safeguards.**

Australia should ensure that a REDD scheme does not threaten the rights and interests of Indigenous peoples and local communities in developing countries. Furthermore, appropriate social safeguards need to be put in place to ensure local rights and interests are given appropriate consideration and protection in international and domestic decision-making processes.

**3. REDD must be supported by capacity-building activities financed by developed countries.**

Any REDD scheme must be supported by a continuing Australian commitment to long-term capacity building for REDD in participating developing countries and to greater adaptation financing made over and above current aid projections. Such funding should not result in the reduction or redistribution of funds from existing poverty reduction programs.

**4. Weak governance arrangements present a significant barrier to a successful international REDD system.**

Australia should address the significant governance risks associated with any international REDD scheme, including corruption and the misappropriation of REDD revenues. This is particularly pertinent considering the difficulties associated with monitoring land use and the lack of capacity to enforce property and land-use laws and support landholders and others to address REDD in those countries.

**5. An effective international REDD scheme requires participating developing countries to have the systems in place to ensure real emission reductions.**

Australia should ensure that the basic operational requirements for an effective REDD system are established in participating developing countries to ensure legitimacy and environmental integrity, particularly given the barriers to real emission reductions including the lack of reliable, accurate and transparent forest monitoring systems.

**6. A REDD system must rely on an accurate and transparent system for setting emissions baselines and measuring forest carbon emissions.**

Australia's support for an international market-based REDD scheme should be conditional on the establishment of an accurate and transparent mechanism for setting emissions baselines and measuring forest carbon emissions.

**7. The establishment of an international REDD scheme will take time and require continued investment in the conception phase to ensure effectiveness.**

Australia should continue to invest in base-level capacity building and trial and demonstration of REDD projects to ensure any scheme it supports is well designed and administered to mitigate potential adverse impacts. Political and economic imperatives for rapid progress should not undermine the scheme design process.

**8. A staged and cautious approach should be adopted for the introduction of any market-based scheme.**

Although a market-based approach to REDD has the potential to bring significant benefits, we must remain wary of the associated risks. If a market system is not designed and administered appropriately, it could have significant adverse climate, environment, social and economic impacts.

A staged and cautious approach should be taken to the introduction of a market-based scheme. This should start with capacity building and demonstration projects, coupled with an interim fund-based scheme to support early action. Graduation to a full market-based scheme must be contingent on the production of evidence that the risks can be appropriately managed and that the national and international frameworks are sufficiently robust and transparent to support an environmentally and socially credible scheme.



Photo: AusAID/Josh Estey

## 1. Introduction

Changes in land use are currently responsible for approximately 12 per cent of annual global carbon dioxide (CO<sub>2</sub>) emissions,<sup>1,2,3,4</sup> with the combustion of fossil fuels, gas flaring and cement manufacture accounting for the remainder. The vast majority of land-use change (LUC) emissions are attributable to deforestation and most of this is due to the clearing of tropical forests for agriculture and forestry in the developing countries of South and Central America, Africa and Asia.<sup>5,6</sup>

Several studies have suggested that without efforts to address the clearing of tropical forests, deforestation could result in the release of between 80 and 130 billion tonnes of carbon (GtC) (~290–480 GtCO<sub>2</sub>) over the 21st century.<sup>7,8,9</sup> If this occurs, it would substantially increase the atmospheric concentration of CO<sub>2</sub>, and reduce the prospects of keeping human-induced warming below 2°C above pre-industrial levels, a commonly cited threshold for dangerous climate change.

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- 1 R Houghton, *Carbon Flux to the Atmosphere from Land-Use Changes: 1850–2005*. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, Oak Ridge, Tennessee, US, 2008.
  - 2 T Boden, G Marland and R Andres, *Global CO<sub>2</sub> Emissions from Fossil-Fuel Burning, Cement Manufacture, and Gas Flaring: 1751–2006*. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, Oak Ridge, Tennessee, US, 2009. Doi 10.3334/CDIAC/00001.
  - 3 G van der Werf, D Morton, R DeFries, J Olivier, P Kasibhatla, R Jackson, G Collatz and J Randerson, 'CO<sub>2</sub> emissions from forest loss', *Nature Geoscience* 2, 2009, pp. 737–738.
  - 4 C Le Quéré, M Raupach, J Canadell, G, Marland, L Bopp, P Clais, T Conway, S Doney, R Feely, P Foster, P Friedlingstein, K Gurney, R Houghton, J House, C Huntingford, P Levy, M Lomas, J Majkut, N Metz, J Ometto, G Peters, I Prentice, J Randerson, S Running, J Sarmiento, U Schuster, S Sitoh, T Takahashi, N Viovy, G van der Werf and I Woodward, 'Trends in the sources and sinks of carbon dioxide'. *Nature Geoscience* 2, 2009, pp. 831–836.
  - 5 G Nabuurs, O Maser, K Andrasko, P Benitez-Ponce, R Boer, M Dutschke, E Elsidig, J Ford-Robertson, P Frumhoff, T Karjalainen, O Krankina, W Kurz, M Matsumoto, W Oyhantcabal, N Ravindranath, M Sanz Sanchez and X Zhang, 'Forestry'. In: B Metz, O Davidson, P Bosch, R Dave and L Meyer, (Eds.), *Climate Change 2007: Mitigation*. Cambridge University Press, Cambridge, UK, 2009.
  - 6 Houghton, *Carbon Flux to the Atmosphere*.
  - 7 R Houghton, 'Tropical deforestation as a source of greenhouse gas emissions'. In: P Moutinho and S Schwartzman, (Eds.), *Tropical Deforestation and Climate Change*. Amazon Institute for Environmental Research (IPAM), Brazil, 2005.
  - 8 J Sathaye, W Makundi, L Dale, P Chan and K Andrasko, 'GHG mitigation potential, costs and benefits in global forests: A dynamic partial equilibrium approach'. *The Energy Journal*, Special Issue No. 3, 2006, pp. 127–162.
  - 9 J Sathaye and P Chan, *Costs and Carbon Benefits of Global Forestation and Reduced Deforestation in Response to a Carbon Market*. Consultant report prepared for Australian Government, Australian Government, Canberra, Australia, 2008.

Over the past few years, increasing attention has been paid by policymakers to ways of reducing deforestation emissions. This is due to the magnitude of the contribution that deforestation makes to climate change and the fact that the abatement of deforestation emissions is considered to be a cost-effective mitigation strategy.<sup>10,11,12,13</sup> Reducing deforestation emissions could also generate a number of incidental benefits, including biodiversity conservation and the promotion of sustainable development in developing countries.

At the thirteenth session of the Conference of the Parties (COP-13) to the United Nations Framework Convention on Climate Change (UNFCCC), it was agreed that negotiations would be undertaken on how best to incorporate mechanisms to reduce emissions from deforestation and forest degradation in developing countries (known as 'REDD') in the post-2012 international climate regime.<sup>14</sup> It was also agreed that these negotiations would incorporate 'the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries'.<sup>15</sup> Combined with REDD, this is known as 'REDD-plus'.

The negotiation framework agreed at COP-13 was intended to culminate in the formation of a new legal agreement at the Copenhagen Climate Conference in December 2009 (COP-15). This did not occur and the only major output from the conference was a political agreement, the Copenhagen Accord.<sup>16</sup> The Accord sets out a broad mitigation framework based on a 'schedules approach', where countries submit mitigation and financing commitments for inclusion in schedules. The extent to which countries meet the registered commitments is then subject to measurement, reporting and verification in accordance with agreed procedures.

Although the Accord has been criticised as having no legal basis and lacking rigour, it did include a firm statement on REDD. Paragraph 6 of the Accord states:

*We recognize the crucial role of reducing emission from deforestation and forest degradation and the need to enhance removals of greenhouse gas emission by forests and agree on the need to provide positive incentives to such actions through the immediate establishment of a mechanism including REDD-plus, to enable the mobilization of financial resources from developed countries.<sup>17</sup>*

The Accord also includes a commitment by developed countries to provide 'substantial finance to reduce emissions from deforestation and forest degradation (REDD-plus)'.<sup>18</sup> The funding that is provided for REDD-plus is planned to form part of a commitment to provide 'new and additional resources ... approaching USD 30 billion for the period 2010–2012'.<sup>19</sup> By 2020, the goal is to mobilise USD 100 billion each year 'to address the needs of developing countries'.<sup>20</sup>

The statements that were included in the Accord reflect the progress that was made on REDD issues both before and during the Copenhagen Conference. The Subsidiary Body for Scientific and Technological Advice (SBSTA) completed its program of work at the conference and was able to present a draft decision on key methodological issues for the operation of a REDD scheme.<sup>21</sup> This decision was subsequently adopted by the COP. The Ad Hoc Working Group on Long-term Cooperative Action (AWG-LCA), the group tasked with negotiating aspects of the international agreement that fall outside the Kyoto Protocol, also produced a draft decision on REDD.<sup>22</sup> Although it was not adopted by the COP, the progress that was made suggests that a REDD scheme is likely to form part of any post-2012 international climate regime.

This paper aims to improve understanding and awareness of REDD issues within the Australian aid sector. It provides an overview of the proposals that have been put forward on REDD-plus and discusses their benefits and disadvantages. Particular emphasis is placed on the Australian Government's proposal, which is used as the basis for analysing the opportunities and risks associated with market-linked REDD schemes. Drawing on this analysis, key issues for the Australian aid sector are discussed.

The paper is set out as follows. Section 2 provides background information on the importance of REDD. Section 3 presents an overview of the main design features associated with REDD schemes. Section 4 introduces the Australian proposal and Section 5 analyses the opportunities and risks associated with market-linked REDD schemes. Section 6 discusses key issues for the Australian aid sector and details the positions taken on REDD by major developing countries. Section 7 provides a conclusion.

10 N Stern, *The Economics of Climate Change: The Stern Review*. Cambridge University Press, Cambridge, UK, 2007.

11 J Eliasch, *Climate Change: Financing Global Forests – The Eliasch Review*. H. M. Stationery Office, London, UK, 2008.

12 R Garnaut, *The Garnaut Climate Change Review*. Cambridge University Press, Cambridge, UK, 2008.

13 E Corbera, M Estrada and K Brown, 'Reducing greenhouse gas emissions from deforestation and forest degradation in developing countries: revisiting the assumptions'. *Climatic Change*, 2010. Doi: 10.1007/s10584-009-9773-1.

14 FCCC/CP/2007/6/Add.1, decision 1/CP.13.

15 FCCC/CP/2007/6/Add.1, decision 1/CP.13, paragraph 1(b)(iii).

16 *Copenhagen Accord*, (Advance unedited version). <[http://unfccc.int/files/meetings/cop\\_15/application/pdf/cop15\\_cph\\_auv.pdf](http://unfccc.int/files/meetings/cop_15/application/pdf/cop15_cph_auv.pdf)> (9 February 2010).

17 *Copenhagen Accord*.

18 *Copenhagen Accord*, Paragraph 8.

19 *Copenhagen Accord*.

20 *Copenhagen Accord*.

21 FCCC/SBSTA/2009/L.19/Add.1.

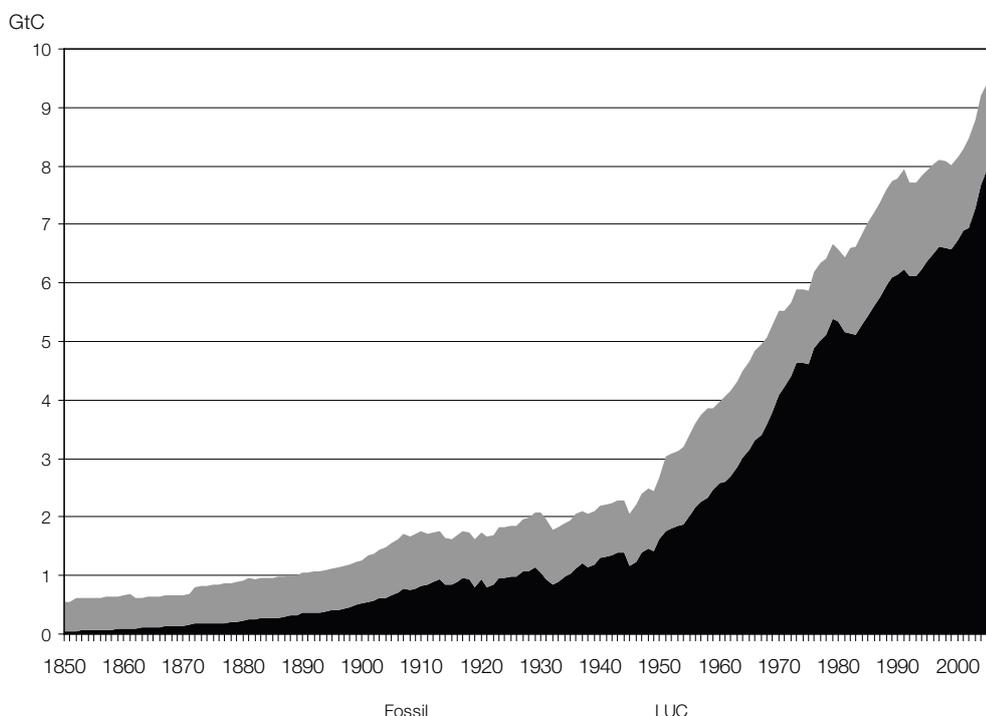
22 FCCC/AWG/LCA/2009/L.7/Add.6.

## 2. Land-use change in developing countries

In the context of global carbon budget science, the phrase 'land-use change emissions' typically refers to the net CO<sub>2</sub> flux from LUC, or emissions from deforestation and forest degradation less uptake of carbon through reforestation, regrowth and changes in land-management practices. In theory, LUC should include net emissions that do not involve changes in tree-cover density, particularly the oxidation and burning of tropical peatlands.<sup>23</sup> In practice, however, these emission sources are usually excluded from global LUC estimates.<sup>24</sup>

LUC currently accounts for ~12 per cent of global anthropogenic CO<sub>2</sub> emissions, or 1.2 GtC. As noted in the Introduction, these emissions are almost wholly attributable to deforestation and forest degradation in developing countries in tropical regions, particularly South-East Asia, Central and South America and tropical Africa. Traditionally, LUC CO<sub>2</sub> emissions have constituted a greater proportion of global emissions than they do today (see Figure 1), accounting for more than half up until the 1950s, but with the exponential rise of fossil emissions, the contribution made by LUC has declined. In the last few years this downward trend has been accelerated by a marked fall in actual LUC emissions from 1.5 GtC in 2005 to just over 1.2 GtC in 2008. This has been attributed to a decline in deforestation in South America and South-East Asia due to both climate and socio-economic factors.<sup>25</sup>

**Figure 1: Global CO<sub>2</sub> emissions, fossil vs. land-use change (excluding peatland emissions), 1850–2008**



Sources: Houghton;<sup>26</sup> Boden et al.,<sup>27</sup> van der Werf et al.<sup>28</sup>

Notwithstanding recent trends, there is widespread agreement that LUC emissions remain significant and need to be reduced, both for climate and broader sustainable development reasons. One factor that has obstructed progress on reducing LUC emissions in the past is the degree of uncertainty surrounding their measurement. As the Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC) states, 'the land use carbon source has the largest uncertainties in the global carbon budget'.<sup>29</sup> Different studies applying different methods have produced markedly different estimates of LUC emissions as illustrated in Figure 2, which shows updated estimates of both LUC and fossil emissions in the 1980s, 1990s and 2008, with the associated

<sup>23</sup> van der Werf et al., 'CO<sub>2</sub> emissions from forest loss'.

<sup>24</sup> The most recent data suggest that in 2008, oxidation and burning of peatlands resulted in the release of around 0.3 GtC, or 19 per cent of total LUC emissions and three per cent of total global CO<sub>2</sub>. See van der Werf et al., 'CO<sub>2</sub> emissions from forest loss'. Due to difficulties in measurement and control, peatland emissions have been excluded from the mainstream debate about the establishment of an international REDD scheme. In the remainder of this paper, references to LUC and REDD do not include peatland emissions unless otherwise stated.

<sup>25</sup> Le Quéré et al., 'Trends in the sources and sinks of carbon dioxide'.

<sup>26</sup> Houghton, *Carbon Flux to the Atmosphere from Land-Use Changes*.

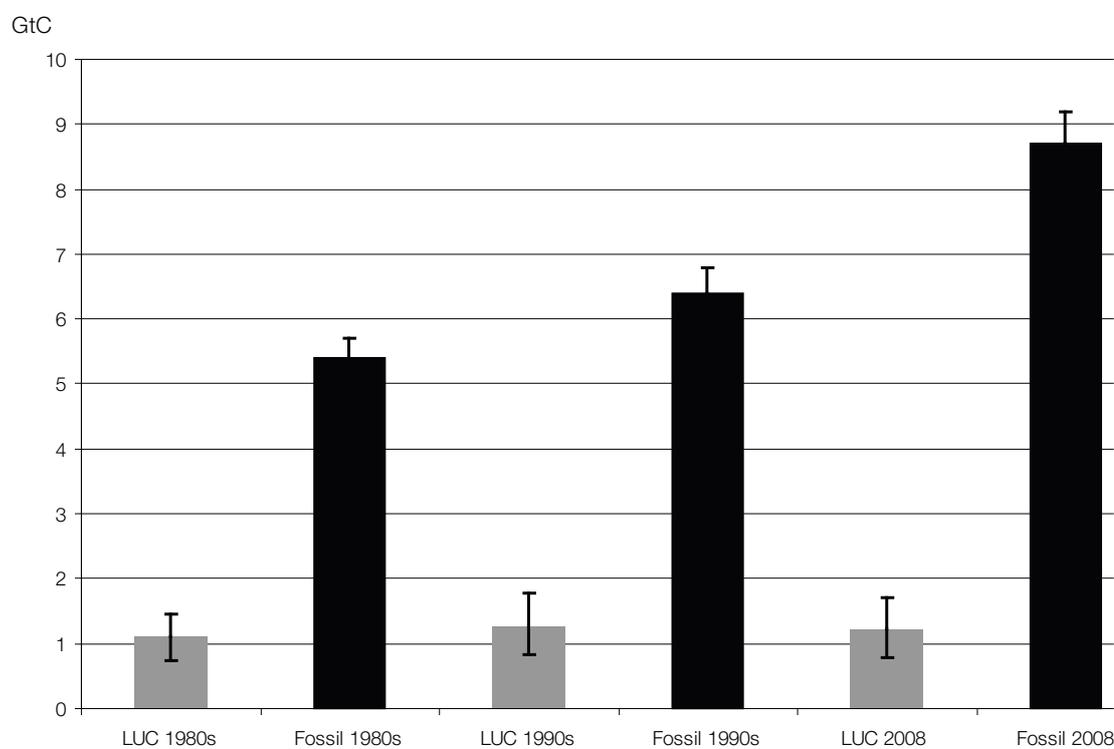
<sup>27</sup> Boden et al., *Global CO<sub>2</sub> Emissions from Fossil-Fuel Burning*.

<sup>28</sup> van der Werf et al., 'CO<sub>2</sub> emissions from forest loss'.

<sup>29</sup> K Denman, G Brasseur, A Chidthaisong, P Ciaia, P Cox, R Dickinson, D Hauglustaine, C Heinze, E Holland, D Jacob, U Lohmann, S Ramachandran, P da Silva Dias, S Wofsy and X Zhang, 'Couplings Between Changes in the Climate System and Biogeochemistry'. In: S Solomon, D Qin, M Manning, Z Chen, M Marquis, K Avery, M Tignor and H Miller, (Eds.), *Climate Change 2007: The Physical Science Basis*. Cambridge University Press, Cambridge, UK, 2007, p. 518.

uncertainty displayed in the error bars.<sup>30</sup> Global LUC emissions estimates are generally subject to a 30 to 40 per cent uncertainty compared to ~5 per cent for fossil emissions. The degree of uncertainty associated with LUC emissions creates challenges for policymakers.

**Figure 2: Updated estimates of global LUC and fossil CO<sub>2</sub> emissions, 1980s, 1990s and 2008 (GtC)**



Source: DeFries et al.,<sup>31</sup> Houghton;<sup>32</sup> van der Werf et al.,<sup>33</sup> Le Quéré et al.<sup>34</sup>

Under the Copenhagen Accord, over 100 countries have committed to keeping the increase in the global average surface temperature below 2°C (presumably from pre-industrial levels) and to ‘take action to meet this objective consistent with science and on the basis of equity’.<sup>35</sup> Stabilising the atmospheric concentration of greenhouse gases at 450 parts per million (ppm) of carbon dioxide equivalent (CO<sub>2</sub>-e) in the latter part of the 21st century or early 22nd century would provide roughly a 50 per cent chance of holding warming within this limit. To achieve a 450 ppm CO<sub>2</sub>-e outcome, global greenhouse gas emissions will have to be reduced dramatically over the coming decades – CO<sub>2</sub> emissions will need to be at least 50 per cent below 2000 levels in 2050.<sup>36,37</sup>

Making the cuts that are necessary to keep warming within the 2°C limit is likely to depend heavily on the capacity of the international community to reduce LUC emissions in developing countries. Most of the strategies that are being contemplated by major emitting countries include a strong emphasis on abatement in this sector but if it fails to materialise, there are two potential outcomes:

- the stated climate target will not be met, or
- the burden of reducing emissions will shift to other sectors, thereby increasing abatement costs.

The importance of an effective REDD-plus mechanism in achieving a risk-averse climate outcome can be illustrated with the 450 ppm CO<sub>2</sub>-e scenario that was devised as part of the Garnaut Climate Change Review (the so-called ‘Garnaut-25’ scenario).<sup>38</sup> A simple climate model, MAGICC 5.3,<sup>39</sup> was used to determine the atmospheric

30 The estimates were calculated using the method employed by the IPCC’s Working Group I in AR4 (See Denman et al., ‘Couplings between changes in the Climate System and Biogeochemistry’) and data from R DeFries, ‘Past and future sensitivity of primary production to human modification of the landscape’. *Geophysical Research Letters* 29(7), 2002, p. 1132. Doi:10.1029/2001GL01362; Houghton, *Carbon flux to the Atmosphere from Land-Use Changes*; van der Werf et al., ‘CO<sub>2</sub> emissions from forest loss’; and Le Quéré et al., ‘Trends in the sources and sinks of carbon dioxide’.

31 DeFries, ‘Past and future sensitivity of primary production to human modification of the landscape’.

32 Houghton, *Carbon Flux to the Atmosphere from Land-Use Changes*.

33 van der Werf et al., ‘CO<sub>2</sub> emissions from forest loss’.

34 Le Quéré et al., ‘Trends in the sources and sinks of carbon dioxide’.

35 Copenhagen Accord, Paragraph 2.

36 B Fisher, N Nakicenovic, K Alfsen, J Corfee Morlot, F de la Chesnaye, L-Ch Hourcade, K Jiang, M Kainuma, E La Rovere, A Matysek, A Rana, K Riahi, R Richels, S Rose, D van Vuuren and R Warren, ‘Issues related to mitigation in the long term context’. In: B Metz, O Davidson, P Bosch, R Dave and L Meyer, (Eds.), *Climate Change 2007: Mitigation*. Cambridge University Press, Cambridge, UK, 2009.

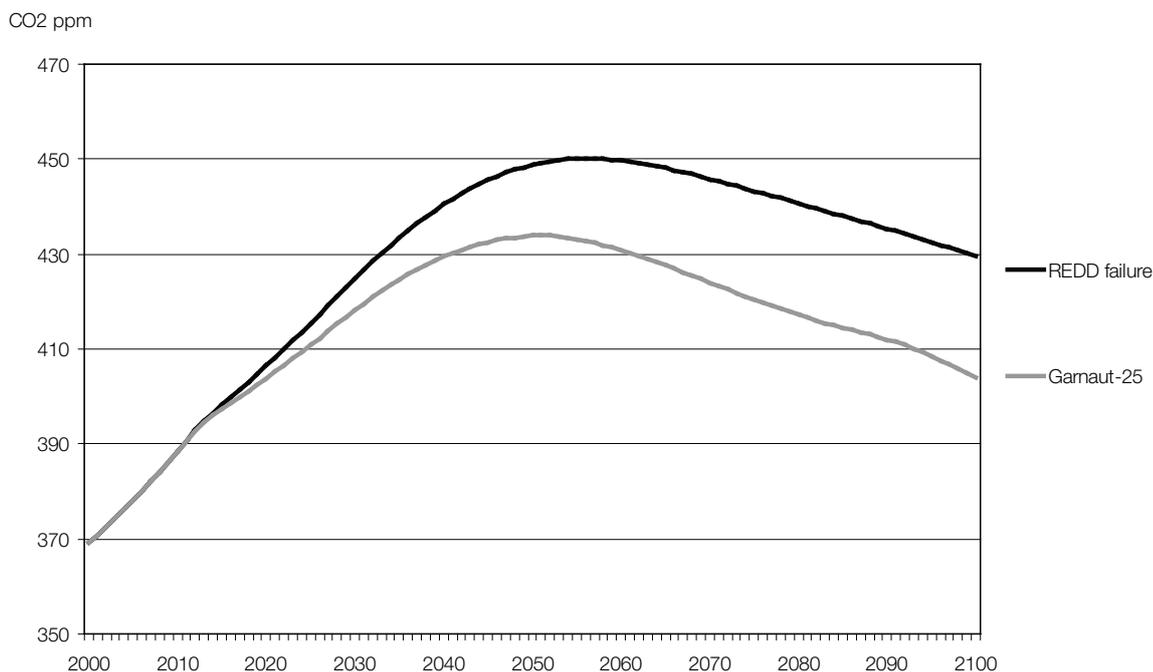
37 A Macintosh, ‘Keeping warming within the 2°C limit after Copenhagen’. *Energy Policy* 38(6), 2010, pp. 2964–2975. Doi:10.1016/j.enpol.2010.01.034.

38 Garnaut, *The Garnaut Climate Change Review*.

39 T Wigley, MAGICC/SCENGEN 5.3. National Center for Atmospheric Research, US, 2009.

concentration of CO<sub>2</sub> under two 21st-century emissions trajectories. The first trajectory was taken from the Garnaut-25 scenario. In the second trajectory (REDD failure), the global fossil CO<sub>2</sub> emissions and developed-country LUC emissions from the Garnaut-25 scenario were combined with the developing-country LUC emissions from the Garnaut reference scenario.<sup>40</sup> That is, it was assumed that all sectors in the global economy follow the Garnaut Review's 450 ppm CO<sub>2</sub>-e abatement path other than developing-country LUC emissions, which continue on the reference trajectory.<sup>41</sup> In this hypothetical, the failure to reduce developing-country LUC emissions results in the atmospheric concentration of CO<sub>2</sub> being 25 ppm higher in 2100 than under the Garnaut-25 scenario (see Figure 3), illustrating the importance of abatement in non-LUC sectors if warming is to be kept to 2°C. Reductions in REDD emissions alone will not avoid dangerous climate change; however, REDD abatement is an important component of a cost-effective strategy to address climate change and failure on REDD could have a material impact on climate outcomes in the latter half of the century.

**Figure 3: Implications of REDD failure – atmospheric concentration of CO<sub>2</sub> under Garnaut-25 vs. concentration where net developing-country LUC emissions continue on the reference trajectory**



Source: Wigley;<sup>42</sup> Australian Department of Treasury.<sup>43</sup>

The alternative outcome of a failure of developing-country LUC abatement is that other sectors in the economy will be forced to find additional, and more expensive, forms of abatement. Figure 4 shows the percentage of global mitigation (deviation from the reference scenario) that is expected to be sourced from a reduction in net developing-country LUC emissions under the Garnaut-25 scenario between 2013 and 2050. It is evident that this sector is relied upon for a significant proportion of mitigation, particularly in the earlier years. Over the period 2013–30, reductions in net developing-country LUC emissions account for 15 per cent of total global abatement. By carrying a significant proportion of the abatement burden in the coming two decades, this sector serves a ‘bridging’ function; it buys time for the development of technologies that lower the abatement costs in other sectors. If there is a failure on REDD, the abatement burden shifts to these sectors earlier, thereby increasing costs.

40 For these purposes, LUC emissions include deforestation, regrowth and afforestation/reforestation. In the Garnaut Report, this emission category is called Land-Use Change and Forestry (LUCF). See Garnaut, *The Garnaut Climate Change Review*.

41 Climate sensitivity was assumed to be 3°C and the emissions of other relevant gases were drawn from the WRE350 scenario.

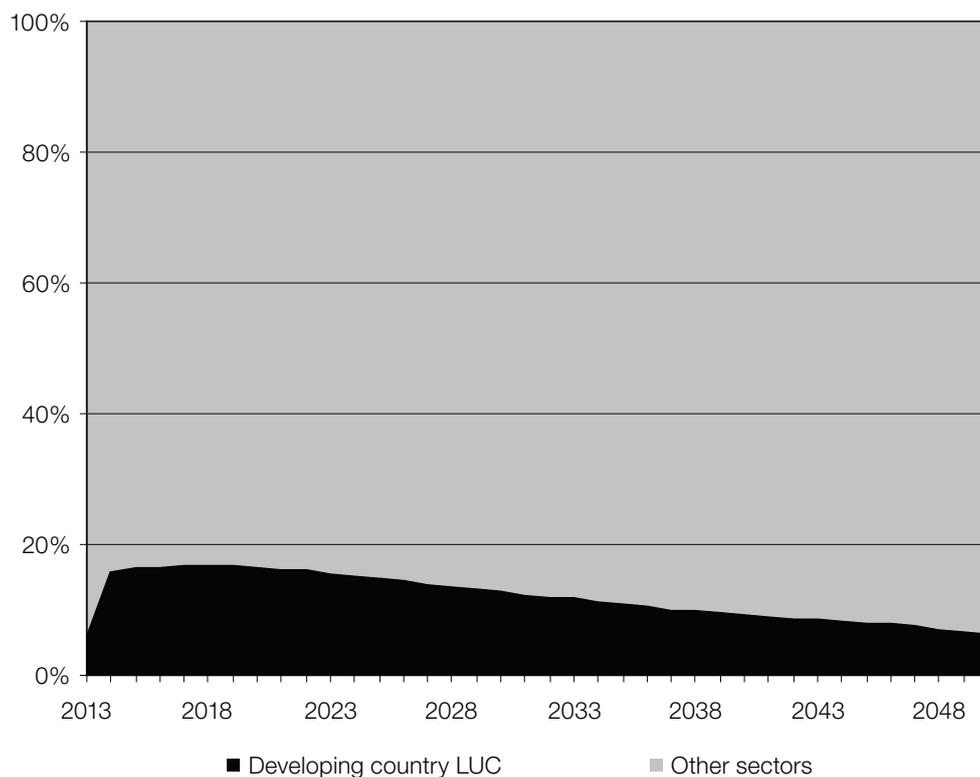
42 Wigley, MAGICC/SCENGEN 5.3.

43 Australian Department of Treasury, Information obtained under Freedom of Information, 12 November 2009.



Photo: Josh Estey

**Figure 4: Mitigation from net developing-country LUC emissions vs other sectors, Garnaut-25 scenario, 2013–50 (per cent)**



Source: Australian Department of Treasury.<sup>44,45</sup>

The potential that REDD holds for lowering mitigation costs is central to the current interest in the topic. In the past, attempts to reduce deforestation and encourage more sustainable forest-management practices have failed because of the unwillingness of developed countries to provide the financial and technological resources demanded by developing countries.<sup>46</sup> REDD schemes, particularly market-based approaches, provide a potential solution to this problem. REDD offers developed countries a way to delay domestic abatement and lower the costs of mitigation while the lure for developing countries is the prospect of substantial financial transfers. If executed effectively, a well-designed REDD scheme should provide benefits for all parties, including domestic actors in developing countries who should receive financial rewards to encourage behavioural change.

44 Australian Department of Treasury, *Australia's Low Pollution Future: The Economics of Climate Change Mitigation*. Commonwealth of Australia, Canberra, 2008.

45 Australian Department of Treasury, Information obtained under Freedom of Information.

46 D Humphreys, 'The politics of "Avoided Deforestation": historical context and contemporary issues'. *International Forestry Review* 10(3), 2008, pp. 433–442.

## 3. Designing a REDD scheme

Despite the progress that has been made on REDD-plus recently, many issues are still to be resolved. The three main design issues are:<sup>47</sup>

- scope – what activities are included?
- type – is it market-based, fund-based or a hybrid?
- reference levels – from what baseline are improvements measured?

### 3.1. Scope of REDD scheme

The draft decision on REDD-plus made by the AWG-LCA at Copenhagen identifies five activities that could contribute to mitigation in developing countries under the proposed REDD mechanism:

- reducing emissions from deforestation
- reducing emissions from forest degradation
- conservation of forest carbon stocks
- sustainable management of forests
- enhancement of forest carbon stocks.<sup>48</sup>

These activities can be broken into two broad groups:

1. those concerned with the reduction of LUC emissions (deforestation and forest degradation)
2. those concerned with the maintenance and enhancement of forest sinks (conservation and enhancement of forest carbon stocks and sustainable forest management).

The following sections briefly describe the meaning of these categories of forest mitigation activities.

#### 3.1.1. Reducing LUC emissions

##### *Deforestation*

Deforestation refers to the human-induced conversion of a land unit from forest to non-forest use. In Australia, it is usually called land clearing. Under the Kyoto Protocol, forests are defined as 'a minimum area of land of 0.05-1.0 hectares with tree crown cover (or equivalent stocking level) of more than 10–30 per cent with trees with the potential to reach a minimum height of 2-5 metres at maturity in situ'.<sup>49</sup> Under this definition, forests include natural forests, regenerated natural forests, plantations and areas temporarily devoid of forest cover due to human or natural causes but expected to return to a forested state. If this definition were applied to the REDD scheme, deforestation would be confined to instances where the crown cover in a forested area experiences a long-term reduction below the 10 to 30 per cent threshold, or the latent height of vegetation falls below the 2 to 5 m threshold for an extended period.

There has been debate about whether the existing forest definition should be changed for the purposes of the REDD mechanism. In particular, concerns have been expressed that the current definition allows areas to be classified as forest when there has been a significant reduction in the stock of carbon on the land unit.<sup>50</sup> For example, this could occur with selective logging, but unless the crown cover has been reduced to below the 10 to 30 per cent threshold, it might not qualify as deforestation. The result could be the under-reporting of forest-related emissions.

The importance of this issue depends on the scope and design of the scheme. If the scope of the REDD scheme is broad, covering deforestation, forest degradation and activities associated with the maintenance and enhancement of carbon stocks, the potential for under-reporting is reduced because activities that alter carbon stocks but do not qualify as deforestation would still be covered within the scheme.

##### *Forest degradation*

Forest degradation refers to a reduction in forest biomass on forest land units due to unsustainable harvest or land-use practices.<sup>51</sup> It covers the impacts of overexploitation, invasive species, fire, pollution and other factors

47 C Parker, A Mitchell, M Trivedi, N Mardas and K Sosis, *The Little REDD+ Book*. Global Canopy Foundation, Oxford, UK, 2009.

48 FCCC/AWGLCA/2009/L.7/Add.6.

49 FCCC/CP/2001/13/Add.1, at 58.

50 N Sasaki and F Putz, 'Critical need for new definitions of "forest" and "forest degradation" in global climate change agreement'. *Conservation Letters* 2, 2009, pp. 226–232.

51 Nabuurs et al., 'Forestry'.

where there is a reduction in biomass, even though the land unit remains in forest use.<sup>52</sup> As discussed above, failure to include forest degradation in a REDD mechanism could result in adverse outcomes as it is possible for forest carbon to be released without the relevant land units crossing the threshold for forest conversion.

### 3.1.2. Maintenance and enhancement of forest sinks

#### *Conservation of forest carbon stocks*

Conservation of forest carbon stocks refers to maintenance of carbon stocks in forested areas, particularly carbon stored in natural forests. Measures to conserve forest carbon stocks could include the creation and maintenance of protected areas and voluntary environmental agreements under which payments are made for the retention and management of forested areas, for example payments for ecosystem services.

#### *Sustainable management of forests*

In REDD-plus proposals, sustainable forest management is essentially concerned with the enhancement of carbon stocks in managed forests (forests used for commercial or subsistence forestry purposes). This could be achieved by changing management practices to increase and improve forest cover and/or soil carbon in these areas. The extent to which sustainable forest management, when applied in the REDD context, is intended to reach into broader social, economic and environmental issues is unclear. For the purposes of the Kyoto Protocol, 'forest management' is simply defined as 'a system of practices for stewardship and use of forest land aimed at fulfilling relevant ecological (including biological diversity), economic and social functions of the forest in a sustainable manner'.<sup>53</sup>

In 2007, the United Nations General Assembly adopted Resolution 62/98, a 'Non-legally binding instrument on all types of forests', which defined sustainable forest management as a 'dynamic and evolving concept [that] aims to maintain and enhance the economic, social and environmental value of all types of forests, for the benefit of present and future generations'.<sup>54</sup> The resolution also identified seven thematic elements of sustainable forest management:

1. extent of forest resources
2. forest biological diversity
3. forest health and vitality
4. productive functions of forest resources
5. protective functions of forest resources
6. socio-economic functions of forests
7. legal, policy and institutional framework.

It is unclear whether, or to what extent, these concepts may form a part of the definition of sustainable forest management under any future REDD scheme.

#### *Enhancement of forest carbon stocks*

Enhancement of forest carbon stocks refers to activities designed to increase the stock of carbon stored in existing but degraded forest areas. Whether this category ultimately includes afforestation and reforestation on previously deforested land units is unclear. At present, afforestation and reforestation in developing countries is covered by the Kyoto Protocol's Clean Development Mechanism (CDM), but proposals from the Australian Government amongst others would see these activities folded into the REDD-plus scheme.

### 3.2. Type of REDD scheme

REDD proposals can be viewed on a spectrum; at one end lie purely market-based schemes, at the other purely fund-based mechanisms. Between the two are hybrids that combine various aspects of the market-based and fund-based approaches. At present, it looks likely that any future REDD scheme will be a hybrid, combining elements of a fund with a market-based mechanism.

#### *Market-based schemes*

Under a market-based scheme, countries that reduce REDD emissions below a pre-set baseline (or reference

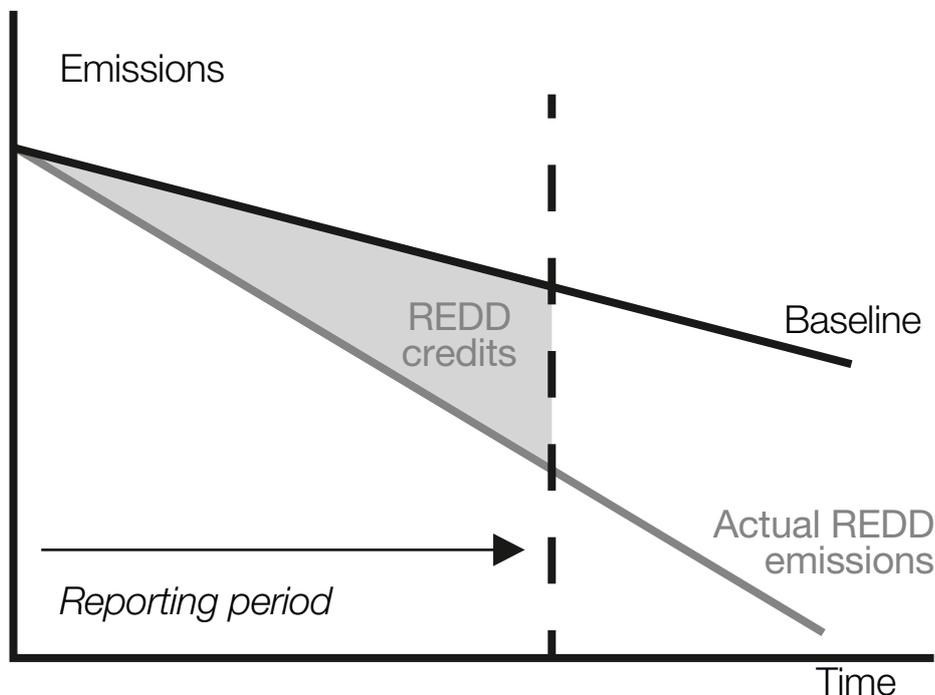
52 Sasaki and Putz, 'Critical need for new definitions'.

53 Sasaki and Putz, 'Critical need for new definitions'.

54 United Nations, Resolution adopted by the General Assembly 62/98: 'Non-legally binding instrument on all types of forests'. New York, 2007.

level) would receive credits that could be sold in carbon markets and used by purchasing nations to meet their international mitigation obligations (Figure 5).<sup>55</sup> These credits could be used to offset emissions from other sectors and thus would not normally result in a net reduction in global emissions; they would merely redistribute them. This type of market-based scheme would be similar to, and in fact built on, the CDM. A description of the CDM is provided below.

**Figure 5: REDD credits in a market-based REDD scheme**



A market-based REDD scheme is able to operate at different levels, national and/or sub-national. Under a national scheme, baselines would be set and emissions measured at the national level. In order to qualify for credits, total national REDD emissions would need to be reduced below the national baseline. A sub-national scheme would allow for the generation of credits by sub-national-level projects, which could be on a state or provincial scale, or even on a smaller regional or sub-regional scale. A baseline would be determined for the chosen area using historical or other data and credits would be generated if relevant REDD emissions were reduced below the baseline.

The content of the AWG-LCA draft decision on REDD-plus from Copenhagen indicates that there is a degree of support for what is known as a 'nested approach',<sup>56</sup> where developing countries that participate in the scheme can engage in sub-national projects before graduating to full involvement at a national level.<sup>57</sup> The benefits of allowing sub-national participation include that it is easier to set baselines and to monitor and measure outcomes, thus allowing for earlier participation by developing countries that have insufficient capacity to operate a national-level scheme.

Sub-national programs could also be established to allow credits to accrue directly to the project partners, which might include financiers from developed countries. This could provide a means of attracting investors and generating the financial resources that are necessary to operate a broad-based and effective REDD scheme.<sup>58</sup> The major risk associated with a sub-national scheme is that REDD emissions may gravitate to areas outside the scheme boundary (leakage). The national and sub-national components would also need to be integrated to prevent double counting.

<sup>55</sup> Polluters with obligations under domestic regulatory schemes could potentially purchase REDD credits to meet domestic liabilities. The REDD credits could then be used by the national government to meet any relevant international mitigation obligations.

<sup>56</sup> L. Pedroni, M. Dutschke, C. Streck and M. Porrúa, 'Creating incentives for avoiding further deforestation: the nested approach'. *Climate Policy* 9, 2009, pp. 207–220.

<sup>57</sup> FCCC/AWGLCA/2009/L.7/Add.6.

<sup>58</sup> Pedroni et al., 'Creating incentives for avoiding further deforestation'.

## What is the CDM?

The CDM is a baseline-and-credit emissions trading scheme, similar to the proposed market-based REDD schemes. The difference between the CDM and most REDD proposals is that it is project-based; projects or groups of related projects in developing countries can be created either to reduce emissions below, or increase removals by sinks above, what would have occurred in their absence. For example, a project to replace an existing coal-fired power plant with a gas-fired plant could be an eligible project because, in its absence, emissions from the coal plant might be higher than those from the gas plant. Similarly, an afforestation or reforestation project could be eligible because it might increase CO<sub>2</sub> removals above what would have occurred in the absence of the project.

Proposed CDM projects are required to undergo a verification process to ensure eligibility, and credits are issued in the form of Certified Emission Reductions (CERs) to the project participants through the CDM registry if the project, when registered, lowers emissions or increases sinks above a pre-determined baseline. Each CER is deemed to represent one tonne of CO<sub>2</sub>-e abated or sequestered.

CERs can be used by developed countries to meet their emission targets under the Kyoto Protocol, although their use is required to be 'supplemental to domestic action'. There are also limits on the number of afforestation and reforestation CERs that developed countries can access during 2008–12, the Kyoto Protocol's first commitment period – they cannot exceed one per cent of the base-year emissions of the relevant country, times five.

In the late 1990s and early 2000s, there were proposals to include 'avoided deforestation' as an eligible activity under the CDM, but these were rejected because of concerns about the environmental integrity of credits generated from such activities and their potential to flood the carbon market and displace other forms of abatement.<sup>59 60 61 62</sup>

The only Land Use, Land-Use Change and Forestry (LULUCF) activities that were ultimately accepted as eligible project activities were afforestation and reforestation, and even these are subject to special rules that result in the expiry and compulsory replacement of afforestation and reforestation credits after a specified time.

The CDM was intended to serve two purposes:

- to assist developed countries to meet their emission targets by providing them with access to abatement opportunities in developing countries
- to assist developing countries to achieve sustainable development.

It was also seen as a way of facilitating technology transfers to developing countries that host CDM activities.

On the basis of the projects registered at 16 November 2009, it has been anticipated that there will be an average of 324 million CERs available each year over the first commitment period, or a total of 1,670 million until the end of the period (that is 1,670 MtCO<sub>2</sub>-e of avoided emissions or enhanced sequestration). When projects in the pipeline are included, the forecast number of CERs to the end of the first commitment period increases to 2,900 million.<sup>63</sup> On an annualised basis, this is equivalent to Australia's total current annual emissions, or almost 10 per cent of the annual emissions of the US.<sup>64</sup> The vast majority of CERs are expected to come from a small number of countries, namely China, India, Brazil and South Korea, which are projected to account for over 80 per cent of CERs from registered projects. China alone is expected to account for 59 per cent of these credits.<sup>65</sup>

The CDM has its supporters and detractors, with criticisms concentrated on the environmental credibility of CERs and the difficulties the scheme has encountered in promoting sustainable development. There is concern that a significant number of CERs do not actually represent real abatement because the projects would have occurred anyway (that is, there is no deviation from the reference scenario), project baselines have been set too high or 'leakage' has occurred.<sup>66</sup> Issues about sustainable development have arisen because CDM projects have tended to concentrate on least-cost abatement opportunities. Critics argue that these types of projects do not necessarily generate sustainable development benefits for host countries.<sup>67</sup>

59 I Fry, 'Twists and Turns in the Jungle: Exploring the Evolution of the Land Use, Land-Use Change and Forestry Decisions within the Kyoto Protocol'. Review of European Community and International Environmental Law 11(2), 2002, pp. 159–168.

60 I Fry, 'Reducing Emissions from Deforestation and Forest Degradation: Opportunities and Pitfalls in Developing a New Legal Regime'. Review of European Community and International Environmental Law 17(2), 2008, pp. 166–182.

61 E Paulsson, 'A review of the CDM literature: from fine-tuning to critical scrutiny?' International Environmental Agreements 9, 2009, pp. 63–80

62 T Neeff and F Ascui, 'Lessons from carbon markets for designing an effective REDD architecture'. Climate Policy 9, 2009, pp. 306–315.

63 UNFCCC, CDM Statistics, 2009. <<http://cdm.unfccc.int/Statistics/index.html>> (22 January 2010).

64 UNFCCC, GHG data from UNFCCC, 2009. <[http://unfccc.int/ghg\\_data/ghg\\_data\\_unfccc/items/4146.php](http://unfccc.int/ghg_data/ghg_data_unfccc/items/4146.php)> (22 January 2010).

65 UNFCCC, CDM Statistics

66 M Mukerjee, 'A Mechanism of Hot Air?' Scientific American, June 2009

67 See Paulsson, 'A review of the CDM literature' for an overview of the literature on these issues

## Fund-based schemes

Fund-based schemes involve the establishment of one or more international funds to finance REDD activities or to provide incentives for countries to address REDD issues. Brazil has proposed one of the most prominent fund-based schemes under which an international fund would be established to operate on the basis of a credit and debit system. A baseline REDD emission rate would be determined for each country that elected to participate and if its emissions were below the baseline, it would receive credits; if above, debits. Financial rewards would be distributed on the basis of the sum of the debits and credits allocated over a period of time. Contributions to the fund would be made by developed countries according to their official development assistance (ODA) commitments and these would determine the size of the incentives provided to developing countries. While this proposal is similar to a number of market-based mechanisms in many ways, it would not generate tradeable credits and would not be linked to any enforceable emission targets.<sup>68</sup>

A second notable fund-based model has been proposed by the Central African Forestry Commission (COMIFAC). It involves the establishment of a fund that would provide two types of incentive payments designed to address REDD and forest-management issues: a sustainable forest-management grant and a climate-regulation grant. The sustainable forest management grant would be based on the area of forest under a certified forest-management plan; the climate-regulation grant would be based on the area of forest not under a forest-management plan weighted by the rate of deforestation in the area.

The most contentious aspect of fund-based schemes is financing – where will the money come from, will there be enough, and how will it be distributed?<sup>69,70,71,72,73,74</sup> For example, the Eliasch Review estimated that the average annual cost of halving deforestation by 2030 was US\$17-US\$33 billion per annum. Given the magnitude of the required funding and historical experience with forestry-related ODA and other environmental funds, it concluded that:

... [A] system that separated forests from the carbon market and instead financed a reduction in forest emissions solely through multilateral funds would be highly unlikely to reach the required level of funding.<sup>75</sup>

In response, it is arguable that financing US\$17–US\$33 billion per annum is not unachievable – after all, it constitutes less than 0.1 per cent of the GDP of advanced economies.<sup>76</sup> There have also been several proposals for potential sources of funding in addition to ODA, including levies or taxes on international transport emissions, and carbon-intensive and military-related goods and services.<sup>77,78</sup> Notwithstanding these considerations, critics still doubt that sufficient financing could be found to drive substantial reductions in REDD emissions.<sup>79</sup>

## Hybrid schemes

If a REDD scheme does emerge from the international negotiations, it is likely to comprise both market- and fund-based elements. The AWG-LCA draft decision on REDD-plus from Copenhagen suggests that the scheme would be introduced in stages. The first stage would involve capacity building and the development of national strategies or action plans for addressing REDD. Stage two would involve ‘further capacity-building, technology transfer and results-based demonstration activities’.<sup>80</sup> The final stage would be a fully functioning scheme, with ‘results-based actions’.<sup>81</sup>

The first two phases of this process would require fund-based financing from developed countries. In 2008, the Eliasch Review<sup>82</sup> estimated that the upfront capacity-building cost of a market-based REDD scheme would be in the order of US\$4 billion over five years, a cost that will require the creation of one or more funds. Already, several programs have been established to assist developing countries to prepare for a future REDD scheme and take first-step measures. These include the World Bank’s Forest Carbon Partnership Facility, the Australian

68 In August 2008, the Brazilian Government established the Amazon Fund, which embodies the fundamentals of the Brazilian REDD proposal. The fund is designed to receive donations from other countries, businesses and individuals but payments to it are conditional on deforestation emissions being below a pre-set reference level in the previous year. If emissions are above the reference level, payments are not made by donors. Both Norway and Germany have contributed to the fund, and Norway has pledged US\$1 billion over the period 2009–15, contingent on performance. See:

Office of the Prime Minister of Norway (OPM), ‘Facts about the rain forest and the Amazon Fund’, News story, 16 September 2008;

Covington and Baker & McKenzie, *Background Analysis of REDD Regulatory Frameworks*. Report prepared for the Terrestrial Carbon Group and UN-REDD Programme, Sydney, 2009;

E Corbera et al., ‘Reducing greenhouse gas emissions from deforestation and forest degradation in developing countries’.

69 K Karousakis and J Corfee-Morlot, *Financing Mechanisms to Reduce Emissions from Deforestation: Issues in Design and Implementation*. Organisation for Economic Cooperation and Development (OECD), Paris, France, 2007.

70 C Potvin, B Guay and L Pedroni, ‘Is reducing emissions from deforestation financially feasible? A Panamanian case study’. *Climate Policy* 8, 2008, pp. 23–40.

71 Fry, *Reducing Emissions from Deforestation and Forest Degradation*.

72 Eliasch, *Climate change*.

73 Neeff and Ascui, ‘Lessons from carbon markets’.

74 Pedroni et al., ‘Creating incentives for avoiding further deforestation’.

75 Eliasch, *Climate change*, p. 95.

76 International Monetary Fund (IMF), *World Economic Outlook Database*, 1 October 2009, Washington DC.

77 Fry, *Reducing Emissions from Deforestation and Forest Degradation*.

78 A Macintosh, ‘Overcoming the Barriers to International Aviation Greenhouse Gas Emissions Abatement’. *Air and Space Law* 33(6), 2008, pp. 403–430.

79 Corbera et al., ‘Reducing greenhouse gas emissions’.

80 FCCC/AWGLCA/2009/L.7/Add.6, paragraph 7.

81 FCCC/AWGLCA/2009/L.7/Add.6, paragraph 7.

82 Eliasch, *Climate change*.

Government's International Forest Carbon Initiative, and the United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UN-REDD). In the event that an international REDD scheme is introduced, similar bi- and multi-lateral funds will be necessary to distribute resources to developing countries for capacity building and demonstration.<sup>83,84</sup>

In addition to providing resources to facilitate the establishment of a market-based scheme, direct funding may be necessary for the forest carbon-stock aspects of REDD-plus. These activities may prove difficult to include within a market-based mechanism due to the need to allocate credits on the basis of deviations from a baseline. Devising credible baselines for deforestation and forest degradation is challenging but it is even more so for forest carbon-stock activities. For example, baselines may have to be artificially increased where countries have already taken steps to conserve forest areas, thus ensuring that they receive financial rewards for these efforts. While this might resolve disputes about rewarding early action, it would undermine the environmental integrity of the REDD scheme. A way around these types of problems would be to use a fund-based approach so that forest carbon-stock measures are not used to offset emissions in developed countries.<sup>85</sup>

### 3.3. Setting baselines

Baselines are central to the operation of most of the proposed REDD schemes; they will provide the basis on which incentives are distributed and will thus have a significant influence on the effectiveness and environmental integrity of the enterprise. In many proposals, the baseline is intended to reflect REDD emissions that would occur in the absence of additional mitigation measures or the absence of the REDD scheme. Baselines can, however, be set at higher or lower levels to achieve different objectives. Lower baselines would allow the scheme to achieve potentially greater emission reductions. Higher baselines could be used as a method of rewarding past actions (conservation measures) and attracting participants.

The principal political difficulty in setting baselines lies in balancing two competing factors. If baselines are set too high, credits will be generated that do not represent real abatement (often called 'hot air' credits, or just 'hot air'). If baselines are set too low, developing countries might be discouraged from participating in the scheme because the costs of achieving the cuts may outweigh the benefits. A method of designing a baseline that juggles these competing priorities needs to be devised.

There are essentially two techniques for setting baselines: simple historical-based projections and advanced model-based projections.<sup>86</sup> Under the historical approach, historic rates of REDD emissions are used to determine the baseline, which can involve a linear extrapolation from past emission trends. For example, if average emissions were X tonnes over the previous five years, the baseline is set at X tonnes for the reference period. Alternatively, a development adjustment factor can be applied to the historical data to account for likely future changes in the drivers of REDD emissions. For example, if average emissions were X tonnes over the previous five years, the baseline is set at X multiplied by the adjustment factor for the reference period.

Advanced model-based projections use information on the drivers of REDD emissions to construct economic models that forecast future emission levels. The complication with this approach is that researchers have found it difficult to find statistically significant relationships between potential drivers of deforestation and actual rates, and to identify causal factors.<sup>87</sup> This is due to the poor quality of deforestation data, complex drivers of deforestation, and the manner in which potential drivers interact. For example, it is extremely difficult to predict how political processes will evolve over time, and how these might influence REDD emissions. Similarly, social factors that influence attitudes toward deforestation and forest degradation are hard to predict, as are the economic forces that have a bearing on the behaviour of direct actors involved in REDD activities. Many of the key drivers of REDD emissions do not follow linear patterns and do not lend themselves to reliable forecasting.

The SBSTA guidance on methodology that was adopted at COP-15 states that developing countries should set forest reference emission levels and forest reference levels 'transparently taking into account historic data, and adjust for national circumstances, in accordance with relevant decisions of the Conference of the Parties'.<sup>88</sup> Precisely what this means is unclear, although the most likely approach is one based on, or informed by, a simple historical projection where the final baseline is agreed through a process of negotiation.

83 Neff and Ascui, 'Lessons from carbon markets'.

84 Pedroni et al., 'Creating incentives for avoiding further deforestation'.

85 M Skutsch and M McCall, 'Reassessing REDD: governance, markets and the hype cycle'. *Climatic Change*, 13 January 2010. Doi: 10.1007/s10584-009-9768-y.

86 Parker et al., *The Little REDD+ Book*.

87 A Herold, G Zerri, J Dietz, A Freibauer, M Hüttner, M Jung, D Mollicone and M Scheffler, *Emissions and removals from land-use, land use change and forestry activities in a post-Kyoto regime – quantitative analysis of a framework for reducing deforestation*. Institute for Applied Ecology, MPI-BGC, ECOFYS, Berlin, Germany.

88 FCCC/SBSTA/2009/L.19/Add.1, paragraph 7.



Photo: Josh Estey

## 4. The Australian Government proposal

The Australian Government has proposed the establishment of a market-linked hybrid REDD scheme. Its centerpiece is a market-based incentive mechanism that generates tradeable REDD credits. This would be coupled with direct funding for readiness and capacity building and possibly also to provide incentives for forest carbon-stock conservation and enhancement activities. Key elements of the Australian scheme are outlined below.<sup>89</sup>

- Participation by developing countries would be voluntary.
- For each commitment period, a national forest emission level would be agreed by the COP, having regard to historical emissions, pre-existing emission reduction measures, population growth, drivers of deforestation and other factors. The national forest emission level would be intended to be 'a conservative projection of future anthropogenic net emissions' from the forestry sector (i.e. a projection of forest emissions in the absence of additional mitigation measures).<sup>90</sup>
- Forestry-sector activities covered by the scheme would include deforestation, forest degradation, and afforestation and reforestation.
- Participating developing countries would be allocated forest carbon credits for 'verified anthropogenic reductions of emissions from [the] national forest emissions level'.<sup>91</sup> These would be issued at the end of each commitment period, or earlier if developing countries so elected.
- Forest carbon credits would be fully fungible on the international carbon market.

<sup>89</sup> For details and analysis of the Australian Government proposal, see M Collett, 'In the REDD: A Conservative Approach to Reducing Emissions from Deforestation and Forest Degradation', *Carbon and Climate Law Review* 3(3), 2009, pp. 324–339; FCCC/AWGLCA/2009/MISC.1/Add.2.

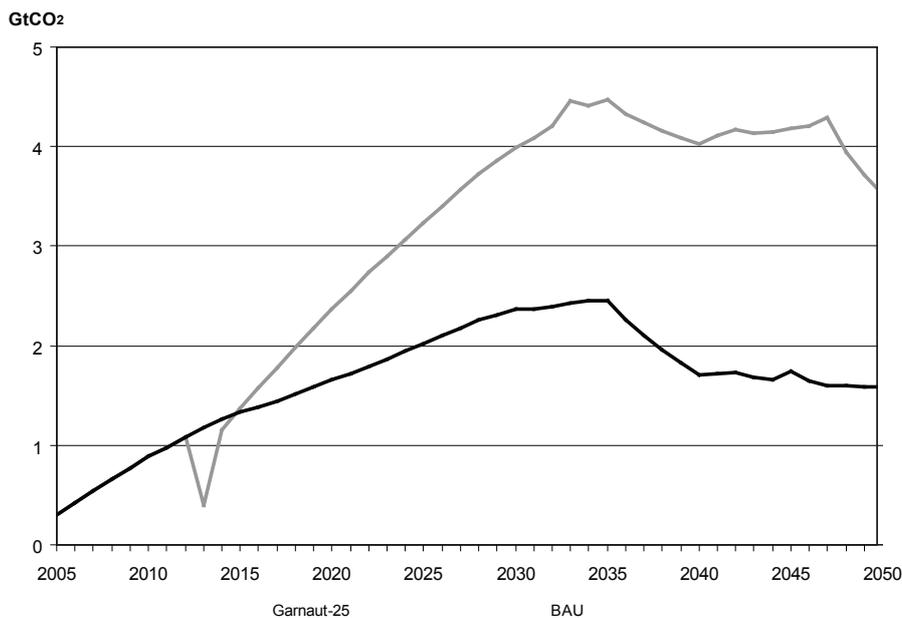
<sup>90</sup> FCCC/AWGLCA/2009/MISC.1/Add.2, at 7.

<sup>91</sup> FCCC/AWGLCA/2009/MISC.1/Add.2, at 8.

- Participating developing countries could establish frameworks to encourage sub-national activities and for the devolution of credits to participants in project-level activities, including the private sector (similar to the nested approach).
- Participating countries would not be responsible for emissions that are unrelated to anthropogenic factors, for example fires and pests.
- The market mechanism would be complemented by financing for readiness and capacity building. How this element of the proposal would operate is unclear. The Australian Government currently runs the International Forest Carbon Initiative, a program costing AU\$200 million and aimed at addressing the technical and policy hurdles that might obstruct the inclusion of a market-based REDD scheme in the post-2012 international climate regime. A core element of this program involves Forest Carbon Partnerships under which Australia is assisting Indonesia and Papua New Guinea to improve their forest monitoring and accounting capabilities. Presumably, Australia envisages that capacity-building finance will be provided through similar bi- and multi-lateral funding arrangements.

The inclusion of afforestation and reforestation is a key design feature of the Australian scheme, differentiating it from a number of other REDD and REDD-plus proposals.<sup>92</sup> The interest in including afforestation and reforestation within the scheme is likely to be driven by two factors. First, a number of studies have suggested that there is considerable scope for cheap abatement in afforestation and reforestation activities in developing countries.<sup>93</sup> The magnitude of these opportunities is illustrated in the Garnaut-25 scenario, which postulates that afforestation and reforestation activities in developing countries will sequester 129 GtCO<sub>2</sub> over the period 2013–50, 58 GtCO<sub>2</sub> above the projected sequestration under the reference scenario (see Figure 6).

**Figure 6: Afforestation and reforestation sequestration in developing countries, reference vs. Garnaut-25, 2005–50 (GtCO<sub>2</sub>)**



Source: Australian Department of Treasury,<sup>94,95</sup>

Secondly, the current CDM rules for afforestation and reforestation projects are restrictive. In particular, these projects only receive expiring credits, otherwise known as ‘temporary’ or ‘time-limited’ credits. This has hindered the uptake of forestry activities under the CDM and, to date, less than one per cent of registered CDM projects have involved afforestation and reforestation projects.<sup>96,97,98</sup> It would appear that the Australian Government is trying to find a way around the CDM’s forestry rules in order to promote greater exploitation of afforestation and reforestation abatement opportunities in developing countries.

<sup>92</sup> There are other REDD proposals that include afforestation and reforestation. See Terrestrial Carbon Group, *How to Include Terrestrial Carbon in Developing Nations in the Overall Climate Change Solution*, 2008.

<sup>93</sup> Nabuurs et al., ‘Forestry’.

<sup>94</sup> Australian Department of Treasury, *Australia’s Low Pollution Future*.

<sup>95</sup> Australian Department of Treasury, Information obtained under Freedom of Information.

<sup>96</sup> The temporary nature of forestry CERs was also one of the reasons they were excluded from the European Union’s emissions trading scheme. See Neeff and Ascui, ‘Lessons from carbon markets’.

<sup>97</sup> Paulsson, ‘A review of the CDM literature’.

<sup>98</sup> UNFCCC, CDM Statistics.

## 5. Opportunities and risks associated with a market-linked REDD scheme

This section provides a brief overview of the opportunities and risks associated with market-linked REDD schemes. It uses the Australian proposal as the primary example of this type of approach to highlight key issues.

### 5.1 Opportunities

The potential benefits associated with a market-linked REDD scheme such as the Australian proposal can be placed in four categories:

- lower abatement costs for developed countries
- greater access to financial resources
- sustainable development and governance benefits
- complementary biodiversity benefits.

#### *Lower abatement costs for developed countries*

A number of theoretical economic studies have found that cutting REDD emissions is a relatively cheap form of abatement.<sup>99 100 101 102</sup> However, most of these studies confine their analysis to direct abatement costs and do not consider the broader transaction costs associated with REDD measures, for example the administrative costs of programs to reduce emissions, the costs of improving governance and political costs. When these are included, the competitiveness of REDD as a source of abatement declines. Yet it is still likely to be amongst the more cost-effective ways of reducing emissions, especially because of the capacity of REDD measures to generate additional economic, social and environmental benefits.<sup>103</sup>

If a REDD scheme is able to lower the costs of meeting abatement targets, it will free up resources for other public and private consumption. Advocates of market-based REDD schemes also argue that by lowering abatement costs, these schemes could promote the adoption of more stringent mitigation targets.<sup>104 105</sup> On this point, the Eliasch Review concluded:

*... [B]y including the forest sector in a cap and trade system, the international community could set and meet a more ambitious global stabilisation target.<sup>106</sup>*

Consistent with this, the Australian Government has offered to reduce emissions by 25 per cent on 2000 levels by 2020, provided several conditions are met,<sup>107</sup> including:

*... [C]omprehensive coverage of gases, sources and sectors, with inclusion of forests (e.g. Reducing Emissions from Deforestation and forest Degradation – REDD) and the land sector (including soil carbon initiatives (e.g. bio char) if scientifically demonstrated) in the agreement.<sup>108</sup>*

Whether the prospect of an international REDD scheme has encouraged, or will encourage, more aggressive mitigation targets is difficult to gauge. The mitigation targets that have been suggested to date are relatively modest and are inconsistent with keeping warming to 2°C.<sup>109</sup> However, in the absence of REDD, the targets may have been significantly less restrictive.

#### *Greater access to financial resources*

Critics of fund-based approaches argue that they are unlikely to generate sufficient resources to trigger substantive action on REDD, a criticism based partly on past experiences with international fund-based approaches to environment

99 B Sohngen and R Sedjo, 'Carbon Sequestration in Global Forests under Different Carbon Price Regimes'. *The Energy Journal* 27, 2006, pp. 109–162.

100 Sathaye et al., 'GHG mitigation potential'.

101 Nabuurs et al., 'Forestry'.

102 Sathaye and Chan, *Costs and Carbon Benefits of Global Forestation and Reduced Deforestation*.

103 Corbera et al., 'Reducing greenhouse gas emissions'.

104 Eliasch, *Climate Change*.

105 A Angelsen, S Brown, C Loisel, L Peskett, C Streck and D Zarin, *Reducing Emissions from Deforestation and Forest Degradation (REDD): An Options Assessment Report*. Report for the Government of Norway, Meridian Institute, Washington DC, US, 2009.

106 Eliasch, *Climate Change*, p. 97.

107 Similarly in the US, proposals debated in Congress include significant REDD components.

108 FCCC/AWGLCA/2009/MISC.1/Add.2.

109 Macintosh, 'Keeping warming within the 2°C limit after Copenhagen'.



Photo: Josh Estey

and forestry issues where a lack of financing has hindered efforts to address relevant problems.<sup>110 111 112 113 114</sup> The funds that have been established, including the Global Environment Facility (GEF), are on too small a scale to prompt a significant reduction in REDD emissions.<sup>115 116</sup> On this point, the Australian Government has argued:

*While public financing from developed countries will play a role, ultimately carbon markets are the only mechanism capable of mobilising investment on the scale needed to support and provide incentives for these emission reductions.<sup>117</sup>*

The attraction of market-based approaches is that they provide access to a substantial pool of funding for proponents of REDD activities via the international carbon market. Emission reduction obligations, prescribed under international or domestic law, would provide the incentive for entities from developed countries to purchase credits on the carbon market and the sale of these credits would provide the source of revenue for developing country governments or other agents to fund REDD measures. Alternatively, project partners from developed countries would provide the upfront capital to support REDD activities in developing countries, in return receiving credits that could be used either to meet domestic carbon liabilities or to sell on the carbon market.

Several studies have raised the prospect that, even with access to the carbon market, there might not be sufficient resources to trigger a significant reduction in REDD emissions.<sup>118,119</sup> Others have argued that market-based approaches constructed solely on national-level accounting (credits are generated for reductions from a national baseline at the end of each commitment period) are unlikely to succeed because upfront costs would still have to be covered by developing-country governments, a burden that is likely to exceed their capacities.<sup>120</sup> This risk could be addressed in part by the creation of a facility for project-level or other sub-national-level accounting and crediting (for example, the nested approach). However, investment by third parties in the form of either debt or equity at the national or sub-national level may be obstructed by the risk that the relevant activity or project will not earn credits.<sup>121</sup> This could occur, for example, if REDD emissions from uncontrolled areas increased (leakage), offsetting any gains from the relevant activity.

### **Sustainable development and governance benefits**

Reducing deforestation and forest degradation will require developing countries to address the many causes of these issues,<sup>122,123</sup> which can be categorized as direct anthropogenic factors, indirect anthropogenic factors, and natural factors. Details of these are provided in Table 1 below.

110 Eliasch, *Climate Change*.

111 Potvin et al., 'Is reducing emissions from deforestation financially feasible?'

112 Pedroni et al., 'Creating incentives for avoiding further deforestation'.

113 Neeff and Ascui, 'Lessons from carbon markets'.

114 Corbera et al., 'Reducing greenhouse gas emissions'.

115 Neeff and Ascui, 'Lessons from carbon markets'.

116 Corbera et al., 'Reducing greenhouse gas emissions'.

117 FCCC/AWGLCA/2009/MISC.1/Add.2, at 7.

118 Karousakis and Corfee-Morlot, *Financing Mechanisms to Reduce Emissions from Deforestation*.

119 Potvin et al., 'Is reducing emissions from deforestation financially feasible?'

120 Pedroni et al., 'Creating incentives for avoiding further deforestation'.

121 Neeff and Ascui, 'Lessons from carbon markets'.

122 Corbera et al., 'Reducing greenhouse gas emissions'.

123 Skutsch and McCall, 'Reassessing REDD'.

**Table 1: Direct and indirect causes of REDD**

<b>Direct anthropogenic factors</b>
<b>Definition</b> Processes or activities that are the proximate causes of deforestation or forest degradation.
<b>Examples</b> <ul style="list-style-type: none"><li>• Clearing for agriculture, forestry, infrastructure, urban expansion and mining.</li><li>• Action to prevent regeneration of modified areas (grazing, large-scale shifting cultivation).</li><li>• Unsustainable forest-harvesting practices that reduce forest biomass.</li></ul>
<b>Indirect anthropogenic factors</b>
<b>Definition</b> The underlying anthropogenic drivers of the proximate causes of REDD.
<b>Examples</b> <ul style="list-style-type: none"><li>• Social, economic and governmental issues that affect the demand for the goods and services associated with REDD (for example GDP growth, population growth, societal preferences, poverty, social marketing, carbon prices, trade laws).</li><li>• Social, economic and governmental issues that affect the demand for, and supply of, deforested or modified land (for example poverty, education, corruption, land laws, planning and environment laws, government administrative capacity).</li></ul>
<b>Natural factors</b>
<b>Definition</b> Underlying natural factors that influence the anthropogenic causes of REDD.
<b>Examples</b> Geography, land availability, wildfires, storms, rainfall, drought.

Sources: Herold et al.,<sup>124</sup> Eliasch.<sup>125</sup>

As Table 1 indicates, the drivers of REDD are complex. They vary between areas and over time, and many of them are beyond the control of governments. The task of reducing REDD emissions is further complicated by the fragile nature of the relevant developing-country governments and the land area involved. Many of the developing countries with high REDD emissions have central and provincial governments with limited administrative capacity and poor records on governance and corruption. In particular, they lack the capacity to monitor land use, to enforce property and land-use laws, and to provide sufficient incentives to landholders and others to address REDD. The relevant countries are also often politically unstable and many of them have poor systems of land tenure that do not provide landholders with clear and secure property rights. These factors have hindered progress on REDD in the past and are likely to continue to do so in the foreseeable future.<sup>126,127,128</sup> As Neeff and Ascui state:

*The risk of failure in national programmes to reduce deforestation is very real: most countries with high baseline deforestation rates have a poor track record in controlling deforestation, and most also score poorly on governance metrics such as effective law enforcement and low corruption.*<sup>129</sup>

Despite this, REDD schemes have the capacity to make inroads, not only in reducing REDD emissions but also in addressing some of the underlying drivers of deforestation and forest degradation. If sufficient resources can be provided within an appropriate institutional framework, there is the prospect of improving governmental capacity and systems of land tenure, and providing sustainable development benefits for affected communities.

These 'add on' benefits of REDD schemes are integral to their success. There will be no sustained reduction in REDD emissions unless governance and legal structures in these countries can be improved, relevant poverty, health and education issues addressed, and direct actors provided with benefits that substitute for the gains they would have obtained from REDD-related activities.

124 Herold et al., *Emissions and removals from land-use*.

125 Eliasch, *Climate Change*.

126 L Tacconi, M Boscolo and D Brack, *National and international policies to control illegal forest activities*. Center for International Forest Research, Jakarta, Indonesia, 2003.

127 Nabuurs et al., 'Forestry'.

128 M Skutsch, N Bird, E Trines, M Dutschke, P Frumhoff, B de Jong, P van Laake, O Masera and D Murdiyarto, 'Clearing the way for reducing emissions from tropical deforestation'. *Environmental Science and Policy* 10, 2007, pp. 322–334.

129 Neeff and Ascui, 'Lessons from carbon markets', p. 311.

## Complementary biodiversity and environmental benefits

Deforestation and forest degradation contribute to land degradation, adversely affect the hydrological cycle, create localised air pollution and flooding,<sup>130,131,132,133,134</sup> and cause significant biodiversity loss.<sup>135,136,137</sup> An effective REDD scheme offers the potential to simultaneously generate both climate benefits and other broader environmental benefits related to the preservation of the ecosystem services provided by forests, for example biodiversity, soil stability, regional rainfall regulation, and flood defence. Forest conservation is also an important adaptation strategy; it helps buffer biodiversity and natural systems from the effects of climate change. For this reason, it is one of the few 'no regrets' (that is, it would be justified even without climate change) policy measures that generate dual mitigation and adaptation benefits.

## 5.2 Risks

Although market-based REDD schemes could potentially generate a number of important benefits, they come with several significant risks. These risks are described and debated extensively in the REDD literature as well as in the literature concerning the CDM and forest projects. What follows is a broad overview of the major REDD-related risks grouped into three categories:

- climate risks
- economic risks
- governance and other risks.

### 5.2.1 Climate risks

#### Additionality

Additionality describes the risk that offset credits will be generated for reductions that would have occurred in the absence of the REDD scheme. Where this occurs, the recipients of the credits will be unjustly rewarded and greenhouse gas emissions are likely to be increased. The magnitude of this risk depends on the accuracy of the baselines (that is, the extent to which they reflect emissions under 'normal' conditions). Devising projections of REDD emissions is challenging, a product of the difficulty in monitoring and estimating REDD emissions and evaluating the multitude of factors that influence them.

The inability to track emissions accurately makes it difficult to forecast future trends. The nature of the drivers of deforestation and forest degradation add an additional layer of complexity. These drivers are difficult to identify and measure, the extent of their influence on REDD trends is difficult to attribute with accuracy, and many of them are variable and difficult to predict.

Of relevance here is forest transition theory, which suggests that deforestation follows a Kuznets curve – it starts slowly, accelerates during the early phases of development, stabilises in the middle phases and is partially reversed in the latter phases.<sup>138</sup> There is some evidence that a number of countries may be in the midst of the stabilising period, having emerged from the high deforestation phase associated with the early to middle stages of development.<sup>139,140</sup> This may be due to economic factors providing alternative investment and employment opportunities, limited remaining forested areas, or social, legal and political changes. Irrespective of the causes, the state of development in relevant countries and their path on the transition curve increases the difficulty of forecasting trends in REDD emissions.

The complexity of setting REDD emission baselines is reflected in the current projections of LUC emissions at the global and regional levels.<sup>141,142,143</sup> Figure 7 below graphs the IPCC's LUC CO<sub>2</sub> emission projections (from its *Special Report on Emissions Scenarios* (SRES)), covering selected scenarios for the 'ALM region', the developing countries in Africa, Latin America, and the Middle East where most deforestation is occurring.<sup>144</sup>

130 M Andrae, D Rosenfeld, P Artaxo, A Costa, G Frank, K Longo and M Silva-Dias, 'Smoking Rain Clouds over the Amazon'. *Science* 303, 2004, pp. 1337–1342.

131 I Koren, Y Kaufman, L Remer and J Martins, 'Measurement of the Effect of Amazon Smoke on Inhibition of Cloud Formation'. *Science* 303, 2004, pp. 1342–1345.

132 Nabuurs et al., 'Forestry'.

133 Eliasch, *Climate Change*.

134 Herold et al., *Emissions and removals from land-use*.

135 Nabuurs et al., 'Forestry'.

136 Eliasch, *Climate Change*.

137 Herold et al., *Emissions and removals from land-use*.

138 A Mather, 'The forest transition'. *Area* 24(4), 1992, pp. 367–379.

139 T Rudel, O Coomes, E Moran, F Achard, A Angelsen, J Xu and E Lambin, 'Forest transitions: towards a global understanding of land use change'. *Global Environmental Change* 15(1), 2005, pp. 23–31.

140 Potvin et al., 'Is reducing emissions from deforestation financially feasible?'

141 S Brown, M Hall, K Andrasko, F Ruiz, W Marzoli, G Guerrero, O Masera, A Dushku, B DeJong and J Cornell, 'Baselines for land-use change in the tropics: application to avoided deforestation projects'. *Mitigation and Adaptation Strategies for Global Change* 12, 2007, pp. 1001–1026.

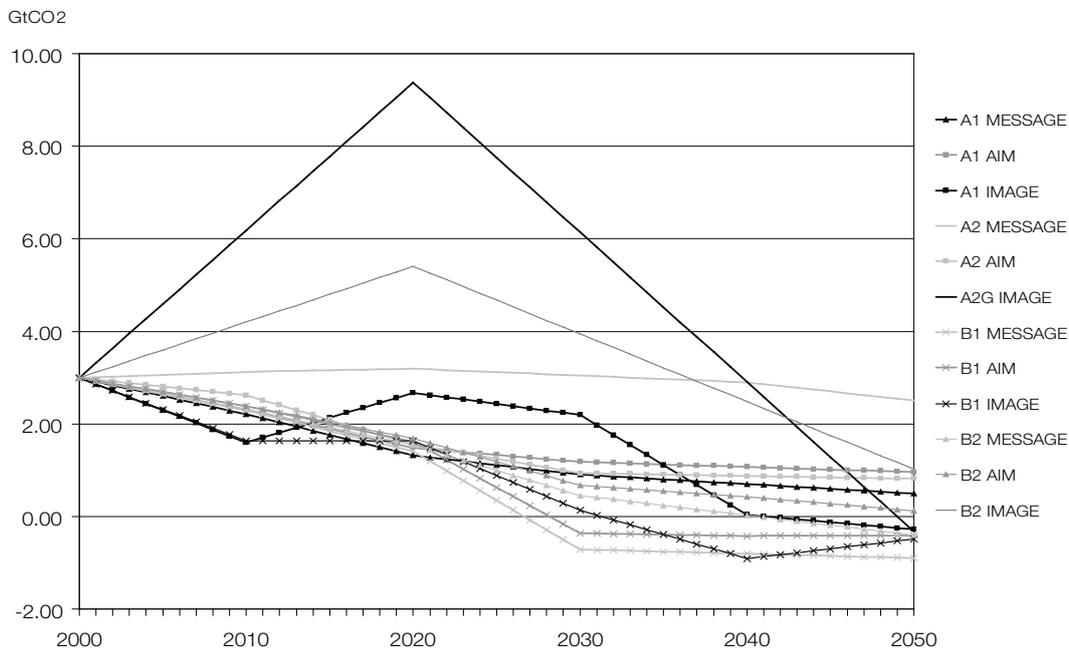
142 Fisher et al., 'Issues related to mitigation in the long term context'.

143 Nabuurs et al., 'Forestry'.

144 N Nakicenovic and R Swart (Eds.), *Special Report on Emissions Scenarios*. Cambridge University Press, Cambridge, UK, 2000.

The projections differ markedly. At 2020, the projected range of LUC emissions in the region is 1.3–9.4 GtCO<sub>2</sub>. By 2030, the range is between -0.7 GtCO<sub>2</sub> and +6.1 GtCO<sub>2</sub>. Even when the high A2G IMAGE and B2 IMAGE scenarios are excluded, the range is still large; -0.7 GtCO<sub>2</sub> to +3.0 GtCO<sub>2</sub> in 2030. Since the publication of the SRES report, there has been further work on methodologies for projecting LUC emissions and setting baselines; however, significant uncertainties and variability in projections remain.<sup>145,146,147,148</sup>

**Figure 7: SRES LUC projections for ALM region, 2000–50**



Source: Nakicenovic et al.<sup>149</sup>

Given the difficulty of forecasting REDD emissions, it is important to set conservative baselines to prevent environmentally invalid credits from being issued. As Karousakis and Corfee-Morlot state:

Regardless of whether a baseline is constructed at the national level or the project level, it will be important to ensure that a baseline is constructed with methods that are consistent across countries and conservative in their assumptions and outcomes, given the recognition of broad uncertainties.<sup>150</sup>

The Australian Government submission provides few details on how the proposed scheme will deal with additionality risks. It merely states that baselines will be set:

*... [U]sing a holistic approach that incorporates historical emissions data, information about pre-existing emissions reduction measures, population growth, drivers of deforestation, policies and measures, national circumstances and respective capabilities. The emissions level will be a conservative projection of future anthropogenic net emissions derived using the above information.<sup>151</sup>*

Later, it suggests that baselines will be set so that ‘credits are issued only for emissions reduction activities that are additional to pre-existing emissions reduction measures’.<sup>152</sup>

145 Fisher et al., ‘Issues related to mitigation in the long term context’.

146 J Sathaye and K Andrasko. ‘Land use change and forestry climate project regional baselines: a review’. *Mitigation and Adaptation Strategies for Global Change* 12, 2007, pp. 971–1000.

147 Brown et al., ‘Baselines for land-use change in the tropics’.

148 Skutch et al., ‘Clearing the way for reducing emissions from tropical deforestation’.

149 Nakicenovic and Swart, (Eds.). *Special Report on Emissions Scenarios*.

150 Karousakis and Corfee-Morlot, *Financing Mechanisms to Reduce Emissions from Deforestation*, p. 32.

151 FCCC/AWGLCA/2009/MISC.1/Add.2, at 7.

152 FCCC/AWGLCA/2009/MISC.1/Add.2, at 7.

## Measurement

Closely related to additionality risks are those associated with measurement. Recently, technological advances have improved the capacity to monitor deforestation and forest degradation and to estimate resulting emissions.<sup>153</sup> Despite the progress, considerable uncertainty remains, particularly in relation to the estimation of forest degradation emissions.<sup>154,155,156,157,158</sup>

The measurement problems associated with REDD schemes like the Australian proposal are magnified by the need to distinguish between anthropogenic and non-anthropogenic emissions, the latter being excluded.<sup>159</sup> Due to these issues, there is a risk that even if REDD baselines are set at an appropriate level, the data that are used to determine offset credit allocations may over- or under-estimate actual emissions, which could result in developing countries receiving too few, or too many, REDD credits. An under-allocation of credits would reduce the incentive for developing countries to continue to devote resources to REDD-related measures. An over-allocation increases global emissions and thereby diminishes the environmental effectiveness of the international climate regime.

## Leakage

Leakage refers to an increase in emissions or a reduction in sinks occurring outside the national, regional or project boundary attributable to the REDD scheme; that is, by reducing REDD emissions in one area, emissions could increase or sinks decline in another.<sup>160,161,162,163</sup> Issuing REDD credits without taking leakage risks into account can result in a net increase in global emissions if the leakage is to a country or area that is not covered by a binding emission target or equivalent REDD scheme.<sup>164</sup> In order for a net climate detriment to arise, the leakage must be to an area that would not have been cleared under normal circumstances; if clearing would have occurred anyway, only the timing of emissions will be altered. This alludes to the spatial and temporal aspects of leakage.

Leakage is often broken into two types: primary and secondary. Primary leakage refers to cases where the direct actors, who would have engaged in the REDD activity, physically transport that activity to another area (for example, a logging company moves from country A that is covered by the REDD scheme to country B that is not). Secondary leakage refers to instances where the transferred REDD emissions are not directly related to the actors covered by the scheme but arise as a result of market forces (for example, a drop in supply of forest products caused by the REDD scheme results in price increases that trigger deforestation in another area).<sup>165,166</sup>

There is currently a lack of empirical data on the magnitude of leakage risks associated with REDD schemes and studies on avoided deforestation activities have produced a wide range of leakage-rate estimates (0–92 per cent).<sup>167,168,169,170</sup> However, these results were not based on REDD schemes with national-level accounting. The adoption of national-level accounting is explicitly designed to reduce intra-national leakage risks – the transfer of REDD activities within a country is reflected in the national total and so should not result in environmentally invalid credits being issued. International leakage risks can also be minimised by ensuring that the scheme includes all, or most of, the major developing countries responsible for REDD emissions. The Australian Government's UNFCCC submission on its proposed scheme states the following in relation to leakage risks.

*Intra-national leakage is minimised by taking a national approach, as any displacement of emissions from one area to another within the national boundary is reflected in the national forest emissions level. The forest carbon market mechanism has been designed to encourage broad participation and therefore minimize international leakage.<sup>171</sup>*

As Collett has written, the Australian proposal seems to deal with international leakage by increasing the inducements for participation by developing countries. In his words, this is likely to “involve the use of baselines that generate “hot air” credits’.<sup>172</sup> That is, it reduces one risk by increasing another.

153 R DeFries, F Achard, S Brown, M Herold, D Murdiyarto, B Schlamadinger and C de Souza, 'Earth observations for estimating greenhouse gas emissions from deforestation in developing countries'. *Environmental Science & Policy* 10, 2007, pp. 385–394.

154 G Asner, D Knapp, E Broadbent, P Oliveira, M Keller, and J Silva, 'Selective Logging in the Brazilian Amazon'. *Science* 310, 2005, pp. 480–482.

155 C Peres, J Barlow and W Laurance, 'Detecting anthropogenic disturbance in tropical forests'. *Trends in Ecology and Evolution* 21, 2006, pp. 227–229.

156 Eliasch, *Climate Change*.

157 Herold et al., *Emissions and removals from land-use*.

158 Collett, 'In the REDD'.

159 J Canadell and M Raupach, 'Managing Forests for Climate Change Mitigation'. *Science* 320, 2008, pp. 1456–1457.

160 Baker and McKenzie, *CDM Rulebook, 2008*. <<http://cdmrulebook.org/home>> (13 April 2010).

161 Karousakis and Corfee-Morlot, *Financing Mechanisms to Reduce Emissions from Deforestation*.

162 Fry, 'Reducing Emissions from Deforestation and Forest Degradation'.

163 Collett, 'In the REDD'.

164 Leakage to an area covered by a REDD scheme could still result in an increase in net emissions if the receiving country/area is already going to exceed its baseline emissions (it would not have received REDD credits irrespective of the leakage), there is no mechanism to make up for excesses, and the area would not otherwise have been cleared.

165 B Sohngen and S Brown, 'Measuring leakage from carbon projects in open economies: a stop timber harvesting project in Bolivia as a case study'. *Canadian Journal of Forestry Research* 34(4), 2004, pp. 829–839.

166 Nabuurs et al., 'Forestry'.

167 Sohngen and Brown, 'Measuring leakage from carbon projects in open economies'.

168 B Murray, B McCarl and H Lee, 'Estimating Leakage from Forest Carbon Sequestration Programs'. *Land Economics* 80(1), 2004, pp. 109–124.

169 D Wear and B Murray, 'Federal timber restrictions, interregional spillovers, and the impact on US softwood markets'. *Journal of Environmental Economics and Management* 47(2), 2004, pp. 307–330.

170 US EPA, *Greenhouse gas mitigation potential in US forestry and agriculture*. US EPA, Washington DC, US, 2005.

171 FCCC/AWGLCA/2009/MISC.1/Add.2, at 9.

172 Collett, 'In the REDD', p. 331.

## Permanence

Permanence refers to the risk that the carbon stored in forested areas will be fully or partially released as a result of future events, some of which may be anthropogenic, for example a change in land use from forestry to agriculture that necessitates the removal of vegetation. They could also be 'natural', including incidents such as wildfires, insect attacks or shifts in the carbon cycle brought on by global warming. This risk of future releases is inherent in LULUCF activities. As Nabuurs et al. explain:

*Terrestrial carbon dynamics are characterized by long periods of small rates of carbon uptake, interrupted by short periods of rapid and large carbon releases during disturbances or harvest.<sup>173</sup>*

Most REDD schemes contain a built-in buffer against the risk of non-permanence because they are based on national-level accounting. Losses on one land unit can be offset by avoided deforestation, or afforestation/ reforestation, on another. In addition to national-level accounting, proponents of market-based REDD schemes have proposed several other mechanisms to reduce the risk of non-permanence, including:

- a 'once in, always in' requirement (countries that participate must continue to participate or face penalties)
- suspension from the scheme in the event of excess emissions
- downward adjustment of future baselines to account for excesses
- temporary credits where the buyer carries the risk of non-permanence
- discounting of REDD credits
- self-insurance and compulsory insurance.

The Australian proposal includes a number of risk-management measures. In particular, if a country's emissions exceed its baseline, it will be possible to suspend it from the scheme. The Australian Government has also proposed the establishment of an international 'confidence buffer' consisting of a pool of credits 'that can be used as a last resort to make up forest carbon credits when a major anthropogenic event results in non-permanence'.<sup>174</sup> The proposal requires host countries to contribute an agreed percentage of their generated REDD credits to the pool, which, in the event of a major human-induced event, would be distributed to purchasers of REDD credits to make up for the loss.

Whether the safeguards proposed by the Australian Government would be sufficient to deal with permanence risks is unclear. Two issues stand out. First, the exclusion of non-anthropogenic emissions from the scope of the scheme could undermine its environmental effectiveness; future natural events could result in emissions and sink reductions that negate the gains achieved through the scheme. Several studies have suggested that climate change could cause the drying of some tropical forests, exposing them to increased fire and insect risks and replacement by less carbon-dense ecosystems.<sup>175,176</sup> If this occurs and there is a resulting loss of terrestrial carbon stocks that is not covered in the international accounting framework, the environmental value of REDD credits will be undermined.

Secondly, under the Australian proposal, REDD credits would be both fully fungible in the international carbon market and permanent, characteristics required to promote the necessary confidence in the scheme to ensure sufficient demand for REDD credits. But the guaranteed permanence of REDD credits and the potential for future non-compliance, even withdrawal, creates an environmental integrity risk the extent of which is contingent on the size of the confidence buffer. If the buffer is big enough to cover future anthropogenic events, the environmental integrity of the scheme will not be threatened. The buffer also helps address other environmental integrity risks by taking credits out of circulation. If the buffer is 'excessive', in the sense that more credits are put aside than is warranted by relevant environmental risks, it could even result in the scheme achieving additional abatement.

### 5.2.2 Economic risks

There are four main economic risks associated with REDD schemes:

- scheme failure
- reduction in non-forest abatement
- exacerbation of poverty and dislocation
- currency risks.

173 Nabuurs et al., 'Forestry', pp. 547–548.

174 FCCC/AWGLCA/2009/MISC.1/Add.2, at 8.

175 R Gullison, P Frumhoff, J Canadell, C Field, D Nepstad, K Hayhoe, R Avissar, L Curran, P Friedlingstein, C Jones and C Nobre, 'Tropical Forests and Climate Policy'. *Science* 316, 2007, pp. 985–986.

176 Canadell and Raupach, 'Managing Forests for Climate Change Mitigation', pp. 1456–1457.

## Scheme failure

Reducing REDD emissions in developing countries is a difficult task because of the vast land areas, poverty, poor governance, imprecise systems of land tenure, capacity and monitoring constraints, and international influences. A combination of these factors make it one of the more complex policy issues to address, indicating why previous efforts to tackle deforestation and forest-management issues have had such limited success. Skutsch et al. accurately described the situation when they stated that 'history has shown that deforestation is a hard nut to crack'.<sup>177</sup>

Given the difficulty of the task, there is a significant risk that developing countries will struggle to control REDD emissions in the short to medium term. An awareness of the barriers to success may deter participation by developing countries but even if a significant number do participate, they may experience difficulty in bringing REDD emissions below baseline levels.<sup>178,179</sup> The capacity-building requirements necessary to support the REDD scheme are of particular concern, including the need to establish a reliable, accurate and transparent forest-monitoring system or systems.

If developed-country emission targets are tightened in anticipation of a significant flow of REDD credits and those credits are not forthcoming, the international carbon price could increase to unforeseen levels, possibly threatening the sustainability of the international climate regime. The failure of the scheme to reduce REDD emissions could also have detrimental social and environmental consequences, for example undermining poverty-alleviation efforts and contributing to biodiversity losses. The Australian Government is helping to address the risks of scheme failure through the International Forest Carbon Initiative. Notwithstanding this program and similar initiatives in other countries, there remains a significant risk that the scheme will not achieve its economic, social and environmental objectives.

## Reduction in non-forest abatement

Reduction in non-forest abatement refers to the risk that REDD credits could flood the international carbon market, driving down the carbon price and removing the incentive for abatement in other areas. In a perfect world, this would not be a problem. One of the primary functions of REDD schemes is to reduce the cost of abatement and thus enhance the economic efficiency of the global scheme. Theoretically, a problem arises only if REDD credits do not represent real abatement.

Due to market imperfections, it is argued by many that there is a need for at least some near-term transformation of non-LULUCF sectors (for example, electricity generation and transport) and investment in new technologies. REDD schemes could hamper these efforts.<sup>180,181,182</sup> To reduce this risk, many advocates suggest that the establishment of an international REDD scheme must be accompanied by higher emission targets.<sup>183,184</sup>

An increase in the stringency of emission targets should counter the risks associated with market flooding. Other suggestions include limits on the number of REDD credits that can be used to meet international obligations, floors on carbon permit prices, temporary REDD credits, and safety valves, for example quantity limits that are triggered by the price of credits.<sup>185,186</sup> The prerequisites for participation (frameworks for monitoring, accounting and reporting), and the institutional framework required to support the scheme may also reduce the likelihood of market flooding in the short term.

## Exacerbation of poverty and dislocation

Depending on how REDD schemes are structured and administered, there is a risk that they could exacerbate poverty and cause dislocation as direct actors and related communities in developing countries are forced to pursue alternative investment and employment opportunities. These risks are most likely to emerge where there is a lack of consultation with affected communities and an insufficient devolution of credit revenues to direct actors and local governments. If revenue is not passed through to local actors, they will not receive adequate compensation for the foregone benefits associated with REDD activities and, in the absence of these benefits, may not have the capacity to sustain or improve their living standards. This could undermine poverty-alleviation objectives and result in migration as people move in search of employment.

177 Skutsch et al., 'Clearing the way for reducing emissions from tropical deforestation', p. 330.

178 Potvin et al., 'Is reducing emissions from deforestation financially feasible?'

179 Neeff and Ascui, 'Lessons from carbon markets'.

180 Stern, *The Economics of Climate Change*.

181 Karousakis and Corfee-Morlot, *Financing Mechanisms to Reduce Emissions from Deforestation*.

182 Fry, 'Reducing Emissions from Deforestation and Forest Degradation'.

183 Eliasch, *Climate Change*.

184 Terrestrial Carbon Group, *How to Include Terrestrial Carbon in Developing Nations in the Overall Climate Change Solution*.

185 Karousakis and Corfee-Morlot, *Financing Mechanisms to Reduce Emissions from Deforestation*.

186 Fry, 'Reducing Emissions from Deforestation and Forest Degradation'.

## Currency risks

The final economic risk concerns the influx of foreign exchange associated with the sale of REDD credits, which could cause an appreciation in the relative value of the currencies of participating developing countries, thereby diminishing their export competitiveness. In turn, this could harm domestic industries and potentially slow development in poor countries, a form of Dutch disease.<sup>187</sup>

### 5.2.3 Governance and other risks

There are several other types of risks associated with REDD schemes, which can be grouped under three headings:

- governance and law enforcement
- sovereignty
- property rights.

#### Governance and law enforcement

The primary governance and law enforcement risks relate to corruption, fraud and devolution of revenues and benefits to direct actors. There are multiple points of potential vulnerability where illegal and unethical behaviour could undermine the credibility of the scheme and jeopardise other sustainable development objectives. These include:

- the use of falsified data to set baselines or report emissions
- the use of falsified REDD credits to defraud landholders or other parties
- illegal misappropriation of REDD credit revenues
- national and provincial governments taking an excessive proportion of REDD credit revenues to the detriment of direct actors and related communities
- parties falsely claiming property rights over affected land in order to obtain REDD credit revenues.

Even before any international REDD scheme has been created, there have been reports that fake REDD credits may have been used to mislead landholders in Papua New Guinea.<sup>188</sup> If a market-based scheme is introduced, there is a risk of similar behaviour undermining its success. The extent of the risk is contingent on the structure of the scheme and the steps that are put in place to safeguard its integrity.

The Australian proposal is vague on international institutional and governance arrangements. The Australian Government's UNFCCC submission suggests establishing an international specialist body to oversee the administration of the scheme and verify emission reports. However, there are few details. Relevantly, the submission states:

*... [I]t will be important to ensure arrangements are transparent, rigorous, efficient, effective and accountable, but also that they are not overly burdensome. Every effort should be made to minimise administrative costs.<sup>189</sup>*

There is an inherent tension between the need to minimise administrative and transaction costs in order to promote participation and the need to maintain the integrity of the scheme. If undue emphasis is placed on the former, it will compromise the latter.

#### Sovereignty

A number of developing countries, including Brazil, have expressed concerns about the possibility of REDD schemes threatening national sovereignty by exerting undue influence over their ability to determine governance arrangements and land-use patterns.<sup>190</sup> The Australian proposal attempts to deal with sovereignty issues by being voluntary. It also provides participating countries with a degree of discretion over the institutional and policy arrangements established to operate the REDD scheme. The Australian Government has stated:

*It is not necessary, and thus not appropriate, for the post-2012 outcome to mandate specific national institutional frameworks for individual Parties. The outcome will, however, need to make provision for the development of independently verifiable technical, methodological and institutional performance specifications that must be met for host Parties to participate in the forest carbon market mechanism.<sup>191</sup>*

187 R Jha, 'India and the Copenhagen Summit', *East Asia Forum*, 4 September 2009. <<http://www.eastasiaforum.org/2009/09/04/india-and-the-copenhagen-summit/>> (9 February 2010).

188 M Wilkinson and B Cubby, 'Carbon scandal snares Australian', *The Age*, 4 September 2009.

189 FCCC/AWGLCA/2009/MISC.1/Add.2, at 9.

190 Fry, 'Reducing Emissions from Deforestation and Forest Degradation'.

191 FCCC/AWGLCA/2009/MISC.1/Add.2, at 9.

As this statement implies, REDD schemes must balance sovereignty concerns against integrity issues. The international community must be able to assure itself that each participating country has established the systems necessary to accurately monitor and account for REDD emissions.

The Australian Government has also asserted that the prerequisites for participation must include 'national sustainable forest management frameworks' that are 'consistent with national sustainable development strategies'.<sup>192</sup> This may raise sovereignty concerns amongst some nations on the grounds that the international community should not seek to interfere in the policy and legal frameworks they establish to address REDD. The Australian proposal for an international specialist body to oversee the scheme and verify emission reports could raise further issues about the transfer of sovereignty to a foreign body and the rights and capacity of such a body to monitor land-use patterns.

### Property-right risks

There is the potential for REDD schemes to harm the interests of Indigenous peoples and other landholders. For example, the establishment of protected areas or the introduction of forest-harvesting restrictions could unjustly deprive Indigenous peoples and other landholders of property rights. Indigenous groups have already expressed concerns about REDD schemes and their capacity to threaten their interests in land. At COP-13, the International Forum of Indigenous Peoples on Climate Change issued a statement claiming that:

*REDD will not benefit Indigenous Peoples, but in fact, it will result in more violations of Indigenous Peoples' Rights. It will increase the violation of our Human Rights, our rights to our lands, territories and resources, steal our land, cause forced evictions, prevent access and threaten indigenous agriculture practices, destroy biodiversity and culture diversity and cause social conflicts. Under REDD, States and Carbon Traders will take more control over our forests.*<sup>193</sup>

The extent of these property-right risks will largely depend on how developing countries attempt to address REDD issues and whether the scheme incorporates sufficient safeguards to protect the interests of direct actors. Any international safeguards that seek to set restrictions on the types of programs and measures that can be used to reduce REDD emissions run the risk of inappropriately interfering with the sovereignty of developing countries. Possibly in recognition of this, the Australian proposal is largely silent on property-right risks, merely referring to the fact that the integrity of the scheme and the effectiveness of national approaches 'will be most effectively supported' through the involvement of all stakeholders, including Indigenous communities.<sup>194</sup> It also states:

*Emissions reduction benefits from the forest carbon mechanism will be maximised by the active inclusions of local and Indigenous communities in host Party activities.*<sup>195</sup>

Similar statements appear in the SBSTA decision and AWG-LCA draft decision on REDD-plus from Copenhagen. The SBSTA decision recognises the 'need for full and effective engagement of indigenous peoples and local communities in, and the potential contribution of their knowledge to, monitoring and reporting of' REDD-plus activities.<sup>196</sup> It also encourages 'the development of guidance for effective engagement of indigenous peoples and local communities in monitoring and reporting'.<sup>197</sup> The draft AWG-LCA decision lists a number of safeguards related to REDD-plus activities, including:

- respect for the knowledge and rights of Indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the General Assembly has adopted the United Nations Declaration on the Rights of Indigenous Peoples; and
- full and effective participation by relevant stakeholders, including in particular Indigenous peoples and local communities.<sup>198</sup>

How these safeguards are operationalised within the final REDD scheme will be the key determinant of the extent to which the concerns of Indigenous peoples and local communities are addressed.

<sup>192</sup> FCCC/AWGLCA/2009/MISC.1/Add.2, at 9.

<sup>193</sup> International Forum of Indigenous Peoples on Climate Change (IFIPCC), 'Statement on "reduced emissions from deforestation and forest degradation" (REDD) agenda item at the UNFCCC climate negotiations', the 13th Session of Conference of the Parties to the UNFCCC SBSTA 27, agenda item 5/REDD, November 2007.

<sup>194</sup> FCCC/AWGLCA/2009/MISC.1/Add.2, at 6–7.

<sup>195</sup> FCCC/AWGLCA/2009/MISC.1/Add.2, at 6.

<sup>196</sup> FCCC/SBSTA/2009/L.19/Add.1, at 2.

<sup>197</sup> FCCC/SBSTA/2009/L.19/Add.1, at paragraph 3.

<sup>198</sup> FCCC/AWGLCA/2009/L.7/Add.6, at 2.

## 6. Issues for the aid sector

### 6.1 Principal issues for the sector

The establishment and operation of an international REDD-plus scheme could present a number of opportunities for the aid sector. The main issues that the sector should be mindful of are set out below.

#### *Inflow of resources for REDD readiness, capacity building and demonstration projects*

Several programs have already been established to assist developing countries prepare to participate in an international REDD scheme. As the scheme moves closer to reality, the scale of REDD readiness and demonstration measures is likely to increase considerably. The aid sector could potentially play an important role in this process, including through direct involvement in project management, oversight, and coordinating participation by non-government actors. Of particular importance could be the aid sector's capacity to promote and support governance, land tenure and transparency initiatives and programs aimed at finding alternative forms of employment for affected communities. The sector may also be able to serve a valuable international monitoring role by reporting on where REDD resources are being allocated within developing countries and the extent to which direct actors are receiving incentives to change land-management practices.

#### *Redistribution of aid budgets to REDD-related activities*

The operation of an international REDD scheme will require a significant amount of public financing, which could place pressure on government aid budgets and result in the redistribution of funds from existing programs. This would adversely affect the capacity to achieve the objectives of existing programs and alter the focus of aid-sector activities.

#### *Impacts of REDD-plus schemes on the rights and interests of Indigenous peoples and local communities*

An effective REDD scheme offers great promise for Indigenous peoples and local communities. Potentially, it could provide access to new and additional forms of employment and financial resources and improve land tenure and governance arrangements. However, there are also risks, including the loss of property rights, social and cultural values, and employment opportunities. Balancing the rights and interests of Indigenous peoples and local communities with the need to curtail REDD emissions is likely to be one of the key challenges of an international REDD scheme.

There is a growing literature on REDD-related risks to Indigenous peoples and local communities and how their interests can best be protected.<sup>199 200 201</sup> Proposals include:

- the creation of voluntary standards for REDD activities<sup>202</sup>
- improvements in land tenure and the protection of property rights<sup>203,204</sup>
- recognition of rights and interests in the text of the REDD agreement
- guaranteeing procedural and appeal rights in domestic and international REDD schemes
- establishing an advisory board to oversee the operation of the REDD scheme and monitor and advise on ways of protecting the interests of Indigenous peoples and local communities.<sup>205</sup>

The aid sector could play many roles in efforts to ensure that the rights and interests of Indigenous peoples and local communities are not adversely affected by any future REDD scheme. Already, CARE International is directly involved in the creation of a draft voluntary standard for REDD projects known as the 'REDD+ Social and Environmental Standards'.<sup>206</sup> In relation to the protection and promotion of the rights and interests of Indigenous peoples and local communities, other areas of possible involvement include:

- awareness-raising and education
- identifying, mapping and recording individual and collective interests in land
- assisting in the distribution of REDD revenues
- capacity building in communities to facilitate involvement in REDD projects, either as project partners (vendors) or as suppliers of required services, for example monitoring, reporting and verification
- third-party monitoring of the social impacts of REDD.

199 Angelsen et al., *Reducing Emissions from Deforestation and Forest Degradation (REDD)*.

200 J Dunlop, *REDD, Tenure and Local Communities: A Study from Aceh, Indonesia*. International Development Law Organization, Rome, Italy, 2009.

201 Climate Community and Biodiversity Alliance (CCBA) and CARE International, 'REDD+ Social and Environmental Standards', draft version 15, January 2010.

202 CCBA and CARE International, 'REDD+ Social and Environmental Standards'.

203 J Crittenden and M Wilder, 'Bringing the Forest to Market : Structuring Avoided Deforestation Projects', *Carbon and Climate Law Review* 2(3), 2008, pp. 273–280.

204 Dunlop, *REDD, Tenure and Local Communities*.

205 Angelsen et al., *Reducing Emissions from Deforestation and Forest Degradation (REDD)*.

206 CCBA and CARE International, 'REDD+ Social and Environmental Standards'.



Photo: Josh Estey

### **Capacity of REDD-plus to generate negative environmental outcomes**

A poorly designed and administered REDD scheme could result in an increase in emissions above agreed targets and thus more damaging climate outcomes. This would lead to increased climate-related costs, including greater impacts on developing countries. A REDD scheme could also promote activities that impact adversely on biodiversity and ecosystem services, for example inappropriately sited forestry plantations that reduce biodiversity and water availability.

The success of the REDD mechanism will hinge on governance and land-tenure reform, and the aid sector is well placed to assist in bringing about these changes. It could also play a key role in:

- identifying and promoting alternative forms of employment
- facilitating the positive involvement of Indigenous peoples and local communities
- monitoring and reporting on the success or failure of REDD-related programs
- ensuring that broader environmental impacts are given real and proper consideration in decision-making processes.

### **6.2 Where do the main developing countries in the region sit on REDD-plus?**

Australia's major developing-country neighbours have taken a diverse range of positions on the creation and design of an international REDD-plus scheme. Some, like Indonesia and Papua New Guinea, are leading proponents of a market-based approach. Others are wary of market-based approaches and prefer a direct-funding model, for example Tuvalu. An overview of the positions that have been taken by the major developing countries in the Australian region is provided in Table 2.

**Table 2: Overview of developing country positions on REDD-plus**

Country	Position on REDD-plus
Fiji	Part of the Coalition for Rainforest Nations (CfRN). See Papua New Guinea below.
India	Supports a dual approach: <ul style="list-style-type: none"> <li>• a market-based scheme for deforestation, stock enhancement through sustainable forest management, and A/R*</li> <li>• a fund-based scheme for stabilisation, conservation and maintenance of forest carbon stocks.</li> </ul>
Indonesia	Supports a dual approach: a market-based scheme coupled with direct funding, particularly in the early phases of the scheme (i.e. bi- and multi-lateral funding for capacity building, demonstration projects etc.). Where baselines are concerned, the Indonesian Government prefers a two-pronged approach that distinguishes between planned and unplanned activities. Planned activities refer to forest areas that have previously been designated as areas available for conversion to other land uses, with the baseline set as the area available for conversion (either as a forest reference level or forest emission equivalent). For remaining areas, unplanned areas, the baseline would be determined by extrapolating from historical data. The Indonesian Government is well advanced in REDD-readiness, having passed laws to facilitate and regulate REDD projects. It has also hosted several REDD demonstration projects, some in partnership with the Australian Government.
Malaysia	Supports a dual market/fund approach that provides incentives to reduce deforestation and forest degradation and rewards measures designed to conserve forest carbon stocks. Advocates for A/R* to remain part of the CDM rather than being merged into any new market-based REDD mechanism. Seeks a national-scale scheme that allows for sub-national projects.
Papua New Guinea	Part of the Coalition for Rainforest Nations (CfRN) and the Alliance of Small Island States (AOSIS) and a leading proponent of a market-based REDD scheme. Supports a dual market-based plus fund approach to financing. Under the proposal advanced by the CfRN, there would be a three-phase process. In phases I and II, developing countries would undertake capacity building, pilot and demonstration projects using finance derived from ODA, carbon taxes within developed countries, and a levy on the sale of Assigned Amount Units (AAUs). Phase III would involve a market-based, national-scale REDD scheme with baselines set using historical emission data modified by a development adjustment factor where appropriate. Countries with high-forest cover and low rates of deforestation and forest degradation may be able to increase their baseline to provide rewards/incentives for maintaining and enhancing forest carbon stocks. Credits would be generated for early action and there would be an ex-ante crediting process to ensure that developing countries have access to 'up-front' finance. Like the Australian proposal, the CfRN proposal provides for the creation of a reserve account to act as a buffer against future exceedences and non-compliance in other countries. Papua New Guinea has been actively involved in REDD readiness projects, including with the Australian Government and the UN-REDD Programme.
Solomon Islands	Part of CfRN. See Papua New Guinea.
Tuvalu	Tuvalu is part of AOSIS. However, unlike a number of other AOSIS members, it supports a fund-based approach to REDD, primarily because of concerns about the environmental integrity and social impacts of a market-based scheme (especially leakage, non-permanence, market flooding, and potential adverse impacts on Indigenous peoples and local communities). Under the Tuvaluan proposal, there would be a two-layered system of funds: an International Forest Retention Fund (IFRF) and a multitude of Community Forest Retention Trust Accounts (CFRT Accounts). IFRF financing could come from a number of sources, including a levy on international transport. The resources from the IFRF would be used to finance local-level projects through the CFRT Accounts.
Vanuatu	Part of CfRN. See Papua New Guinea.
Other AOSIS members (includes Cook Islands, Kiribati, Marshall Islands, Nauru, Niue, Samoa, Timor Leste, Tonga)	These countries call for the establishment of a Multilateral Fund on Climate Change (MFCC) to support mitigation and adaptation. The MFCC would be financed via contributions from developed countries with REDD one of its six 'funding windows'. While the MFCC would provide resources to support REDD measures, AOSIS also recognises a role for other sources of finance, including market-based sources. It submits that 'robust environmental integrity will need to be maintained if a REDD mechanism is linked to international carbon markets'.

Source: FCCC/AWGLCA/2009/MISC.8; FCCC/AWGLCA/2009/MISC.1/Add.4; FCCC/AWGLCA/2009/MISC.4 (Part I); FCCC/AWGLCA/2008/MISC.5/Add.2 (Part II); FCCC/SBSTA/2008/MISC.4; FCCC/SBSTA/2007/MISC.14/Add.3; FCCC/SBSTA/2006/MISC.5.

\* A/R refers to afforestation and reforestation.

## 7. Conclusion

Over the past several years, there has been much excitement about the establishment of an international REDD scheme and its capacity to generate multiple benefits from providing a cheap source of greenhouse gas abatement to promoting sustainable development in developing countries. As Skutsch and McCall have recently written, there has been a tendency in some circles to over-hype the benefits of such a scheme and gloss over its limitations.<sup>207</sup>

While a REDD scheme currently looks inevitable and it could play an important role, it is likely to be on a more modest scale than is often predicted. REDD-related emissions are lower than previously believed, reducing the scope for any REDD scheme to assist in cutting emissions. The scheme will also take time to establish and it appears that it will go through several evolutionary phases, from base-level capacity building, to trial and demonstration, through to full operation. The final scheme will probably be market-based, with full integration into the international carbon market. Yet this may not eventuate and direct funding via bi- and multi-lateral mechanisms may ultimately prove to be the main source of finance.

Irrespective of the final form of the REDD scheme, it will face a number of significant challenges. The environmental, economic, social and governance risks associated with an international REDD scheme are real, though not insurmountable. With good design and administration, these issues can be managed. However, due to the international scope of the scheme, and the fact that it will operate in countries with long-standing governance and law-and-order problems, vigilance will be required to avoid adverse impacts. In the absence of proper safeguards, and a conservative approach to administration (particularly the setting of baselines), an international REDD scheme could worsen climate outcomes, obstruct sustainable development and unjustly deprive vulnerable communities of access to economic and cultural opportunities.

The object of this paper has been to explain how an international REDD scheme would operate and to highlight the principal risks and opportunities from a sustainable development standpoint. A number of critical development issues have been identified.

- A REDD-plus scheme could threaten the rights and interests of Indigenous peoples and local communities. It is essential that these rights and interests be given appropriate consideration and protection in international and domestic decision-making processes.
- There is an associated risk that the potential benefits of REDD-plus will not reach the most vulnerable or affected communities. It is essential to ensure not only that those living in poverty are no worse off by any REDD-plus scheme, but that the potential benefits are equitably distributed.
- Demands for REDD financing risk placing pressure on donor government aid budgets, resulting in the potential redistribution of funds from existing programs that may jeopardize progress made in reaching the Millennium Development Goals (MDGs).
- The political imperative for rapid progress on a REDD-plus scheme has the potential to undermine the effectiveness and equity of any agreed international scheme. The continued investment in conception phase projects is critical to ensure any scheme is well designed and administered.
- Although a market-based approach has the potential to bring significant benefits, we must remain cautious of the associated developmental risks if it is not designed and administered properly. This highlights the need for a staged and gradual approach to the introduction of a market-based scheme based on evidence that the risks can be appropriately managed.

While there is uncertainty about the current state of international climate negotiations, there is a possibility that an agreement will be reached on a post-2012 regime over the next two to three years. If this occurs, it is highly likely that the agreement will contain a REDD-plus component, which will provide the platform for the future evolution of REDD measures. We should be mindful of the risks and opportunities associated with REDD schemes and conscious of Australia's role in ensuring the success of any future international REDD scheme.

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<sup>207</sup> Skutsch and McCall, 'Reassessing REDD'.

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## (Footnotes)

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The logo for TAI (Trade Action Initiative) features the letters "TAI" in a bold, sans-serif font. The "T" is small and positioned to the left of the "A". The "A" is large and dark brown, with a white outline. The "I" is tall and black, positioned to the right of the "A".

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