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**The Potential and Challenges of Forest Carbon Finance for
Commonwealth Countries¹**

A Paper by the Commonwealth Secretariat

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TABLE OF CONTENTS

	Page
Executive Summary	1
Some issues for Ministers	2
INTRODUCTION	3
The State of Forests in Commonwealth Member States.....	3
The Role of Forests in Climate Change Mitigation and Adaptation	4
Sustainable Forest Management (SFM) and its Challenges	5
Forest Carbon Finance and the Case for Conservation.....	6
MITIGATION AND SUSTAINABLE FOREST MANAGEMENT	6
Current Market Situation and the Potential for Forest Carbon Finance	6
Some Questions for National Carbon Finance Initiatives.....	8
<i>How can a country ensure CDM projects are good for sustainable development? ..</i>	<i>8</i>
<i>How can voluntary market projects be encouraged?</i>	<i>8</i>
<i>Should the country develop a REDD programme? Will it be worth it?</i>	<i>8</i>
<i>How could a national REDD programme be forward financed?</i>	<i>9</i>
<i>How could a pro-poor REDD strategy be promoted?</i>	<i>9</i>
<i>Would REDD result in sustainable forest management?</i>	<i>10</i>
<i>Should the country anyway pursue REDD-like strategies?.....</i>	<i>10</i>
<i>Some other unresolved REDD questions</i>	<i>10</i>
ADAPTATION AND SUSTAINABLE FOREST MANAGEMENT	11
Adaptation Funding Situation	11
The Potential for Sustainable Forest Management	11
Synergies or Trade-offs Between Adaptation and Mitigation Projects	12
Challenges and Some Questions for National Policy Makers	12
CONCLUDING COMMENTS ON CARBON FINANCE AND SFM	13
ANNEX 1: UNFCCC DECISION ON REDD, DECEMBER 2007	15
ANNEX 2: THE PLAN VIVO MODEL OF PRO-POOR CARBON SEQUESTRATION	19
ANNEX 3: CAPTURING ADAPTATION AND MITIGATION SYNERGIES	20
ANNEX 4: GLOSSARY OF TERMS	21
ANNEX 5: ACRONYMS	23

EXECUTIVE SUMMARY

1. It is thought that deforestation currently contributes about a fifth of all human-made CO₂ emissions, the principal greenhouse gas that leads to global warming and climate change. With this in mind, there have been strong moves recently to include action to reduce emissions from deforestation and forest degradation within international frameworks for action on climate change. By-and-large, deforestation and degradation are the result of a combination of market, policy and government failures, which make it more profitable to fell trees rather than to keep them. This paper provides an overview of these issues and discusses a range of carbon finance issues that are being considered to address the problem of deforestation and forest degradation. In particular, the paper considers the role of forests in climate change mitigation and adaptation, and how 'forest carbon finance' can contribute to sustainable forest management (SFM). The paper also considers the state of Commonwealth forests; and identifies some key questions for Ministers to consider when drawing up national programmes.

2. A high proportion of Commonwealth countries are highly vulnerable to climate change, and forests are very important in many of them; however Commonwealth forests overall have a deforestation rate well above the global average, with some African and South Asian countries recording alarmingly high rates.

3. As regards climate change mitigation, forestry has been rather marginalised to date. But with the 2006 Stern Review, the focus shifted to Reduced Emissions from Deforestation and forest Degradation (REDD). While action on REDD was supported at the Conference of the Parties to the UN Framework Convention on Climate Change, which took place in Bali, in December 2007, there is still great uncertainty with various proposals on the table, each with their strengths and weaknesses, and for each one winners and losers. A major sticking point is between countries with low deforestation rates who want a fund-based system that rewards forest conservation, and countries with high deforestation rates who favour a market-based system in which REDD payments would depend on a country's success in reducing their deforestation rates against a historical baseline. Over the next five years, the emphasis will be on 'Readiness' activities and pilot REDD projects.

4. Whether REDD programmes are effective and contribute to SFM depends on whether countries undertake the necessary legal, policy and institutional reforms to tackle the policy and governance failures driving deforestation, and thereby lower the opportunity costs of SFM. Countries should also consider very carefully whether and how to pursue pro-poor REDD strategies, since anti-poor strategies may appear economically more attractive. From an equity perspective, priorities are clarification of property rights over carbon in a range of tenure situations, better governance and measures to reduce transaction costs for community forest managers.

5. Climate change adaptation has received less attention since it may be seen as less in the self-interest of wealthy countries. While there have been many studies and toolboxes, there has been little funding (compared to the tens of billions of dollars per annum needed) and few practical adaptation projects. Funding will improve with the ratification in Bali of the Adaptation Fund, based on a 2% levy on the Clean Development Mechanism, and it is hoped that real on the ground action will pick up quickly. Priorities include mainstreaming adaptation in national development plans; developing a coherent institutional basis for adaptation efforts; increasing co-operation between those working on adaptation and

mitigation forestry; promoting ‘integrative’ or multiple benefit carbon projects; local collaborative research to improve the resilience of farm-forest production systems; and empowering local government and civil society in adaptation efforts. It should be noted that the type of forestry needed for adaptation is in fact very close to SFM.

SOME ISSUES FOR MINISTERS

6. In their consideration of forest carbon finance concerns, Ministers may wish to share their experiences and opinions on the following and other issues:

- How the international regime can encourage a REDD approach that promotes equity and increases the adaptive capacity of communities.
- How equity and carbon objectives can be harmonised at the national-level.
- How trade-offs in carbon mitigation projects can be minimised and the synergies between mitigation and adaptation projects strengthened.
- How ‘adaptation forestry’ can be mainstreamed and integrated into broader development agendas.
- The key capacity constraints they face in developing carbon finance initiatives at the national level.
- What further action is needed at the international level (for example, information, policy advice, debate and other approaches) to support effective decision making and capacity building in the area of forest carbon finance.
- What further support is needed to enable the full and effective engagement of highly vulnerable member states on REDD and other forest carbon finance issues being considered through the UNFCCC.

The Potential and Challenges of Forest Carbon Finance for Commonwealth Countries

INTRODUCTION

7. There is now scientific consensus about the links between global warming and climate change. The latest report of the Intergovernmental Panel for Climate Change (IPCC) predicts a temperature rise of 2—4°C and sea level rise of up to 60 cm by 2100. Recent years have seen a dramatic increase in scientific and public interest and scrutiny surrounding the role of forests, especially tropical forests, as both part of the problem and solution to global warming. Noting that deforestation contributes about a fifth of human-made carbon dioxide emissions, second only to the energy and power sector, the 2006 Stern Review made a strong case to include ‘avoided deforestation’ or Reduced Emissions from Deforestation and forest Degradation (REDD) in the Kyoto Protocol carbon trading mechanisms. Stern also pointed out the relative cost of concerted action now compared to action later.

8. While there is a long way to go in defining what a REDD regime will look like, the November 2007 meeting of the United Nations Framework Convention on Climate Change (UNFCCC) agreed on the need for urgent and meaningful action on REDD (see Annex 1 for the text of the Bali decision on REDD). Almost simultaneously, Commonwealth Heads of State signed the Lake Victoria Commonwealth Climate Change Action Plan, recognising *inter alia* that the cost of inaction on climate change mitigation and adaptation is far greater than the cost of early action, and prioritising “support for improved land use management, including conservation and sustainable use of forest resources.”

9. While REDD currently has most of the limelight as regards forests and climate change, this paper also assesses the key role of forests in climate change adaptation, given the importance of adaptation for Commonwealth countries, a very high proportion of which are Small Island Developing States (SIDS), African and/or Least Development Countries (LDCs), all of which are seen as highly vulnerable to climate change.

The State of Forests in Commonwealth Member States²

10. Commonwealth countries have 810 million hectares of forests, over a fifth of the world total. These include three (Canada, Australia and India) of the ten most forested countries and five others with over 20 million hectares: Zambia, Tanzania, Papua New Guinea, Cameroon and Malaysia. Others with a high proportion of land under forest are Guyana (77%), Belize (73%), Malaysia (64%), Dominica (61%) and Zambia (57%).

11. About 28% of Commonwealth forests are ‘primary forests’ containing high levels of biodiversity and carbon. Other important forest types include the mangrove coastal forests of many SIDS and low-lying countries, montane forests and Canada’s extensive boreal forests. Mangrove and boreal forests are particularly threatened by climate change. The importance of forests and woodlands to the rural poor³, including in ‘low forest cover countries’ (under

² This section is based on the publication ‘Commonwealth Forests. An Overview of the Commonwealth’s Forests’ by the Commonwealth Forestry Association.

³ According to the World Bank, 1.6 billion depend to some extent on forests for their livelihoods and about 350 million rely almost entirely on them, including 60 million indigenous people.

10% of land area under forest) and 'other wooded land' (5-10% canopy cover), covering 280 million hectares, is greatly underestimated.

12. The state of Commonwealth forests is a major concern - about 25,000 square km are deforested each year, over a third of the world total; the recent (2000-2005) annual deforestation rate (0.31%) is nearly double the global average (0.18%). Also while global deforestation has fallen (from 0.22% during 1990-2000), Commonwealth deforestation has increased (from 0.27%). Deforestation is particularly acute in Africa (1.08%), including Nigeria (3.3%), Uganda (2.2%) and Ghana (2.0%). In South Asia, Pakistan (2.1%) and Sri Lanka (1.5%) also have high deforestation rates. Papua New Guinea's deforestation rate is 'only' 0.46%, but most of it is primary forest.

13. A more encouraging trend, observed especially in India and other Asian countries, is a 'forest transition' from net deforestation to a net increase in forest cover (although often with a net biodiversity loss). This is partly due to plantations, which in Commonwealth countries cover over 14 million hectares or 1.8% of the Commonwealth forest estate (half the global average of 3.5%), as well as from secondary forest regrowth over abandoned farmland. Several Commonwealth countries rely increasingly on plantations for forest goods and services, and some have adopted 'outgrower' schemes with significant livelihood benefits. Tree planting in towns and cities is also attracting increasing support.

The Role of Forests in Climate Change Mitigation and Adaptation

14. Forests are critical to the global carbon cycle. The concentration of carbon dioxide (CO₂), the principal greenhouse gas, in the atmosphere is the result of a cycle between different carbon pools. Forests and their soils are important carbon pools, as are oceans, agricultural soils, other vegetation and wood products. Forests represent about 70% of global terrestrial carbon; the carbon stored in forest biomass and soils is about 50% more than in the atmosphere. Forests continuously exchange CO₂ with the atmosphere. In this context, the release of CO₂ into the air is due to natural processes (respiration and decomposition of organic matter) and human processes (removal or destruction of trees). Similarly, carbon dioxide is removed from the atmosphere by the action of photosynthesis, which leads to carbon being integrated into complex organic molecules used by plants, including the development of wood in trees.

15. Thus, forests contribute to climate change mitigation in two main ways – through carbon storage (or avoided deforestation) and carbon sequestration. Avoided deforestation is known as REDD in the international climate change negotiations. As already mentioned, deforestation is a major source of CO₂ emissions; therefore conserving forests under threat is an essential strategy for reducing atmospheric CO₂ levels. It is also thought that intact forests contribute importantly to the net uptake or absorption of atmospheric CO₂, and therefore act as 'sinks' for industrial and other carbon emissions. The sink function is most pronounced during the growing biomass phase of trees: as a consequence, only planted forests or trees are eligible for carbon sequestration credits.

16. Stern said that "curbing deforestation is a highly cost-effective way of reducing greenhouse gas emissions and has the potential to offer significant reductions fairly quickly", while warning that "major institutional and policy challenges" have to be overcome for these opportunities to be realised. It should be noted that some Kyoto Protocol Annex 1

Commonwealth countries have made significant commitments to REDD, and at least one (New Zealand) includes forestry in its national Emissions Trading Scheme.

17. Forests, trees and their ecosystem services also have a vital role in climate change adaptation, which is about building resilience (or reducing vulnerability) and minimising negative impacts. But adaptation has received much less attention than mitigation since it is less in the self-interest of wealthier countries, which due to their resources, social organization and technology, are more easily able to adapt and respond to climate change threats.

18. Forest ecosystems and products perform a buffering role during climate change events, for example, when farming systems fail, forests provide a safety net or coping strategy for rural populations; mangrove forests reduce cyclone impacts in coastal areas; and watershed protection reduces landslide risks in mountain areas. An important part of the adaptation agenda is how to increase the resilience of farm and forest-based livelihoods, and therefore reduce the vulnerability of the poor to climate change. This includes helping the poor adapt their forest production systems to the ecological impacts of climate change, with its implications for appropriate varieties and management systems.

Sustainable Forest Management (SFM) and its Challenges

19. When considering the potential of carbon finance for sustainable forest management (SFM), it is important to briefly define what SFM means and explain why in much of the world it is not happening. An authoritative definition by the International Tropical Timber Organization (ITTO) describes SFM as involving practices that “do not significantly reduce the ecosystem’s capacity to deliver future products and services” and that “balance the needs of different forest users so that its benefits and costs are shared equitably”. Note that in this paper the term SFM is taken to include forest conservation.

20. While SFM is widely practiced in temperate and wealthier countries, it is less common in the tropics. According to a recent ITTO survey, only 5% of tropical forests are well or 'sustainably' managed. By definition, when forests are not sustainably managed, they are being degraded or felled. Deforestation and degradation are caused mainly by a combination of market, policy and governance failures which make it more profitable to fell trees than keep them.

21. ‘Market failure’ refers mainly the absence of markets for the environmental and cultural or spiritual benefits of forests. ‘Policy and governance failures’ include inter alia weak property rights for resident stakeholders, weak forest regulation, illegal logging, under priced timber from state forest, corruption in concession allocation, new trunk roads in forest areas and macro-economic policies that favour unsustainable land uses. There are also deforestation drivers that governments have less control over like agricultural commodity prices. It should be noted that SFM is more difficult for communities than companies, but less difficult (and remunerative) in more remote forests where subsistence values are prominent and market pressures lower.

22. All these factors result in depressed forest values compared to alternative land uses, including unsustainable forestry. For example, illegal extraction depresses market prices, new trunk roads encourage ‘cut and run’ logging, and subsidised fertilizers or credit encourage

clearance for crops. The challenge for SFM is as much about how to reduce its ‘opportunity costs’⁴ as how to increase forest product and service values.

Forest Carbon Finance and the Case for Conservation

23. The Stern Review and other key reports by the IPCC and McKinsey highlight REDD’s mitigation potential. This is based on the often low land use opportunity costs (e.g., cattle ranching or subsistence crops) compared to the carbon storage (or avoided emissions) value. Most studies estimate a unit cost of REDD of \$2-10 per tonne of carbon dioxide equivalent (tCO₂e), including administrative or transaction costs. This can be compared to an average carbon value in the Clean Development Mechanism (CDM) in 2006 of \$11 per tCO₂e; and a cost of cutting industrial emissions of over \$50 per tCO₂e.

24. A 2006 World Bank study focusing on the carbon rich Amazon rainforest estimated a carbon value per hectare of \$5,000 -10,000, supposing 500 tCO₂e avoided emissions⁵ and a carbon price of \$10-20, compared to opportunity costs of \$500 (pasture) - 4,000 (cash crops) per hectare. Much more conservatively, McKinsey & Co. estimate that tropical deforestation rates could be cut by 75% in Latin America and 50% in Africa⁶ at a cost below €40 (currently \$58) per tCO₂e. The latter study still viewed REDD as a cost-effective mitigation strategy.

25. Such economic comparisons underestimate the wider benefits of REDD. If successful, it would bring major co-benefits like biodiversity protection and hydrological or watershed protection benefits. Some observers think it could provide a bridging point between the Multilateral Environment Agreements, especially the Convention on Bio-Diversity (CBD) and UNFCCC.

MITIGATION AND SUSTAINABLE FOREST MANAGEMENT

Current Market Situation and the Potential for Forest Carbon Finance

26. Forest carbon is currently marginalised on the regulatory markets (the CDM and the European Union Emissions Trading Scheme), and accounts for much less than 1% of the value of the global carbon trading market (over \$30 billion in 2006). Only planted trees (for sequestration) are allowed in the CDM, and due to the technical/methodological complexities like ‘leakage’ and ‘permanence’ (see Glossary, Annex 4) and transaction costs, only one project (in China) has been approved. The only type of forestry likely in the CDM is large scale plantation forestry. This can be appropriate for degraded land, but plantations first need to pass the ‘additionality’ test. This means that the carbon gains should only occur because of the carbon finance; if they would have happened anyway, for example, due to a commercially viable plantation, they are not additional.

27. Since plantations can have low biodiversity and livelihood benefits, policy makers may prefer to target the more flexible voluntary carbon markets. These have lower transaction costs, but also lower prices. The ‘Plan Vivo’ model in Uganda and Mozambique, involving agroforestry and community timber woodlots (see Annex 2), shows the type of

⁴ The opportunity cost of SFM is the net income from the alternative use of the land, which is usually unsustainable forestry (including illegal logging), cash/subsistence crops or ranching.

⁵ The more carbon rich tropical forests contain 500-1000 tCO₂e per hectare, although the global mean carbon content of forests is 71 tCO₂e of which about 90% is released on clearance.

⁶ McKinsey think the cost in Asia will be higher due to a higher opportunity cost of land compared to mainly subsistence farming in Africa and commercial agriculture or ranching in Latin America.

forestry possible in the voluntary market. Another model being explored in several African countries is sustainable charcoal production for the generation of avoided deforestation credits.

28. As regards carbon storage or avoided deforestation, the only current option is the voluntary carbon market, but following the green light in Bali for REDD, the focus is on 'Readiness' activities for the generation of REDD carbon credits in the 'post Kyoto' commitment period of 2013-2017. The voluntary market is however very important in the REDD context, since it is allowing countries to design and pilot their REDD strategies and incentive mechanisms.

29. Exactly what REDD will look like is still unclear, even after Bali. Each of the many proposed mechanisms has strengths and weaknesses, and 'winners' and 'losers'. Therefore, agreement is proving difficult. Some proposals have been made by Commonwealth countries; for example, Tuvalu has proposed a 'Forest Retention Incentives Scheme' for community-based forest management, and India a 'Compensated Conservation' mechanism. There is, though, considerable momentum behind the 'Compensated Reduction' approach through which emission reduction credits would be gained by a country through the reduction of deforestation (and forest degradation) against a baseline deforestation rate.

30. But the baseline is also hotly contested with some preferring an historical baseline and others a predicted baseline, including an 'adjustment factor' to allow for future development – both approaches are inherently problematic. With historical baselines, for example, deforestation rates tend to rise when low income countries experience faster economic growth, while they could slow down if most accessible forests have been depleted leaving more remote or inaccessible forests. As regards predicted baselines, the problem is the complexity of deforestation drivers, some of which are very unpredictable like agricultural commodity prices and inflation/currency depreciation rates.

31. The main strengths of a 'Compensated Reduction' REDD mechanism are that it would be market rather than fund-based, and so be more financially sustainable, would have high additionality and probably most impact on the global cost of reducing emissions. This may be attractive to Commonwealth countries with high deforestation rates, but would be of little benefit to lower deforestation countries – it even creates a perverse incentive for these countries to increase their deforestation rates. Another fear is that it will flood the carbon market and depress the carbon price.

32. This concern has led to several suggestions for a 'dual market' approach in which trading of REDD credits could take place in a new and separate market to the CDM, for example a 'Tropical Deforestation Emission Reduction Mechanism' involving the issue of 'Tropical Deforestation Emission Reduction credits' (Greenpeace proposal). A difficulty with a separate market would be how to ensure demand and value; Greenpeace suggests this can be achieved through mandatory obligations on Annex 1 countries to finance tropical conservation. On the other hand those who favour 'fungible' REDD credits argue that the key to avoiding a price collapse is through much stricter emission caps in a post Kyoto regime, as well as bringing the USA into the market, or, less satisfactorily, limiting how much Annex 1 countries can use REDD credits to offset their caps.

33. An alternative or possibly secondary approach is based around maintaining or improving the 'carbon stock' or standing forest value, as in the Indian proposal. The

proponents of this gained ground at Bali - the decision on REDD refers to “enhancing forest carbon stocks due to sustainable management of forests.” While a system based on carbon stock values would overcome the problem of perverse incentives and be more equitable—it will be easier to compensate community forestry—additionality would be much lower and its market basis⁷ relatively weak.

Some Questions for National Carbon Finance Initiatives

How can a country ensure CDM projects are good for sustainable development?

34. As mentioned above, CDM projects are likely to involve trade-offs between carbon, livelihood and biodiversity objectives. If they do not already have them, countries should develop a set of widely consulted sustainable development criteria in order to make the initial decision, instigate the transparent monitoring of impacts, and be prepared to mitigate negative livelihood or biodiversity impacts where they occur.

How can voluntary market projects be encouraged?

35. The main means of encouraging voluntary market projects, which can later come under a national REDD programme, is to reduce the risks and transaction costs for investors or buyers of credits. This would involve a strengthening of the legal and policy framework for carbon projects, for example, improved compliance (if possible with simplified or rationalised regulations) and measures to reduce transaction costs, especially for community level projects. Possibilities for the latter include establishing or strengthening second order or ‘collective action’ institutions; legal support; capacity building in participatory carbon measurement methods; and business and market development services via ‘honest brokers’. Buyers will also be assured by the use of a credible standard or certification of project design, such as the Climate, Community and Biodiversity Alliance (CCBA) standards (www.climate-standards.org).

Should the country develop a REDD programme? Will it be worth it?

36. Continuing uncertainty over REDD mechanism(s) makes this difficult to answer. But countries embarking on ‘Readiness’ activities and gaining experience with pilot projects will be ahead of the game and be most likely to benefit from 2013. Research is needed on the cost of REDD options, especially the opportunity costs of forest conservation. If the main alternative land uses are subsistence farming, ranching or cash crops with modest returns, then it will be more affordable than if high value cash crops have to be compensated. In practice countries will need to find a balance between additionality (likely to be higher when the opportunity costs are higher) and affordability. Some very careful research is needed to identify situations where a modest REDD payment could ensure a marginal land use situation in favour of SFM – this could well involve community forestry.

How could a national REDD programme be forward financed?

37. Considerable forward financing of REDD is necessary since carbon payments will be ex-post, and due to the need to develop national ‘carbon infrastructure’, appropriate institutions, REDD plans, legal and policy reforms, etc. Possibilities include the forward purchase of REDD credits, but at heavily discounted prices unless donor countries underwrite

⁷ Some market-based proposals have been put forward for valuing standing forests, like the ‘carbon stock accounting’ cap and trade approach of Climate Focus, but they are complex and much weaker than the ‘compensated reduction’ REDD approach.

the risks⁸; the issue of forest carbon bonds; risk insurance; and low interest loans. As regards funding 'Readiness', \$100 million of the World Bank's Forest Carbon Partnership Facility is to be divided between about 20 countries, and a further \$200 million will fund pilot REDD projects in five or six countries⁹. It is also hoped that a REDD Enabling Fund will be set up, possibly using some of Norway's Bali pledge of \$500 million per annum for REDD.

How could a pro-poor REDD strategy be promoted?

38. Depending on how countries design and implement their REDD strategies, there is potential for positive or negative equity impacts. The first risk is 'elite capture'. An early priority for countries pursuing REDD is to clarify carbon property rights (or shares of carbon payments) in a range of tenure situations, like customary tenure on state land.

39. Secondly, it will depend on what REDD strategies a government decides to adopt. For example, a major strategy could be a 'fences and fines' approach with existing and new protected areas with restricted or zero access to local people. The REDD decision text from Bali (Annex 1) clearly recognizes the potential threats to the rights of indigenous and other forest dependent communities of anti-poor REDD policies. At the same time there should be some pro-poor 'low hanging fruit' options, for example, where community forest management and conservation are economically marginal and under threat.

40. Thirdly, REDD programmes will need to compensate to some extent would-be developers, who are often business people, politicians, military, etc.¹⁰ These actors may also be threatening to break weakly implemented laws. REDD should clearly not be used to compensate developers for the opportunity costs of obeying the law for reasons of political expediency – this amounts to 'environmental blackmail'. Countries need to judge carefully the balance between law enforcement and making REDD payments.

41. A further concern is how to channel REDD incentives down to communities and farmers. Corruption would make REDD programmes ineffective and result in 'business as usual'. The wording of contracts will also be critical to ensure communities are not locked into unfavourable long-term agreements.

42. The general experience with environmental policy measures is that there are normally trade-offs between environmental and equity or poverty reduction objectives. REDD programmes also involve trade-offs, for example, the high transaction costs of working with local forest users. The support of donors and international NGOs are likely to be critical in helping countries pursue pro-poor REDD options. An alternative view is that it is overloading the REDD agenda to try and make it pro-poor, and poverty reduction is better left to other policies and sectors. Governments will have some difficult decisions to make.

Would REDD result in sustainable forest management?

43. The answer to this is partly yes since, for deforestation to be substantially reduced, the aforementioned market, policy and governance failures need to be effectively tackled. For example, Bali delegates felt that control of illegal logging should be an essential part of any REDD programme. But a real challenge for high deforestation countries is that they generally suffer from poor governance, and some also have conflict situations.

⁸ This raises the possibility of bilateral agreements between Commonwealth Annex 1 and developing countries in which the former could forward finance 'Readiness' activities and underwrite risks in exchange for discounted future carbon credits.

⁹ The World Bank is in talks with Brazil, Costa Rica, DRC, Indonesia and Papua New Guinea.

¹⁰ Paradoxically this could result in REDD payments for would-be biofuel developers.

44. It will therefore require high levels of political will to stand up to vested interests in ‘business as usual’ activities. Some countries may therefore decide to only go for low cost or ‘low hanging fruit’ options which do not involve the reforms necessary for SFM. Another problem is that some deforestation causes are outside state control; for example, an upsurge in international agricultural commodity prices, partly driven by biofuels, could swamp other efforts and make REDD strategies very expensive.

Should the country anyway pursue REDD-like strategies?

45. There are strong economic and social arguments for reducing deforestation rates in view of the harmful environmental and social impacts. REDD strategies, as long as they are not anti-poor, should achieve considerable social, environmental and economic benefits whether or not REDD credits are earned later. For example, bringing illegal logging under control would encourage SFM and increase state forest revenue.

Some other unresolved REDD questions

46. There are some other unresolved questions that are less in the hands of national policy makers, and are more dependent on UNFCCC decisions.

Should forest degradation be included and how?

47. Until Bali, it was unclear whether degradation would be included in REDD, but there was broad agreement that it should be included. This would make it possible to distinguish ‘sustainable’ shifting cultivation from other forms of clearance, and to include timber-based SFM, for example, via reduced impact logging. It would also provide a role and incentive for certification. But there is less clarity as to how to include degradation without significantly increasing the measurement and transaction costs.

Should the private sector be included and how?

48. Most observers think the private sector should be included in REDD since it responds more effectively than the state to market incentives. This means that a project crediting system is needed within national REDD strategies, one in which a successful project will not be penalised by poor national performance. This is known as a ‘nested’ REDD approach, but again how to do it has not been properly worked out.

Should there be posteriori (after 2012) crediting of ‘early action’ REDD projects?

49. UNFCCC could provide a boost to voluntary REDD projects and the development of robust methodologies, but there are risks for project developers and investors since they will need to forward guess the likely rules for accreditation of the emission reductions.

How can international leakage be controlled?

50. Participation in REDD is completely voluntary for non-Annex 1 countries. REDD will reduce timber supplies, but the demand on local and international timber markets will remain. The concern is that this will increase illegal logging, degradation and deforestation in non-participating countries which still have the capacity to supply timber.

ADAPTATION AND SUSTAINABLE FOREST MANAGEMENT

Adaptation Funding Situation

51. Unlike mitigation, there is no market basis for financing adaptation; there is less political will to address this internationally; and is low down on most countries' development priorities. It is therefore severely under-funded compared to the needs – estimated at tens of billions of dollars a year for high risk countries alone. Up to Bali, the four main adaptation funds contributed about \$310 million and bilateral donors contributed \$110 million. The four main adaptation funds, the first three under the UNFCCC, are:

- The Adaptation Fund based on a 2% levy on CDM projects;
- The Least Developed Countries (LDCs) Fund, used so far to help LDCs prepare National Adaptation Programmes of Action (NAPAs);
- The Special Climate Fund for all developing countries;
- The Global Environment Fund's (GEF) Strategic Priority on Adaptation.

52. Of these the most important is the Adaptation Fund due to its automatic replenishment by the CDM levy; the others depend on voluntary contributions. A key advance in Bali was agreement on management of the Adaptation Fund under the Kyoto Protocol, paving the way for its operation. There is also increasing pressure for levies on other Kyoto trading mechanisms¹¹.

The Potential for Sustainable Forest Management

53. The potential for SFM from adaptation carbon finance is very high since the type of forestry needed is essentially multiple objective SFM – a system which aims to maintain ecosystem services, and to provide product/income diversification and an equitable distribution of benefits and costs. The key additional element is that the system should be as resilient as possible to outside shocks and the ecological impacts of climate change, and thus minimise livelihood vulnerabilities.

54. Research reported by the IPCC and others reveals that forests play a key role in increasing resilience to extreme climate events. They act as a safety net or coping strategy, providing food and shelter when farming systems collapse, reduce landslide risks in mountainous areas, and regulate the hydrological cycle during and following natural disasters. When they act as a buffer, forests make uncompensated contributions across various sectors including energy, tourism, industry and agriculture.

55. But after each climate change event the forest system's buffering capacity is weakened. Forests are also under gradual long-term pressures from climate change: shifting rainfall and temperature patterns are altering species/variety suitability, raising fire vulnerability, changing disease/pest incidence and reproductive cycles, and eroding biodiversity¹² which is essential to system sustainability. For example, major mangrove systems like the Sundarbans of India and Bangladesh and which regulate cyclonic coastal damage, are threatened by salinity. Other likely consequences of the erosion of forest

¹¹ Critics claim it is inequitable that an adaptation levy should only be applied to the CDM, since this is effectively a tax on poorer countries. They argue for levies on greenhouse gas trading between industrialized countries, and a 'bunker fuel' tax on air and maritime travel (a 2% International Air Travel Adaptation Levy has been proposed).

¹² The 2002 Millennium Assessment reported that climate change will be the main cause of species loss by 2050.

ecosystems are common pool resource conflicts, environmental migration (an ‘adaptation strategy’) leading to cross-border conflicts, and reduced capacity to cope with disease.

56. Much of the adaptation agenda is about reducing the vulnerability of the poor to climate change events by increasing the adaptive capacity of their livelihood systems. Examples of forest-farm adaptation measures include agroforestry, multiple cropping, more resistant varieties to drought or new diseases, soil and water conservation management practices (e.g., fallow management), fire barriers and improved pest control. Agroforestry has a particularly high adaptation value since it can increase the resilience of farming systems, improve food security and diversify income. It also has a well defined research agenda.

Synergies or Trade-offs Between Adaptation and Mitigation Projects

57. There are obvious but untapped synergies with the mitigation agenda, and more broadly with the payments for ecosystem services (PES) agenda¹³. Carbon payments should help maintain the overall flow of forest ecosystem services, which are vital for adaptation. However the type of forestry encouraged in the CDM can result in trade-offs between carbon gains and social/biodiversity objectives (e.g., large monoculture plantations).

58. A way of ensuring that forest carbon projects incorporate adaptation needs is through appropriate standards. In the voluntary market, the CCBA Standards include adaptation criteria, but the CDM standards focus more exclusively on carbon additionality. While the latter is very important, ignoring adaptation in mitigation projects can have harmful social impacts and increase future costs if forest systems prove vulnerable to climate change. What is needed is ‘bundled’¹⁴ PES approaches that encourage more resilient farm/forest landscapes and diversity livelihood options. Promising approaches include ‘integrative forest carbon’ projects, multiple benefit or ‘conservation carbon’ projects in the voluntary carbon market, and soil conserving agricultural practices (see Annex 3).

Challenges and Some Questions for National Policy Makers

59. A recent stocktaking study by the Organisation for Economic Co-operation and Development (OECD) on adaptation found many studies, good policy level understanding and several useful toolboxes for vulnerability assessments, but very few projects of the type needed, for example, collaborative projects with local institutions generating locally specific information for the design and implementation of adaptation projects. Assuming the Bali rhetoric is sincere and resources become less constraining, some key questions for vulnerable Commonwealth countries are:

- How can adaptation become more of a development priority than at present?
- How can the legal, policy and institutional framework encourage donors and investors in adaptation forestry)?
- How can the level of co-ordination between those working on the mitigation and adaptation agendas be improved? How can information exchange be increased?

¹³ One of these is that ecosystem service providers are often very poor, such as small farmers in upper watershed areas. This win-win potential is the focus of the Rewards for Upland Providers of Ecosystem Services (RUPES) programme developed in Asia and, more recently, in Africa.

¹⁴ A bundled PES approach refers to a system of payments for more than one ecosystem service, e.g., carbon and biodiversity bundled together, sometimes called ‘biocarbon’.

- How can a coherent institutional base for prioritising adaptation needs, identifying resources, designing projects and establishing financial and technical assistance delivery mechanisms be developed?
- How can local institutions, able to generate locally relevant adaptation services (forecasting, research on forest system vulnerability and increased resilience, delivery of appropriate technical and financial assistance, etc.), be promoted?
- How can local government and civil society become more involved in the formulation of decentralised forest policies and programmes?
- What capacity building and governance reforms (e.g., increased transparency and accountability) are needed for this to happen?

CONCLUDING COMMENTS ON CARBON FINANCE AND SFM

60. In order to create positive incentives for SFM and reduce deforestation, it is vital to confront market, policy and governance failures. Carbon finance combats market failure, but if policy and governance failures persist, the opportunity costs of SFM will remain high. Therefore REDD will only be effective for SFM if countries go beyond the ‘low hanging fruit’ options. Carbon finance is therefore not a panacea or stand alone measure; it needs to be part of a package of measures for SFM starting with secure property rights for local forest managers and improved governance, which are *per se* more powerful SFM drivers than carbon finance or other payments for ecosystem services. REDD can be perceived as a powerful demand-side incentive for better policies and governance, and therefore potentially represents an integrated approach to SFM with positive equity outcomes – the poor should benefit both from direct payments and improved governance/property rights.

61. There are some difficult decisions as regards pro-poor REDD strategies, and equity impacts also depend on whether transaction costs for local user groups can be reduced. Countries need to think carefully about the likely trade-offs between carbon, biodiversity and livelihood objectives of CDM projects. Each country should have a broadly consulted set of sustainable development criteria for deciding whether to go forward with a particular carbon finance project.

62. The type of forest system desirable for the adaptation agenda is very close to SFM. Its main additional characteristic is that it should be as resilient as possible to climate change, both in terms of extreme events and ecological changes. Adaptation is inherently equity focused, so there is no ‘trade-off’ problem. But it is a financially much weaker agenda which is rooted in social justice rather than in the self-interest of richer nations. The adaptation agenda is also very close to existing agendas for rural poverty reduction and the Millennium Development Goals. Since the vulnerability of farm-forest livelihoods is part of a wider vulnerability, including health, water and food security, it should not be difficult to mainstream adaptation in national development agendas.

63. It is hoped that adaptation funding and projects will pick up sharply after Bali. Priorities include agroforestry in farm systems; ‘integrative’ or ‘multiple benefit’ carbon projects which help develop more resilient farm-forest landscapes; increased co-operation between those working on the mitigation and adaptation agendas; establishing a coherent institutional basis for forest adaptation; and collaborative efforts to support local applied research and build institutions capable of delivering a range of locally relevant services.

64. Ultimately it is worth pointing out that SFM is primarily a public goods issue – the provision of forest ecosystem services. It will require a much more prominent role of the state and international community than has so far been the case in order to achieve the necessary balance of ‘carrots’ (including carbon finance) and ‘sticks’. At the risk of generalising, SFM and conservation tend to happen where there is good governance, secure tenure and compensated ecosystem services, or where forests are too remote, inaccessible or lacking in commercial value to be worth exploiting.

Decision -/CP.13.

Reducing emissions from deforestation in developing countries: approaches to stimulate action

(Advance unedited version)

The Conference of the Parties

Recalling the relevant provisions of the Convention, in particular Article 2, Article 3, paragraphs 1, 3 and 4, and Article 4, paragraphs 1(a)–(d), 3, 5 and 7,

Acknowledging the contribution of the emissions from deforestation to global anthropogenic greenhouse gas emissions,

Acknowledging that forest degradation also leads to emissions, and needs to be addressed when reducing emissions from deforestation,

Recognizing that efforts and actions to reduce deforestation and to maintain and conserve forest carbon stocks in developing countries are already being taken,

Recognizing the complexity of the problem, different national circumstances and the multiple drivers of deforestation and forest degradation,

Recognizing the potential role of further actions to reduce emissions from deforestation and forest degradation in developing countries in helping to meet the ultimate objective of the Convention,

Affirming the urgent need to take further meaningful action to reduce emissions from deforestation and forest degradation in developing countries,

Noting that sustainable reduction in emissions from deforestation and forest degradation in developing countries requires stable and predictable availability of resources,

Recognizing that reducing emissions from deforestation and forest degradation in developing countries can promote co-benefits and may complement the aims and objectives of other relevant international conventions and agreements,

Recognizing also that the needs of local and indigenous communities should be addressed when action is taken to reduce emissions from deforestation and forest degradation in developing countries,

1. *Invites* Parties to further strengthen and support ongoing efforts to reduce emissions from deforestation and forest degradation on a voluntary basis;

2. *Encourages* all Parties, in a position to do so, to support capacity-building, provide technical assistance, facilitate the transfer of technology to improve, inter alia, data collection, estimation of emissions from deforestation and forest degradation, monitoring and

reporting, and address the institutional needs of developing countries to estimate and reduce emissions from deforestation and forest degradation;

3. *Further encourages* Parties to explore a range of actions, identify options and undertake efforts, including demonstration activities, to address the drivers of deforestation relevant to their national circumstances, with a view to reducing emissions from deforestation and forest degradation and thus enhancing forest carbon stocks due to sustainable management of forests;

4. *Encourages*, without prejudice to future decisions of the Conference of the Parties, the use of the indicative guidance provided in the annex as an aid in undertaking and evaluating the range of demonstration activities;

5. *Invites* Parties, in particular Parties included in Annex II to the Convention, to mobilize resources to support efforts in relation to the actions referred to in paragraphs 1–3 above;

6. *Encourages* the use of the most recent reporting guidelines¹⁵ as a basis for reporting greenhouse gas emissions from deforestation, noting also that Parties not included in Annex I to the Convention are encouraged to apply the Good Practice Guidance for Land Use, Land-Use Change and Forestry;¹⁶

7. *Requests* the Subsidiary Body for Scientific and Technological Advice to undertake a programme of work on methodological issues related to a range of policy approaches and positive incentives that aim to reduce emissions from deforestation and forest degradation in developing countries noting relevant documents¹⁷; the work should include:

(a) Inviting Parties to submit, by 21 March 2008, their views on how to address outstanding methodological issues including, inter alia, assessments of changes in forest cover and associated carbon stocks and greenhouse gas emissions, incremental changes due to sustainable management of the forest, demonstration of reductions in emissions from deforestation, including reference emissions levels, estimation and demonstration of reduction in emissions from forest degradation, implications of national and sub-national approaches including displacement of emissions, options for assessing the effectiveness of actions in relation to paragraphs 1, 2, 3 and 5 above, and criteria for evaluating actions, to be compiled into a miscellaneous document for consideration at the Subsidiary Body for Scientific and Technological Advice at its twenty-eighth session;

(b) Requesting the secretariat, subject to availability of supplementary funding, to organize a workshop on methodological issues identified in paragraph 7 (a) above, before its twenty-ninth session, and to prepare a report on the workshop for

¹⁵ At the time of this decision, the most recent reporting guidelines for national communications from Parties not included in Annex I to the Convention are found in decision 17/CP.8.

¹⁶ Decision 13/CP.9.

¹⁷ FCCC/SBSTA/2006/10, FCCC/SBSTA/2007/3, FCCC/SBSTA/2007/MISC.2 and Add.1, FCCC/SBSTA/2007/MISC.14 and Add. 1–3; and the background paper prepared for the workshop on reducing emissions from deforestation held in Rome, Italy from 30 August to 1 September 2006, available at <http://unfccc.int/methods_and_science/lulucf/items/3757.php>.

consideration by the Subsidiary Body for Scientific and Technological Advice at that session;

(c) Advancing the development of methodological approaches, taking into account the outcome of the workshop referred to in paragraph 7 (b) above at its twenty-ninth session;

8. *Requests* the Subsidiary Body for Scientific and Technological Advice to report to the Conference of the Parties, at its fourteenth session, on the outcomes of the work referred to in paragraphs 7 (a)–(c) above, including any recommendations on possible methodological approaches;

9. *Invites* relevant organizations and stakeholders, without prejudice to any future decision of the Conference of the Parties on reducing emissions from deforestation and forest degradation in developing countries, to support efforts in relation to paragraphs 1, 2, 3 and 5 above and to share outcomes of these efforts with the Subsidiary Body for Scientific and Technological Advice by providing corresponding information to the secretariat;

10. *Request* the secretariat to support, subject to the availability of supplementary funding, the activities of all Parties, in particular developing countries, in relation to paragraphs 3, 5, 7 and 9 above, by developing a Web platform where information submitted by Parties, relevant organizations and stakeholders will be made available;

11. *Notes* the further consideration, under decision X/CP.13, of policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries;

12. *Notes* further that when addressing policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries, the efforts described in paragraph 3 above should be considered.

ANNEX

Indicative guidance

1. Demonstration activities should be undertaken with the approval of the host Party;
2. Estimates of reductions or increases of emissions should be results based, demonstrable, transparent, and verifiable, and estimated consistently over time;
3. The use of the methodologies described in paragraph 6 of this decision is encouraged as a basis for estimating and monitoring emissions;
4. Emission reductions from national demonstration activities should be assessed on the basis of national emissions from deforestation and forest degradation;
5. Sub-national demonstration activities should be assessed within the boundary used for the demonstration, and assessed for associated displacement of emissions;

6. Reductions in emissions or increases resulting from the demonstration activity should be based on historical emissions, taking into account national circumstances;
7. Sub-national¹⁸ approaches, where applied, should constitute a step towards the development of national approaches, reference levels and estimates;
8. Demonstration activities should be consistent with sustainable forest management, noting, inter alia, the relevant provisions of the United Nations Forum on Forests, United Nations Convention to Combat Desertification and the Convention on Biological Diversity;
9. Experiences in implementing activities should be reported and made available via the Web platform;¹⁹
10. Reporting on demonstration activities should include a description of the activities and their effectiveness, and may include other information;
11. Independent expert review is encouraged.

¹⁸ Activities carried out within the national boundary.

¹⁹ To be developed by the secretariat as referred to in paragraph 10 of this decision.

ANNEX 2 THE PLAN VIVO MODEL OF PRO-POOR CARBON SEQUESTRATION

The Plan Vivo model stems from the Scolel Té project in Chiapas, Mexico. Developed since 1994, Scolel Té involves over 700 farmers from 40 communities and a range of agroforestry systems including live fences, coffee with shade trees, tree-enriched fallow, pasture reforestation, taungya, and fruit and timber trees intercropped with maize, as well as small timber plantations. A trust fund provides the farmers with financial and technical assistance based on the expected carbon revenues. Supported by the Edinburgh Centre for Carbon Management (ECCM) and a co-operative of foresters and agronomists, credits are being sold on the voluntary carbon market for \$4-8/t CO₂e. This price barely covers costs, including the high administrative costs inevitable with dispersed farmers in an area of social conflict. In 2005, Scolel Té sold over 10,000 tons of carbon offsets to a road safety research foundation, the World Bank BioCarbon Fund and Guadalajara Cathedral.

ECCM has now developed the Plan Vivo model as a management system and certification standard that incorporates sustainable livelihoods. Plan Vivo has been extended to a remote community in the buffer zone of a protected area in Mozambique; and, in partnership with an NGO called Trees for Global Benefits and the World Agroforestry Centre (ICRAF), in a project with small farmers in Southwest Uganda. Both projects involve agroforestry activities and small-scale plantations, diversification of income generating activities and re-investment of profits in community infrastructure. About 100 farmers have registered in Uganda. In the Mozambique project, it is estimated that each participating family will receive an average of US \$35 per hectare per year for seven years for carbon sequestered by various land use activities. Although carbon trading is not particularly profitable for farmers given current carbon prices and transaction costs, positive net incomes will result when carbon sales are combined with the sale of tree/crop products. Other reported benefits in Mozambique include fruit, fodder, fuel wood, better soil structure and improved organisational capacity. At the same time, recent research shows that in the Mexico project there has been some trade-off between poverty and environmental objectives.

Finally it is interesting to note that the original intention was that the Plan Vivo projects be submitted to the CDM. However the very high transaction costs for this kind of project, involving communities and scattered farmers, proved prohibitive. Therefore the carbon credits are being sold in the voluntary carbon market.

ANNEX 3 CAPTURING ADAPTATION AND MITIGATION SYNERGIES

A report by the Centre for International Forestry Research (CIFOR) identifies the opportunity for ‘integrative’ forest carbon projects which combine mitigation and adaptation objectives, and that attempt to optimise ecosystem and livelihood benefits. A promising example is the San Nicolas Project in an ecologically vulnerable area in the Colombian Andes: a farm-forest management plan has been developed with local stakeholders which includes agroforestry, ecological strengthening of farm systems, bio-energy plantations on degraded land, forest restoration and conservation of residual forests. Carbon credits will help the viability of this kind of integrated landscape approach.

Another approach is through the promotion of multiple benefit or ‘charismatic’ carbon projects in the voluntary carbon markets. The International Institution for Environment and Development (IIED) and Forest Trends/Tropical America Katoomba Group (TAKG) are taking advantage of the flexibility of the voluntary carbon market and the development of the CCBA as a credible standard for community-based forest carbon, and which takes in some important adaptation criteria. IIED, the New Economics Foundation and other partners are exploring a ‘Mit-Ad’ offset product which offers mitigation benefits while targeting vulnerable communities (e.g., afforestation in coastal areas).

Meanwhile Forest Trends and TAKG are developing a portfolio of community forestry projects (including certified forest management) which generate ‘multiple benefit’ carbon and other ecosystem services. The aim is to act as an honest broker that brings multiple benefit carbon to the market place through appropriate legal, financial, technical and marketing assistance. It is also exploring, with the NGO Climate Focus, a ‘Conservation Carbon Mechanism’ for carbon credits with high social and biodiversity values; these would not be sold as carbon offsets, and therefore would not need to meet the ‘additionality’ criterion. The idea is to sell them as alternative carbon credits to corporate social responsibility buyers who wish to ‘green’ their greenhouse gas offset portfolios.

Another high potential area is for carbon sequestration benefits from soil conservation practices, as in a proposed ‘Carbon Soil Fund’ for Africa. Organic farming practices like conservation tillage, erosion control, organic soil fertility enhancement, improved water and crop residue management, use of shrubs, woody perennials and other agroforestry practices restore soil quality by increasing its organic content, and contribute to climate change mitigation and poverty reduction. The methodologies are being partly researched by the Sequestration of Carbon in Soil Organic Matter (SOCSOM) Project in Senegal.

ANNEX 4 GLOSSARY OF TERMS

Additionality: This is when a carbon payment leads to an additional carbon benefit above and beyond that which would have happened without the payment.

Avoided deforestation: This is the avoidance of carbon dioxide emissions due to deforestation or forest degradation. It means the same as carbon storage or REDD, and is the term normally used when referring to voluntary carbon markets, while REDD is used when referring to the regulatory market under the UNFCCC.

Carbon pool: A reservoir of carbon or a system which has the capacity to accumulate or release carbon (IPCC definition).

Carbon stock: The quantity (mass) of carbon held within a carbon pool at a specified time.

Carbon sink: Any process or mechanism which removes CO₂ from the atmosphere. A carbon pool becomes a sink for atmospheric carbon if, during a given time interval, more carbon is flowing into it than is flowing out (IPCC definition).

Carbon credits: the right to sell a carbon credit is gained when an independent certifier verifies that a net reduction in carbon emissions or a net gain in carbon sequestration has taken place. These are purchased as Carbon Emission Reduction (CER) units in the UNFCCC markets and as Voluntary Emission Reduction (VER) units in the voluntary carbon markets.

Carbon cycle: The biogeochemical cycle by which carbon is exchanged between the biosphere, geosphere, hydrosphere and atmosphere. Carbon moves between carbon pools or reservoirs due to various chemical, physical, geological and biological processes.

Carbon sequestration: The process of increasing the carbon content of a carbon pool (IPCC definition).

Carbon storage: The retention of carbon in a carbon pool.

Carbon stock: The absolute quantity of carbon held within a carbon pool at a specified time (IPCC definition).

Climate change adaptation: Efforts to help vulnerable countries and communities adjust to and live with climate change, reduce the negative impacts, increase their resilience and assist in the recovery from climate change events.

Climate change mitigation: Efforts to stabilize or reduce the level of greenhouse gases in the atmosphere.

Fungible: A forestry-based carbon emissions reduction unit (or carbon credit) is fungible when it can be traded along with other emission reduction units, for example, in the CDM. It is non-fungible if there is a separate 'forest carbon' market, as in some of the suggestions for REDD.

Hydrological cycle: The circulation and conservation of the Earth's water.

Leakage: This happens when a project or national carbon gain is lost or cancelled out due to a carbon loss somewhere else, and the latter has been directly or indirectly caused by the project or national initiative; e.g., where unsustainable logging is prevented in one area of forest and the loggers move their operations somewhere else.

Opportunity cost: The foregone benefit as a result of a particular action or activity. In an SFM context, it refers to the net income of the best (highest return) alternative use of the land, and of other resources like labour and capital, compared to SFM.

Permanence: Forest carbon suffers from a lack of permanence since forests are subject to fires, disease and other risks, and in the long term woody mass gradually deteriorates.

Photosynthesis: This is the conversion of light energy into chemical energy by living organisms. The raw materials are carbon dioxide and water; the energy source is sunlight; and the end-products are oxygen and energy-rich carbohydrates.

Primary forests: Forests that have never been logged and have developed following natural disturbances and under natural processes, including forests managed for subsistence purposes by indigenous/local communities, and where disturbance is minimal. In Europe it can refer to forest which has been continuously wooded for several centuries.

Secondary forests: Forest or woodland which has re-grown after a major disturbance such as fire, disease, logging or wind-throw, until a long enough period has passed so that the effects of the disturbance are no longer evident.

Sustainable forest management: Forest management that seeks to ensure that "forest-related activities should not damage the forest to the extent that its capacity to deliver products and services – such as timber, water and biodiversity conservation – is significantly reduced. Forest management should also aim to balance the needs of different forest users so that its benefits and costs are shared equitably" (ITTO).

ANNEX 5 ACRONYMS

CBBA	Climate, Community and Biodiversity Alliance
CBD	Convention on Biological Diversity
CDM	Clean Development Mechanism of the Kyoto Protocol
CIFOR	Centre for International Forestry Research
CO ₂	Carbon dioxide
ECCM	Edinburgh Centre for Carbon Management
ICRAF	World Agroforestry Centre
IIED	International Institute for Environment and Development
IPCC	Intergovernmental Panel for Climate Change
ITTO	International Tropical Timber Organization
LDC	Least Developed Country
NAPA	National Adaptation Programme of Action
NGO	Non-government organization
OECD	Organisation for Economic Co-operation and Development
PES	Payment for ecosystem (or Environmental) services
REDD	Reduced Emissions from Deforestation and forest Degradation
RUPES	Rewards for Upland Providers of Ecosystem Services
SIDS	Small Island Developing States
SFM	Sustainable forest management
SOSCOM	Sequestration of Carbon in Soil Organic Matter project
tCO ₂ e	Tonne of carbon dioxide equivalent
TAKG	Tropical America Katoomba Group
UNFCCC	United Nations Framework Convention for Climate Change (UNFCCC)