

Reducing Emissions from Deforestation and Degradation: The Dual Markets Approach

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Executive Summary

Tropical deforestation currently accounts for approximately 20% of carbon dioxide emissions globally.¹ Addressing emissions from this sector will be crucial to addressing climate change. To date, various structures have been proposed for a mechanism for providing positive incentives to reduce emissions from deforestation and degradation (REDD) in developing countries. In order to be effective, the mechanism must continually generate money and create incentives for land-use activities that reduce or avoid deforestation and degradation.

In this paper, the Center for Clean Air Policy (CCAP) develops a new approach to encourage actions to reduce emissions from deforestation and degradation in developing countries post-2012— a “**Dual Markets**” approach for reducing emissions from deforestation and degradation in developing countries.

A New REDD Market for the Post-2012 Period

The Dual Markets approach specifies the creation of a new carbon market for emissions reductions from deforestation and degradation that is linked with the overall reductions achieved by developed countries in the post-2012 timeframe, but is only partially fungible with the post-2012 global carbon market. Developed countries would commit a percentage of their post-2012 target to come from the REDD market. For example, if a country committed to an overall 30 percent reduction, they could also commit that 5 percent of that reduction would be generated through financing REDD activities in developing countries—the other 25 percent would come through domestic reductions or through purchasing reductions in the non-REDD post-2012 carbon market.

Minimizing Risks to Global Emissions Efforts and the Carbon Market

The REDD market will be a new program with a number of uncertainties about baselines, “hot air”, measurements, and the connection between policies undertaken and their actual relation to changes in deforestation rates. Given this uncertainty, the proposal outlines that the COP would set a maximum on the percentage Annex I can achieve through overseas REDD. This limits how much of the global greenhouse gas reduction goal in the next commitment period may be met (or not met) through REDD and thereby reduces the threat to the well established carbon market.

Similarly, a separate REDD market avoids major disruption of the post-2012 global carbon market. In a pure integrated-market approach such as Compensated Reduction,² fluctuations in REDD supply and pricing would directly affect the post-2012 carbon prices, which could cause overall volatility in a carbon market that is currently functioning well. A Dual Markets approach keeps separate an emerging market (REDD) from the more mature carbon market until questions of volatility have been resolved.

¹ World Bank, March 2007

² Santilli et al., 2005

Signaling Strong Demand for REDD Activities

Slowing deforestation requires considerable change within developing countries, often at a high cost to the countries themselves. Developing countries will need some guarantee that there will be a buyer for their REDD credits. In the Dual Markets Approach Annex I countries would specify at the outset which developing countries' credits they will eventually buy. This will reduce the uncertainty in developing countries over who will buy how many credits, thus enabling them to make potentially expensive changes to their domestic policies and land-use practices.

A pre-2012 preparation phase for developing countries—to include emissions inventories, capacity building, and pilot projects—will empower developing countries to better compete in the post-2012 REDD market and generate a strong knowledge base on actions they can undertake to reduce or avoid deforestation.

Allowing the REDD Market to Evolve: Linking to the Carbon Market Over Time

A separate REDD market facilitates learning-by-doing, allowing the REDD market to stabilize before any full-scale linking with the post-2012 global carbon market. Interference on carbon market prices by REDD credits would be minimized, therefore avoiding concerns related to fully linking a potentially uncertain REDD market with the broader carbon market. Second, this approach allows the REDD market, and individual countries' REDD programs, time to develop before integration with the existing global carbon market. The COP would periodically review the Dual Market system, taking into account how well the system is working and how dependable the REDD credits are. The COP can make needed changes to the system for subsequent compliance periods, such as altering percentages allowed from REDD, potentially permitting Annex I increases in their share, and eventually determining whether to directly link with the global carbon market.

A Workable Solution: Bridging the Gap between Competing Proposals

The Dual Markets approach captures many advantages of the two general approaches to REDD that have shaped REDD policy discussions—the integrated market approach (where REDD reductions would be sold directly on the post-2012 global carbon market) and the fund-based approach (dependent on Official Development Aid or institutional financing)—and circumvents many of their potential drawbacks. The major advantage of the integrated market proposal is its ability to incentivize large amounts of funding (e.g., from the private sector), while its major downside is the potential to disrupt the global carbon market which is already functioning well. A fund approach prevents disruption to the carbon market, but would likely lack enough resources to produce large-scale results. The Dual Markets Approach provides incentives for the private sector to invest, while minimizing potential adverse impacts on the global carbon market.

CCAP puts forth the Dual Markets approach as a workable solution for the upcoming post-2012 commitment period that can bridge the gap between competing proposals and enable effective action on REDD.

I. Introduction

Tropical deforestation currently accounts for approximately 20% of carbon dioxide emissions globally.³ Addressing emissions from land-use change and forestry (LULUCF) will be crucial to addressing climate change. For example, modeling for the European Commission estimates that limiting global increases in temperature to less than 2°C with a 50% probability through cost-effective measures requires that net global emissions from land use change to fall to near zero by 2020 (see Figure 1, below).

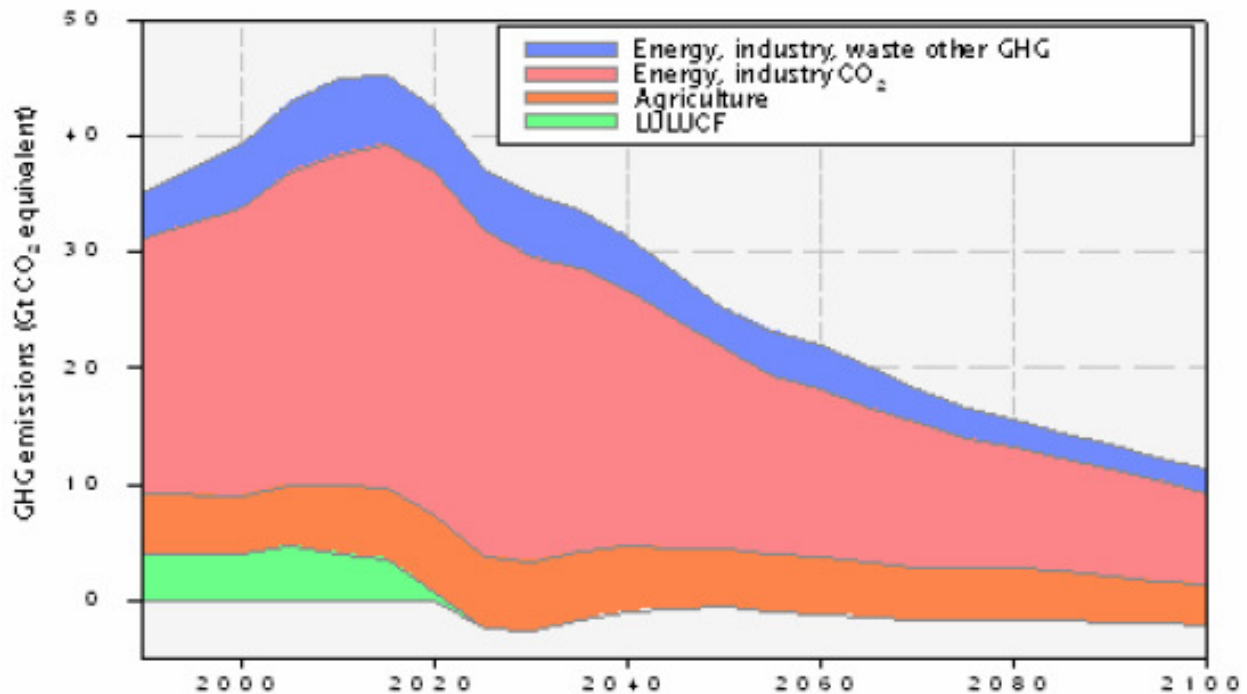


Figure 1. Global GHG emissions to meet 2°C increase with 50% probability (EC, 2007)

In Montréal in 2005, the United Nations Framework Convention on Climate Change (UNFCCC) began a series of workshops aimed at discussing and developing potential post-2012 policy instruments to reduce emissions from deforestation in developing countries. UNFCCC workshops on the subject were held in Rome in 2006 and in Cairns, Australia in March 2007; the issue is expected to play a large role in the climate negotiations at COP-13 in December 2007 and beyond.

To date, various structures have been proposed for a mechanism for providing positive incentives to reduce emissions from deforestation and degradation (REDD), and over 60 countries and 15 nongovernmental organizations have submitted position papers to the UNFCCC.⁴ In addition to

³ World Bank, March 2007

⁴ Major proposals include both joint and party submissions by Costa Rica, Malaysia, Japan, Argentina, Australia, New Zealand, South Africa, Dominican Republic, Colombia, Burundi, Cameroon, Chad, Congo, Gabon, Equatorial Guinea, Central African Republic, Rwanda, Sao Tome, Democratic Republic of the Congo, Paraguay, Peru, Bolivia, Thailand, Brazil, India, Germany, Indonesia, Central African Republic, Dominican Republic, Fiji, Ghana, Guatemala, Honduras, Kenya, Madagascar, Nicaragua, Panama, Papua New Guinea, Samoa, Solomon Islands, Vanuatu, Mexico, Panama, Ecuador, EU, Bosnia Herzegovina, Serbia, Former Yugoslav Republic of Macedonia, Croatia and Turkey. Available at <http://unfccc.int>.

crosscutting issues such as scope, scale, and methodological considerations, financing emerges as a critical component of any mechanism. In order to be effective, the mechanism must continually generate money and create incentives for land-use activities that reduce or avoid deforestation and degradation. Over the long-term the ideal mechanism will provide incentives that will encourage sustained reductions in greenhouse gas emitting activities (e.g., shifting to sustainable agriculture/forestry). Such financing would support activities by governments, businesses, local communities and individuals to reduce or halt activities which lead to deforestation.

In this paper, we develop a new approach to encourage actions to reduce emissions from deforestation and degradation in developing countries post-2012— a ***Dual Markets Approach***. In this approach, a market is created for the sale of emissions reductions from avoided deforestation, but this market would be separate from the post-2012 carbon market.⁵ Developed countries would commit a percentage of their post-2012 target to come from the REDD market. The approach combines many advantages of the market and fund based approaches currently proposed, and avoids many of their drawbacks.

The Dual Markets approach is presented in the context of the discussions and proposals surrounding the REDD issue in the UNFCCC. Therefore, in Section II we present an introduction to fundamental issues that must be addressed under any REDD program, followed by an overview of market and non-market approaches and a discussion of the proposals and general frameworks submitted thus far. Section III provides a comprehensive discussion of the key elements of the new REDD Dual-Markets Approach proposed in this paper.

II. Policy Discussions on an International REDD Mechanism

In this section we summarize the policy needs, proposals, and frameworks currently under discussion in the UNFCCC. Negotiators and researchers alike have pointed to the many crosscutting issues a REDD mechanism must address, described below. Various Parties have put forth specific proposals on REDD, detailed in section IIB. These fall under two general approaches—market-based and fund-based—and the advantages and disadvantages are discussed in section IIC. This section sets the context for understanding how the Dual Markets proposal fits into the international negotiations.

II.A. Crosscutting Issues

A range of policy issues will need to be addressed under any REDD framework. These include the following:

- *Reference Rates.*⁶ The development of national reference rates for deforestation will be the first and most important foundation of any international approach to REDD.

⁵ A number of options have been proposed for how the post-2012 carbon market structure, including Sectoral CDM and Sector-based Approaches. For the purpose of this paper, when we refer to “post-2012 carbon market” we mean any of these approaches applied to the sources of emissions included in the CDM (e.g., energy sector, high GWP gases, and afforestation/reforestation) and not deforestation or degradation emissions. In this paper, carbon markets developed for deforestation or degradation are referred to as the REDD carbon market.

⁶ This can also be referred to as a baseline, base year, or base period level depending on how it is defined.

Reference rates will first require creation of inventories of historical forest cover and carbon sequestration since 1990, a task that may be a challenge in some countries due to lack of data, geography, institutional capacity, etc. Designing a formal methodology for reference rates that will be used to estimate reductions will need to address a range of factors, including:

- Historical versus business-as-usual forecasts: Brazil has proposed that future reductions in deforestation and emissions be estimated through comparison with observed historical levels (i.e. the historical trend from the inventory becomes the baseline). Others have proposed using “virtual” baselines developed as counterfactual business-as-usual trends in future years. Papua New Guinea mentioned that any reference scenario should incorporate at least five years in historical data.
 - Years: If historical rates are used, appropriate years and time periods will need to be selected to develop the reference deforestation and emissions rate. This could involve historical rates averaged over consecutive years (e.g., 1990-2000), spot years (e.g., averaged using every third or fourth year since 1990), etc.
 - Methodology: Each country might have the same prescribed methodology for establishing baselines; alternatively, methods might be tailored to specific countries depending on the level and quality of data available and other factors.
 - National vs. sub-national: To prevent domestic leakage, ideally baselines would be developed on a national basis, taking into account the forest cover changes and carbon flows across the entire country. In some cases, however, geography or measurement difficulties might support the use of a sub-national baseline (e.g., archipelago countries, large countries with forests concentrated in only one area, countries with inaccessible forests due to terrain or political instability, etc.).⁷
- *Effective incentives for participation by developing and developed countries*. Annex I countries would either purchase credits in a market system or provide funds in a non-market system. In the latter case, appropriate incentives would be required to encourage developed countries to contribute financial resources. Developing countries would need appropriate rewards for changing their land-use activities.
 - *How to fund/encourage implementation and capacity-building*. Various proposals, including Costa Rica and Mexico, have specific funds designated for implementation, capacity building and stabilization. The structure of the funds, incentives, and design of implementation activities have not been specified, however.
 - *Mitigation cost and reduction potential*. Accurate assessment of mitigation costs will be crucial under any international REDD framework. Under a market system, countries would require detailed knowledge of the costs and reduction potentials of mitigation options before investing in REDD actions. If a non-market fund approach were used, detailed cost estimation methodologies would be needed to estimate the total funding

⁷ It is important to note that developing a national reference rate does not limit the ability to implement projects at a sub-national scale, but rather defines the basis against which credits are generated. For example, projects could be implemented under a national reference rate approach, but these projects could only generate credits if the overall national emissions were below the reference rate. Others have suggested a so-called “nested” approach where national reference rates would be established, but projects could generate credits in absence of the national emissions being below the reference rate (see for example, Pedroni and Streck, 2007).

required, ensure efficient use of financial resources, and establish credibility of the system in the eyes of developed country donors.⁸

- *Levels of final compensation paid* (e.g., price paid per tonne carbon emissions avoided). To the extent that the entire REDD actions are financed by developed countries, the compensation mechanism will need to ensure that the total payment to each country is greater than the cost of undertaking REDD actions. Alternatively if the REDD actions are partly paid by the developing country through “unilateral actions”, then the financing would need to cover the incremental cost.
- *Distribution of funds*. The mechanism will need to ensure that funds actually go toward forest stewardship and are not diverted toward other purposes.
- *Leakage*. If not designed appropriately, a REDD mechanism could simply shift deforestation from one area to another-- thereby also shifting carbon emissions. Various actors, (e.g. businesses based on extraction), that operate in a forested area covered by the mechanism may move to new areas or countries not covered by the mechanism, and deforest there. On a larger level, unchanged or growing international demand for certain commodities, such as palm oil or beef, could lead to deforestation in new areas not under government REDD policies. Research could help demonstrate which areas are prone to leakage and to design appropriate measures to address this issue (e.g., policies to address the international drivers for deforestation).
- *Double-counting with afforestation/reforestation under the CDM and deforestation incentives*. This would need to be avoided to maintain additionality under Clean Development Mechanism (CDM) rules, and to ensure that a REDD mechanism contributes new emissions reductions to the global atmosphere.
- *Permanence*. Permanence directly ties to the reward system of a REDD mechanism. The system would have to address the question of how long a credited forest area would have to be maintained, and how the mechanism would handle -- or incentivize against -- situations where a plot of land previously credited is later destroyed.
- *Perverse incentives*. How would the mechanism guard against a short-term incentive to quickly deforest in order to establish a lower baseline -- a baseline from which it would be easier to improve and gain credits?

⁸ Research in this area remains preliminary, but over the past few years some estimates of the costs of avoiding deforestation have been developed. For example, one study predicts that in 2025, measures costing <\$6, <\$14 and <\$27 per tonne CO₂e could sequester a total of 44, 98, and 137 Gt CO₂e, respectively (Sohngen, 2005). Another study projects that at \$27 per tonne tropical deforestation could nearly be stopped by 2055. This would require payments of \$465-\$660 per hectare – about \$2.5 trillion total (Sohngen and Beach, 2006). In addition, an analysis conducted for the Stern Review of the Economics of Climate Change concluded that the opportunity costs of avoided deforestation in eight countries (Bolivia, Brazil, Cameroon, Congo, Ghana, Indonesia, Malaysia, and Papua New Guinea) would range from \$3 billion to \$6.5 billion annually, with \$5 billion being perhaps the most realistic estimate (Grieg-Gran, 2006).

- *Credit for early action.* Some have called for credit for early action as a means to provide incentives for actions pre-2012, while only actually generating carbon credits for use by developed countries post-2012.
- *Degradation.* Counting this requires additional on the ground sampling and monitoring; and therefore likely more funding for capacity building and implementation.
- *Net versus gross deforestation.* Would the mechanism support reductions in net or gross deforestation? Gross refers to emissions from deforestation only, whereas net includes sequestration (and regrowth). Rewards based on gross deforestation reductions help to ensure that replacement of cleared primary forests by cash crop plantations or reforestation projects are not credited. The second option would help guard against crediting countries where GHG emissions have increased due to forest fires, selective logging, soil erosion or flooding -- a risk with gross accounting.
- *Conservation and Afforestation/Reforestation.* Should REDD reward expanding or maintaining existing forests and carbon stocks, such as in the India and Thailand proposals?
- *Offsets of Annex I Targets or non-Annex I “Contribution to the Protection of the Atmosphere”.* Would REDD simply offset emissions reductions in Annex I targets—as in the case of the CDM—or would some portion of the reduction be developing countries “contribution to the protection of the atmosphere”? For example, in a market system should countries be allowed to sell 100% of their reductions, or should they be required to make an initial unilateral reduction (making a “contribution to the protection of the atmosphere”) and only be able to sell the additional reductions achieved beyond this level?

II.B. Specific REDD Proposals of Parties

Specific proposals submitted to the UNFCCC by Parties include:

- A *REDD Market Mechanism* would operate in the post-2012 carbon market. Crucial components include credits from reduced deforestation emissions tradable with developed countries and post-2012 carbon credits, deeper targets by Annex I, and additional crediting for early action (e.g. pre-2012 pilot projects, capacity building, and monitoring). Reductions would be measured against a reference scenario determined by a reference emissions rate and a development adjustment factor. Market mechanisms are proposed by the majority of developing countries.
- A Non-Market *REDD Fund*, proposed by Brazil, would reward countries that demonstrate reductions in their deforestation rate through a direct funding mechanism not linked to the post-2012 carbon market. The funds would be distributed in proportion to the emission reductions achieved, measured against a reference scenario comprised of a historic national baseline. Funds would be awarded only after a reduction was demonstrated from this baseline, as opposed to a projected baseline. Contributors to the fund could conceivably include governments and businesses.

- An *Avoided Deforestation Carbon Fund* would finance activities that reduce deforestation rates in developing countries, as well as help maintain existing forests. This would be generated by voluntary contributions, as well as taxes or levies on the carbon market. For some countries, this would facilitate entry into the carbon market. Costa Rica proposed this in conjunction with a market mechanism.
- A non-market *Stabilization Fund* finances efforts to maintain, or stabilize, currently forested areas. This applies to countries with historically low rates of deforestation, to prevent the potential deforestation of their existing forests. This fund could be generated through taxes or levies on the carbon market, or through voluntary contributions.
- A non-market *Enabling Fund* assists REDD infrastructure development activities in non-Annex I countries (e.g. capacity building, monitoring program development, establishment of inventories and baselines). This fund would provide early financial resources to countries in need of infrastructure development, so that these countries could eventually participate effectively in a REDD mechanism.
- *Community Accounts*, proposed by Tuvalu, allow local communities a pool of money for forest retention projects.

II.C. Review of Market and Fund-Based Approaches

The majority of REDD proposals submitted to the UNFCCC thus far fall under two general categories: market and non-market based. In both cases, the amount distributed, credits allocated, and activities covered depend on the design of the mechanism.

A market-based approach would allow developing countries undertaking voluntary actions that reduce their deforestation rate or maintain carbon stocks to generate carbon credits, which they can sell at a market-determined price per tonne CO₂e reduced. Most current proposals envision this market mechanism to be linked to a “post-2012” carbon market envisioned as an extension of the existing carbon market created under the Kyoto Protocol. In such a system, credits generated from REDD actions would be equivalent to “post-2012” carbon credits (e.g., those generated through the CDM or its successor) and could be traded along with or in place of such credits. Such market integration is not essential, however-- in section III, CCAP will propose creating a REDD market not directly linked to the post-2012 carbon market.

Non-market approaches would rely on contributions to a fund or funds from developed country governments and sources such as through official development assistance (ODA), international financial institutions, and the private sector. For the REDD mechanism, financing is then distributed from this fund to activities that either reduce deforestation or reward countries for successful forest protection. Contributions could be either voluntary or mandatory. Other types of funds have also been proposed, such as to cover REDD capacity-building activities, administration, project implementation, and monitoring. Non-market systems could also involve non-monetary compensation to developing countries in the form of technology transfer, concessions on international trade (e.g., lowering of tariff barriers to agricultural imports from

developing countries),⁹ direct assistance with national development efforts (e.g., training, construction), and debt forgiveness (“debt-for-nature” swaps) in exchange for REDD actions.

Both approaches have generated debate during the UNFCCC workshops among governments and NGOs. For example, Compensated Reduction has been proposed as a purely market-based mechanism of rewarding actions that reduce deforestation rates by allowing the trading of reductions in the post-2012 carbon market (Santilli et al., 2005).¹⁰ Brazil, on the other hand instead supports a strict fund-based approach that would provide direct payments to countries for carbon reductions achieved through REDD measures, but not generate carbon credits. To date, most governments are in favor of some combination of market-based support and funds. One example is the proposal of the Coalition for Rainforest Nations which combines a market-based reward system for reducing deforestation with separate funds for capacity building.

II.D. Strengths and Weaknesses of Market and Fund-Based Approaches

One often-cited advantage of the carbon market approach is the capability to provide the large sums of money required to support deforestation actions.¹¹ It is argued that this approach would enable financing beyond the likely reach of government by creating a direct mechanism for private sector investments as is occurring in the current CDM market.¹² A market-based system would also be self-functioning while carbon caps are maintained; similar to cap and trade, a market system would not depend solely upon actions by governments, and would empower many players in the public and private sectors. Since the carbon market is already in place, this approach would likely require less effort to administer than a fund approach, though REDD-specific criteria would need to be developed. A market system could help to facilitate GHG mitigation actions and reduce mitigation costs of climate action globally, by generating potentially lower-cost REDD credits that can be purchased as offsets by developed countries from other sectors.

A market-based program would also carry possible risks. The global carbon market could be flooded with a large volume of low-cost REDD credits. This could create market disruptions, increase volatility, and produce a sudden drop in carbon market prices. In addition, it may also reduce the credibility of the post-2012 carbon market, because reductions from REDD/LULUCF actions are often viewed as less certain and accurate than reductions from energy and other sources.¹³ Another drawback is that a strict carbon market approach would provide little incentive for developing countries to undertake higher cost actions (e.g., agricultural and forestry policy reforms) as the carbon market will naturally incentivize the lowest price emissions reductions. In the long term, addressing the more difficult (and higher opportunity cost) drivers

⁹ For a related discussion of this topic see the CCAP paper, *Positive Trade Incentives for Encouraging Greater Participation in a Post-2012 Climate Agreement*.

¹⁰ A number of Parties have supported variations of Compensated Reduction.

¹¹ For example, one presentation at the Cairns Workshop (Noble, 2007) outlined that \$2-25 billion per year may be required for REDD incentives, while current non-market based financing is significantly lower than this amount.

¹² In 2006, it is estimated that 90% of the CDM assets were from the European private sector (World Bank, May 2007).

¹³ Perception can shape the political and market landscapes of such projects. For example, such a perception could lead the political negotiations to lead to an extremely conservative compromise agreement or market actors could significantly discount such credits.

of deforestation may require higher cost incentives than the early stages of the REDD-included carbon market mechanism would generate.¹⁴

Linkage with the current carbon market would complicate developing appropriate REDD baseline protocols, since these would have to be made consistent with those already in place under the CDM. Non-participation by key countries and lack of a mechanism to strictly evaluate and monitor performance could also produce leakage. A market system also would not directly support implementation or capacity-building activities, which would have to be financed separately.¹⁵ However, various countries have proposed a levy on carbon credits to generate funding for these activities.

A non-market (fund-based) approach addresses some of the major concerns associated with a carbon market approach to REDD, but also carries significant drawbacks of its own. The main advantage of this approach relates to protecting the post-2012 carbon market. Because REDD credits would not enter the carbon market, the non-market REDD mechanism would better maintain the integrity of the existing carbon market. In addition, a fund-based system could more directly finance capacity building and implementation efforts, as well as potentially supporting stabilization of standing forests in countries with low deforestation rates. However, any such fund requires developing new, potentially complex administrative infrastructure and selection criteria.

The largest drawback is that funding would depend upon voluntary contributions from Annex I countries or other institutions, and would therefore not likely produce levels of funding comparable to market approaches. This approach currently lacks a crediting mechanism that would incentivize sufficient contributions. A REDD fund would likely be less attractive to Annex I countries than the carbon market, for reasons such as political resistance to increased development aid and uncertainty of reductions. For these reasons, uncertainty about securing appropriate funding might make developing countries less likely to undertake REDD initiatives. In addition, a fund approach would provide little incentive for competition to produce the most well-managed, environmentally robust and cost-effective REDD programs. A fund proposal could also make REDD actions more dependent on government leadership by reducing the potential private sector driving forces that a market-based approach would promote.

III. The Dual Markets Approach: A New Proposal for REDD

In this section we suggest an alternative proposal for supporting REDD actions—the ***REDD Dual Markets Approach***. This proposal would create a new market for the sale of REDD credits post-2012, separate from the post-2012 carbon market. The COP would establish a maximum percentage countries could choose to achieve through the new REDD market. Annex I countries would then meet a portion of their post-2012 reduction target through purchasing REDD credits

¹⁴ This is likely only a concern to the extent that not providing incentives for the higher opportunity cost deforestation actions would “lock-in” a certain level of deforestation trends. For example, investments in agriculture activities which lead to deforestation could be more difficult (and costly) to reverse once the infrastructure, political support, etc. have been undertaken.

¹⁵ A surcharge or tax could be established on the market mechanism to separately fund these, but this would not be directly undertaken by the carbon market.

from the new REDD market. The proposal also outlines a pre-2012 preparatory phase to better enable developing countries to participate in the post-2012 REDD market.

DUAL MARKETS OVERVIEW:

- **The REDD system is *a new and separate market from the post-2012 carbon market (e.g., the Kyoto system)*. REDD units would not be directly fungible with the post-2012 carbon market (e.g., CDM credits).**
- **Pre-2012, developing countries begin establishing and reporting national LULUCF inventories annually with capacity building assistance from Annex I countries. Developing countries have a “no-lose”¹⁶ option to create REDD programs.**
- **Annex I countries commit to dual post-2012 targets: 1) a GHG reduction target via domestic action and post-2012 flexible mechanisms and 2) a CO₂ equivalent reduction from contributions to reduced deforestation and degradation in developing countries. For example, Europe might commit to -25% below 1990 levels from the post-2012 system and -5% through the REDD market by 2020.**
- **The COP decides the maximum amount Annex I can achieve from the REDD market. This addresses concerns of the potential generation of “hot air credits” and affecting the post-2012 carbon market demand. The Annex I REDD dual target is set within this maximum. After each commitment period, COP assesses the dual targets system and makes necessary revisions.**
- **Annex I countries can meet any shortfalls in their REDD goals with post-2012 allowances at the end of, or after, a given commitment period-- or through borrowing against a future commitment period.**
- **Annex I countries specify at the outset which developing countries’ carbon credits they will eventually purchase. This assures developing countries some minimum demand and financing as they start and implement forest management programs.**
- **As REDD is a nascent market while the post-2012 carbon market is more mature, a dual market approach allows REDD time to develop and stabilize before any linking.**
- **The Dual Market system ensures some demand for financing for developing country REDD actions while protecting the integrity of the existing carbon market.**

III.A. Short-Term: Capacity Building and Inventory Development

The REDD Dual Markets Approach would begin with a commitment from both developed and developing countries to lay the groundwork for an effective REDD mechanism until 2012. Developed countries would commit to using ODA and other development financing to fund key activities including the establishment of developing country LULUCF emission inventories,

¹⁶ “No lose” targets are defined as incentives for countries that meet voluntary emission reduction targets combined with the absence of penalties for countries that do not meet targets.

capacity-building, research studies of potential mitigation measures and costs, and implementation of pilot projects.

Emissions inventories and Baselines: In any post-2012 framework, emissions reductions from reduced deforestation will need to be easily comparable between countries. Therefore, it is critical that scientifically accurate, transparent, and consistent national emissions inventories are developed.¹⁷ Similarly, credible baselines of previous deforestation rates need to be developed, from which developing countries can compare their future deforestation rates.¹⁸ A standard template and estimation protocol would be developed for both inventories and baselines to ensure consistency across countries.

Capacity-building: Annex I countries will also assist with development of data collection practices, building administrative, measurement and monitoring capacity, and training and education of in-country staff. They will also undertake collaborative research to identify high-priority areas for REDD actions. These activities can encourage unilateral actions by developing countries in the pre-2012 phase by providing an expanded understanding of opportunities, cost savings, co- benefits, and implementation requirements afforded by REDD.

Pilot projects: Pre- 2012 pilot projects provide valuable models that can be tested, refined, and replicated to facilitate effective REDD actions in the 2012 phase. These could include establishment of Protected Areas, agricultural intensification, relocation of agricultural activities to degraded lands, and creation/expansion of the indigenous reserves.

III.B. Post-2012 REDD Dual Market and Implementation

The cornerstone of the Dual Markets proposal is the creation of a new REDD-only carbon market. This market is not directly linked to the traditional (Kyoto/CDM) post-2012 carbon market. The REDD-only market would begin in 2013 with the next commitment period. In this new REDD market, reductions generated through REDD actions in developing countries would be sold to Annex I countries to help them meet their overall post-2012 reduction target. Emission reductions from REDD activities in developing countries could not be traded with or used in place of carbon credits generated through the traditional carbon market (e.g., CDM, bilateral national trades or the EU-ETS). Over time, after the REDD market stabilizes, it is conceivable that the two markets could be linked if decided by the COP.

Overall Target-Setting

The COP would first decide the maximum percentage of GHG reductions that Annex I countries can achieve through the REDD market for the first post-2012 commitment period. This can be viewed as a ceiling on purchases from the REDD market. The maximum is necessary to: 1) ensure consistency with global stabilization goals while incorporating potential uncertainties of

¹⁷ Various methodologies for determining baselines and reference in areas have been proposed. These include tracking annual changes in forest cover by biome type, land-use and soil activities, and carbon contents and emissions by biome type and LULUCF source. CCAP recommends using methodologies that will enable consistency between countries and are scientifically sound, to be determined by experts in the field.

¹⁸ Proposals for measuring baselines include averaging deforestation rates for the past five years and projecting a virtual baseline into the future. Regardless of the methodology, it is agreed that baseline formation should avoid perverse incentives for a short-term increase in deforestation emissions.

REDD credits, 2) allow the REDD market time to develop before integrating with the already mature Kyoto market, and 3) protect demand for the CDM.¹⁹

Annex I Target-Setting

Individual Annex I countries would then commit to meeting a certain percentage of their own reduction target through purchasing (or funding the creation of) GHG reductions from REDD activities in developing countries. This percentage would be up to the maximum established by the COP. The Annex I REDD target would be a firm pledge, serving essentially as both a minimum and a maximum.²⁰ (However, provisions for borrowing and target-shifting would apply-- see below).

Take as an example the current EU proposal for a 30% reduction in emissions by 2020.²¹ Under the REDD Dual Markets approach, the EU commit to meeting a share of this target (for example, 5%) to be met through the REDD market. The remaining 25% would then be achieved through domestic GHG mitigation or purchases in the traditional post-2012 carbon market.²²

Agreements with Developing Countries

Developing countries would draw upon their preparatory pre-2012 phase to estimate the quantity and cost of reductions they can generate. They would draft a plan for managing their forests and government policies in order to achieve these reductions. Using these plans, developing countries could then solicit Annex I buyers.

At the beginning of the post-2012 phase, individual Annex I countries would review these proposals and determine which developing countries' credits to eventually buy (e.g., by signing ERPA--Emissions Reduction Purchasing Agreements). Within these agreements, for example, Annex I countries could specify a portion their REDD target (e.g., 80%) to come from certain countries, while maintaining some flexibility to use the general REDD market for the remaining portion (e.g., 20%). These Annex I commitments could then be translated into private sector commitments through that Annex I country's strategy for meeting its national reduction target.

Developing countries therefore know at the outset which Annex I party will be buying their credits. This gives developing countries a minimum level of demand for, and potential upfront funding for, REDD credits. This approach also offers an incentive to act early on REDD and develop effective programs, in order to recruit Annex I buyers. Given the potential lead time that may be needed for countries to develop and implement their policies/programs, this upfront confirmation of support will help countries begin the implementation of their efforts. These agreements could take the form of bilateral contracts-- for example, country A will sell country B a certain amount of credits at a certain price per ton, with built-in pricing mechanisms such as escalators linked to the global carbon price.

²⁰ Annex I countries could meet their REDD targets through use of government funds, mandates on companies (e.g., through targets in domestic emissions trading systems), or a combination.

²¹ Contingent upon participation by other developed countries

²² During the introductory post-2012 phase of the REDD mechanism, developed countries would not be allowed to increase their REDD share, in order to protect demand for the traditional post-2012 carbon market (e.g., CDM), and to ensure the integrity of each market. Developed countries could continue to increase their Kyoto Protocol share in order to reach their national commitments.

Ensuring emissions reductions goals through non-REDD carbon credits or borrowing

To ensure that the overall global emission reduction goals are met, at the end of the first post-2012 phase, if the *ex post* reductions from REDD actions are lower than the contract, Annex I countries would be permitted to move a portion of their REDD targets to traditional post-2012 caps. In other words, they could meet the targets through non-REDD reductions, and undertake additional domestic actions or market purchases to make up the shortfall.

If developing countries' REDD policies fail, Annex I countries can also borrow against their future REDD commitments. This flexibility provides a protection that Annex I countries will have options at the end of the commitment phase if their contracts do not produce results, while simultaneously ensuring that the overall reduction target will be met.

Review by the COP

The Dual Markets Approach specifies that Annex I REDD targets stay constant for the commitment period, and the COP determines the maximum percentage allowed from REDD. However, the COP would periodically review the Dual Market system, taking into account how well the system is working and how dependable the REDD credits are. The COP, of course, can make needed changes to the system, such as altering percentages allowed from REDD, potentially permitting Annex I increases in their share, and eventually determining whether to link with the global carbon market.

III.C. Question and Answer

The Dual Markets Approach may at first appear complex, but in fact is a realistic strategy that incorporates many of the positive elements of previous proposals while avoiding many disadvantages. This question and answer section aims to clarify the logic of this new approach for those new to this approach and to the REDD policy field. It also demonstrates that the Dual Market Approach addresses enough details so as to be a policy proposal that could work in practice.

Why is a separate REDD market necessary? Why is it necessary for the COP to set a maximum (ceiling) on REDD credits?

For the next commitment phase, (2012-2020 or 2012-2030), a separate REDD market with a maximum has many advantages. These stem from the fact that most developing country REDD programs and policies would be new and untested at such a large, national scale. First, the Dual Market system would provide a safety net for global stabilization goals. Many climate negotiators worry that REDD reductions may be uncertain, producing a risk of ‘hot air’ credits.²³ It may be difficult to determine exactly how many carbon tons can be sequestered from developing countries’ new REDD policies until those policies have had enough time to demonstrate results. A maximum set on REDD credits therefore provides some safety net for global stabilization goals if REDD programs do in fact produce “hot air,” or worse, fail entirely. The maximum prevents Annex I countries from relying too much on reductions from untested

²³ Since any REDD reduction sold to a developed country will offset one reduction achieved either domestically or through non-REDD activities in developing countries, many negotiators want to ensure that any REDD reduction lead to a “one-to-one” reduction (i.e., is real, additional, and verifiable).

REDD programs for the upcoming commitment phase.²⁴ The maximum therefore emphasizes the importance of domestic reductions by developed countries and safeguards demand for already-tested reductions such as the CDM.

Second, this approach allows the REDD market, and individual countries' REDD programs, time to develop before integration with the existing global carbon market. Developing countries would not face as much pressure to compete directly with the CDM and can craft and test functional REDD policies in a time frame appropriate to national circumstances. In addition, with these countries testing national REDD programs for the first time, it is unlikely they would produce a large surplus of reductions that would exceed the maximum placed by the COP.²⁵

Third, a separate REDD market avoids major disruption of the post-2012 global carbon market. In a pure integrated-market approach such as Compensated Reduction, fluctuations in REDD supply and pricing would directly affect the post-2012 carbon prices, which could cause overall volatility in a carbon market currently functioning well. A Dual Markets approach keeps separate an emerging market (REDD) from the more mature carbon market until questions of volatility have been resolved.²⁶ It also protects many countries' investments in the CDM.

It should be noted that successful precedents for creating dual environmental markets already exist – in the United States, for example, national and state-level fuel economy standards and renewable portfolio standards (RPS) have functioned effectively along with independent emissions trading programs for GHGs and criteria pollutants.

In a dual system, how will REDD market affect the existing carbon market?

The two markets will affect each other to some extent. For example, if REDD tons fail to materialize by the end of the first commitment phase, and many Annex I countries use the post-2012 carbon market to offset their REDD shortfalls, prices in the post-2012 global carbon market would rise. However, this proposal mitigates the effect of REDD tons on the existing carbon market, compared to entirely integrated market approaches such as the Compensated Reduction. In a truly integrated market, REDD prices directly affect carbon market prices in real-time-- which could produce extreme market volatility, as discussed earlier. In this Dual Markets approach, REDD credits would most likely only affect post-2012 carbon market prices at the end of the commitment phase.

Why is it necessary for Annex I countries to decide at the outset which developing countries' credits they will buy?

Slowing deforestation requires considerable change within developing countries, often at a high cost to the countries themselves. Developing countries will need some guarantee that there will be a buyer for their REDD credits. To determine REDD program structure and costs, such as hiring of staff and paying for monitoring, host countries will also need to have some estimate of funds they will eventually receive. The goal of this commitment is to create a long-term commitment for a long-term REDD market. If there is too much uncertainty over who will buy how many credits, developing countries may view the REDD market as not worth expensive changes to their domestic policies and land-use practices. A lack of action on deforestation

²⁴ The COP can always establish a review process, like the CDM board, to add flexibility to the maximum if REDD programs prove dependable in a short amount of time.

²⁵ At least for the upcoming commitment phase.

²⁶ As discussed earlier, linking of the two markets could be decided eventually by the review system of the COP.

could result, making it even more difficult to send strong signals for REDD reductions in both the short and long-term.

Would Annex I countries be allowed to increase their REDD targets during the commitment period?

Annex I countries would not be allowed to increase their REDD targets during the commitment period. They could, however, adjust their REDD targets at the beginning of the next commitment period, or during review stages if put in place by the COP. Since Annex I countries can borrow from future commitment periods if a portion of their contracted REDD target that does not materialize (e.g., due to failure of the developing country policy/program to deliver expected reductions), it is important not to allow an upward adjustment of their REDD targets during the actual commitment period. Otherwise Annex I countries could circumvent the system by increasing their REDD target, subsequently announce that their REDD target could not be met, and then borrow from the future commitment period. As a result, their overall Annex I target would not be met (potentially by a large amount if they were allowed to significantly increase their REDD target), which would generate less overall global reductions than anticipated from the post-2012 agreement.

With such specified buyers and sellers, how is the “REDD market” really a market?

The REDD market is a government-driven market, but one in which the private sector has a strong implementing role. In this approach, national governments have a much stronger role than in a pure integrated market (e.g., Compensated Reduction) mechanism. However, national REDD programs would incorporate specific projects which could be financed and implemented by the private sector. Approaches would need to be developed to score individual projects against the overall national reductions.²⁷

How can the pre-2012 phase be financed?

Like most other proposals, the Dual Markets approach predicts that inventories, capacity building, and implementation will be financed by multilateral institutions and official development aid from an Annex I governments. The World Bank, for example, has started the Forest Carbon Partnership Facility and the government of Australia has committed funding for forest conservation in the Asia Pacific region. However, most experts agree that more support will be needed to enable large-scale reductions in the short-term.

However, once countries and investors know that a REDD market will exist after 2012, some incentives should emerge for contributions to capacity building in developing countries. The ability to meet domestic GHG reduction targets through cheaper overseas REDD credits in the post-2012 phase should encourage Annex I to contribute. In addition, once private-sector brokers know there will be a carbon market, it is highly possible that private-sector funds will contribute as well. Even though the Dual Markets approach specifies national inventories and policies, actual reductions will also incorporate on-the-ground projects, which are ripe for investment.

One creative approach to financing could be policy-based loans. Policy-based lending, a technique used by international finance institutions, provides loans to countries for assistance in the implementation of policy reform (e.g., paying for staff or consultant time to

²⁷ This is an issue that would need to be addressed under any national-based approach (e.g., Compensated Reduction or the Dual Markets Approach).

develop/implement the policy reform)—often at low interest rate.²⁸ In this case, policy-based lending could focus on in-country forestry and development experts to devise programs most suitable for the particular political landscape.

Would preservation/stabilization of existing forests be credited in the mechanism?

This is excluded from the Dual Markets Approach for a variety of reasons. While it is understandable that countries with low deforestation rates would want to be compensated for maintaining their existing forests, actual crediting of such forests would complicate the REDD mechanism. Additionality would be very difficult to prove which could facilitate the creation of hot air credits since existing forest land may not necessarily be deforested if not for the funding from the REDD credits. A separate approach may be needed for such stabilization, but we suggest that this take a different form than the approach outlined here.²⁹ While some have argued that possibility of international leakage (e.g., efforts to reduce deforestation through the REDD market leads to those same activities shifted to another country) argues for the need to include stabilization into the mechanism, we suggest that international leakage is best addressed through changing international market demand for industries such as beef, soybeans, and palm oil that often drive large-scale deforestation. Separate and complementary policy mechanisms to the REDD carbon markets approach (e.g., certification) are needed to address these drivers.

Would the REDD market link with traditional carbon market over time? While the maintenance of separate REDD and traditional carbon markets is necessary to protect the latter in the short-term, ideally both markets would be brought together at some future time to increase market efficiency and competitiveness. The international community would need to agree on a set of criteria the REDD market would have to meet before integrating with the traditional carbon market, and would then have to establish new combined administration and monitoring protocols that are consistent between the two programs.

III.D. Alternative Design Options

Various alternative design options can be added to tailor the Dual Markets proposal to the needs of the international community. The key options include:

- *The REDD Program could include provisions for discounting some final emissions before crediting.* Given the significant uncertainties involved regarding the estimation of reductions from REDD actions and monitoring and verification, in some situations it might be appropriate to discount the estimated reductions achieved before applying them to the national targets. The specific situations where discounting would be applied would vary, with Annex I countries with discounted REDD projects required to invest in a level of reductions greater than their actual target. This would help to guarantee that the environmental goals of the agreement are achieved by being conservative. Discounting could be a way of achieving a "contribution to the protection of the atmosphere" by applying a higher discount rate (see next bullet) as long as no minimum level of REDD

²⁸ For a summary of such approaches and how often they are used by the major international financial institutions, see CCAP (2007).

²⁹ A limited number of proposals have been suggested for how these countries could be handled. See for example, Santilli et al. (2005) and Mollicone et al. (2007) for two approaches.

targets are required. If a minimum Annex I purchase is required, discounting would not work because the price of REDD tons could be raised to cover the discounted portion.

- *A portion of the reductions by non-Annex I countries could be retired as “contribution to the protection of the atmosphere.”* Under several REDD proposals, the entirety of the REDD reductions would be available for sale to help Annex I countries meet their target. Alternatively, a portion of the reductions (e.g. 20%) could be permanently retired as developing countries “contribution to the protection of the atmosphere”.³⁰ For example, if a country generated 100 tons of emissions reductions from its REDD program, it might only be allowed to sell 20 tons to Annex I countries, with the remaining 80 tons permanently retired. Whether such an approach is supported and how it would work for REDD reductions requires further evaluation.³¹
- *An additional fund could be set up to address gaps.* Even a REDD market that functions relatively smoothly may have certain complications. For example, the REDD market could be dominated by a small number of developing countries, especially if implementation costs vary significantly between nations. The creation of a supplemental non-market fund for REDD activities could address such potential difficulties. Under this system, Annex I participants would be required to meet a minimum share of their reduction target through contributions to a central international REDD discretionary fund administered through an independent agency, such as the UNFCCC or World Bank. Reductions achieved through fund activities would then be allocated to the Annex I countries proportional to their total contribution (any national reduction shortfalls could be made up through domestic reductions or purchases in the carbon market). Activities funded could include:
 - Capacity-building and implementation of REDD projects in developing countries that desire to undertake such activities but have been largely ignored by the carbon market
 - Implementation of REDD projects likely to produce high levels of reductions that have not been undertaken by the major investors due to high costs or other factors. These could include projects to reduce deforestation-related fires, soil erosion, or flooding to achieve additional reductions in emissions of carbon dioxide and methane.
 - Broad-based structural and policy reforms in developing countries that can reduce deforestation emissions
 - Reduction projects already implemented that may otherwise be abandoned due to unforeseen difficulties (the share of the reductions achieved would be claimed by the fund in proportion to the amount contributed)
 - Higher-cost projects expected to produce other significant environmental or development-related co-benefits

³⁰ This is the approach suggested in the CCAP Sector-Based approach (Schmidt et al., 2006) where developing countries undertake “no lose” intensity targets in key sectors and only the reductions achieved beyond the “no lose” target would be eligible for sale to developed countries.

³¹ Discounting of the tons generated through REDD could also be done in some circumstances to account for the potentially large uncertainties (Persson & Azar, 2007) in estimating the emissions savings from a REDD program. This would help to guarantee that the environmental goals of the agreement are achieved by being conservative.

Potential Timeline: Dual Markets in Practice

2009 (Dec. 31): Dual Markets created: COP decides on a creditable REDD-only market to begin in 2013. No credits generated in the 2008-12 timeframe. COP decides on the commitment period for REDD (e.g., 2012-2020).

2010 (Dec. 31): Rules for Dual Market and crediting system completed, including the maximum percentage of Annex I reductions allowed to come from REDD in the 2013-2020 timeframe. Pre-2012 phase occurs in developing countries, aided by outside funding, including inventories, baselines, capacity building, and program development and implementation; this phase could also begin earlier.

2011 (Dec. 31): Individual Annex I countries commit to a percentage of their GHG target to come from REDD—their REDD target.

2012 (Dec. 31): Developing countries provide estimates of potential supply of carbon credits and pricing, aimed at meeting Annex I demand for REDD.

2013 (Dec. 31): Annex I countries decide which developing countries' credits they will eventually purchase, and sign contracts.

2018 (Dec. 31): COP reconsiders REDD ceiling and market integration. In the case of a 2012-2030 commitment period, COP can use this near-halfway point to raise (or lower) the REDD maximum depending on the certainty of the REDD reductions.

2020 (Dec. 31): Annex I countries complete REDD transactions from their specified developing countries. If REDD reductions do not materialize, developed countries either submit emissions allowances equal to the REDD target (e.g., from the post-2012 carbon market) or borrow into their next REDD target. Annex I signs REDD contracts for the following commitment phase. At this point, the COP could end the Dual Markets Approach and make REDD reductions fully fungible with the broader carbon market for the subsequent (e.g., 2020-2030) commitment period.

IV. Conclusion

The development of a framework to encourage actions to reduce GHG emissions from deforestation and degradation in developing countries (REDD) will be one of the most important and challenging issues faced by the world community in addressing global climate change. With approximately 20% of carbon dioxide emissions globally coming from tropical deforestation, REDD actions on a broad scale will be necessary to stabilizing GHG concentrations in the atmosphere. A REDD mechanism will need to address many issues, including establishing reference scenarios and baselines, creating effective incentives for developing and developed countries, and ensuring a sufficient and consistent flow of funding. Parties have submitted a variety of proposals for an international REDD mechanism, relying on carbon market integration and/or voluntary contributions.

The Dual Markets Approach presented in this paper would combine critical elements of the market and fund based approaches and would address many of their shortcomings. By creating a separate REDD market, in contrast to other market-based proposals, the Dual Markets framework would maintain the integrity of the existing carbon market while generating more financing than a fund-based approach. Annex I would agree to specific voluntary REDD targets, also considered a maximum, providing a guaranteed level of demand for developing country REDD credits while safeguarding stabilization goals against potential uncertainties of REDD reductions. The flexibility of this proposal would provide a range of options to both developing countries and Annex I countries, including voluntary participation, borrowing from future REDD targets, making up REDD shortfalls with CDM credits, and review by the COP to eventually consider linking to the global carbon market. This flexibility would facilitate a system of learning-by-doing for the upcoming post-2012 commitment period and allow the international community to craft a workable program to reduce emissions from deforestation.

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