

# REDD Flags: What We Need to Know about the Options

## Draft Executive Summary



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### Summary:

Stabilizing greenhouse gas emissions in the atmosphere at safe levels requires significant reductions in the current rates of deforestation. Reducing Emissions from Deforestation and Degradation (REDD) and maintaining healthy forests also can deliver important additional benefits to the forest-dependent poor and for biodiversity conservation.

Successful REDD initiatives require a combination of government interventions and concerted action by both producers and consumers of forest products. If REDD is to achieve a large reduction of global greenhouse gas emissions, major industrial practices in the forestry, energy, and agricultural sectors, which are at the heart of many countries' economic and political structures, need to be fully involved. Eliminating (and even significantly reducing) deforestation has serious costs associated with it.

Recognizing the challenge of halting deforestation in the short and medium term, international criteria for determining REDD priorities may include

- o Preserving forests highly valued for biodiversity or ecosystem services (e.g., water regulation, erosion and flood control)
- o Protecting those living in poverty and relying on forests for subsistence.

Maintaining the world's remaining forests requires multiple strategies. If verifiable and credible emission reductions can be generated, carbon markets could provide one important source of revenue for REDD. In addition to carbon market-based solutions for REDD, policymakers should also consider

- o Designing programs that address both the demand for products causing deforestation and the method of their supply.
- o Creating new, separate REDD funds.
- o Recognizing REDD activities in a sustainable development policy and measures approach, also under the United Nation Framework Convention on Climate Change (UNFCCC).

### 1. Linking Forest Loss, Climate Change, and REDD<sup>1</sup>

Between 2000 and 2005, the world's great tropical forests disappeared at the approximate rate of 10.4 million hectares each year, an increase in the rate for the period between 1990 and 2000, when around 10.16 million hectares of forest were lost per year.<sup>2</sup> Furthermore, in primary forests, annual deforestation rose from 5.41 million hectares to 6.26 million hectares in the same period.<sup>3</sup> These forests harbor 70 percent of the world's biodiversity and two-thirds of the world's animal and plant species, and are home to as many as 60 million people, many of them among the world's poorest.

Another value of tropical forests, however, is their ability to mitigate some of the impacts of climate change, for example, by helping protect both the quality and the quantity of water and by sending humidity into the atmosphere and surrounding areas.<sup>4</sup> But if the forests are cleared, they will release large amounts of carbon dioxide into the atmosphere, exacerbating the climate change problem. Currently, deforestation accounts for about 15 to 20 percent of global anthropogenic greenhouse gas emissions (see box 1). According to the International Panel on Climate Change, the world's global emissions must begin to decline within the next fifteen years if global mean temperatures are to be prevented from increasing beyond 2.6 degrees C (4.7 F). But

even with such a modest temperature change, we can expect greater degradation of forests and damage to ecosystems. Halting deforestation globally, therefore, is a high priority in mitigating climate change.

The decision whether to create a mechanism that recognizes the reduction of emissions from deforestation and degradation—which under the UNFCCC would allow developing countries with tropical forests to be recognized for implementing activities that have Reduced Emissions from Deforestation and Degradation (REDD)—is high on the agenda for discussions leading into countries' next commitment period under the Kyoto Protocol, which starts in 2012. Although it seems almost certain that the answer will be to include this large source of emissions into some structure, the question is which structure, and how?

Although countries have suggested a number of different proposals (see Appendix 1), the details of such a REDD mechanism have still not been decided, although some proposals are clearly at the forefront. This publication<sup>5</sup> seeks, first, to clarify what will be required to achieve REDD at a level that will help mitigate climate change and, therefore, to frame the questions to be considered when deciding on the advantages and disadvantages of various policies or options. Second, it considers the policy options that could be part of a broad structure to achieve REDD under the UNFCCC, some options that have been proposed and others that have not, and analyzes the advantages and challenges points of each.

## Box 1: Deforestation and Carbon Emissions

Carbon dioxide (CO<sub>2</sub>) is absorbed by growing trees through photosynthesis and is released by their respiration as well as by the decomposition of dead trees. Forests become a carbon sink, or stable stock, if their absorption of CO<sub>2</sub> is higher than their release of it. When the forest is cut and the soil disturbed, the CO<sub>2</sub> is assumed to be released. Although this may be a premature release, the carbon stocks can return to past levels if the trees are given time to grow untouched. If areas are not allowed to return to forested land—that is, if they are deforested—then there are not only short-term emissions but also a global reduction of carbon stocks, since those trees will not be allowed to grow back. The 15 to 20 percent of global emissions attributed to deforestation reflects stocks lost owing to land use change.

## 2. Money and More

To succeed, all REDD proposals must include regulatory and market incentives that are strong enough to offset the current incentives driving deforestation at unprecedented rates. The challenges of creating an environment that will slow deforestation are well known. A number of successful projects already have been implemented around the world to avoid deforestation or for sustainable forest management in certain areas, for example, the Mexico Project in the Chiapas<sup>6</sup> and the Noell Kempf project in

Bolivia.<sup>7</sup> However, the resources necessary to raise initiatives from the project level, and to reduce emissions enough to make a difference for climate change, should not be underestimated. To achieve a higher level of change, many countries will need to consider the impacts on the large industries (forest products, energy, agriculture) that are at the heart of their political and economic structure. For other countries, addressing poverty and the needs of rural forest dwellers and indigenous peoples will be fundamental. And many countries will need to take both into account. At the base will be the governments' willingness to undertake these challenges and create the structures required to institute these changes, in coordination with many different groups of stakeholders.

Meanwhile, the pressure to deforest in tropical forest countries will continue to be enormous if the global demand for forest products, including timber, hydrocarbons, and other forest-based extractives, keeps rising. If the tropical forest countries that are currently supplying this demand are asked to forgo revenues in order to protect certain areas, they will be entitled to ask for compensation. If these countries are asked to improve forest management practices so that the continued supply of forest, energy, and agricultural products does not harm the climate through deforestation, they will also likely require a significant amount of additional financial support. Therefore, sustainable financial flows are needed either to provide alternative sources of income to persuade countries to address the causes of deforestation or to make, or help others make, alternative land use decisions that will reduce emissions.

How these financial flows enter and then are distributed in a country is likely to be a challenge, both when considering the structure of REDD and during the implementation. Understanding the causes and drivers of deforestation, for whom and where the incentives are needed, and what the governments and companies linked to the supply and demand of the products that are causing deforestation must do, will be fundamental to creating the best systems for change and positive incentives. Because the markets for these products are global, and the relationship among and within countries regarding their production and consumption is complex, it is clear that no matter how REDD is implemented, eliminating (or even significantly reducing) global emissions from deforestation is likely to take a number of concerted efforts, using old and new policy tools/mechanisms<sup>8</sup>, building on one another.

## 3. Using the Carbon Market to Create Financial Flows

The desire to address emissions from deforestation and degradation offers an opportunity to create financial flows from carbon markets, through the certification and sale of carbon offsets, primarily to industrialized countries and companies seeking to comply with their national emission reduction targets. Carbon offsets for REDD activities could be implemented on a project scale, such as other clean development mechanism (CDM) projects, in which the avoided emissions would be

addressed and rewarded to one site or project at a time (a project-level crediting approach). Or they could be certified on a national scale, essentially making the entire country the project site, and reducing the emissions from deforestation across the country (here called a national-level crediting approach).

In a national-level crediting approach, a reference level of emissions<sup>9</sup> is decided by calculating the country's historical rate of deforestation, along with, most probably, some calculations of how the future will look, in order to come up with the number against which future emissions will be compared. A country's governments or agents would implement projects and policies to reduce the rate of deforestation; and if the emissions fell below the agreed reference level as a result, then Annex 1<sup>10</sup> countries could buy those emission reductions to help meet their targets.<sup>11</sup>

Because developing countries are reluctant to make binding commitments to reduce greenhouse gases, the proponents of the national-level approach have emphasized that these countries' participation would be voluntary and that it would be a "no regrets reference level." In other words, these countries would join such a scheme only if they wanted to, and if they joined and failed to reduce their emissions from deforestation and degradation, they would not be penalized.

The national-level approach has gained significant support from some of the potential REDD country participants as well as other stakeholders (see appendix 1).<sup>12</sup> It has been noted that some forested countries also may have great quantities of emission reductions to sell and could raise quite substantial levels of funding.<sup>13</sup> In addition to their carbon benefits, given the linkages between forests and biodiversity, as well as development and livelihoods<sup>14</sup>, REDD could offer multiple benefits to those countries implementing such activities.

Given the interest in and positive aspects of this approach, it is worth looking more closely at the design requirements that would yield these outcomes, for example, global long-term reductions in deforestation and emissions, and the maintenance of forested areas.

## 4. Tracking "Real Reductions": The Technical Questions for REDD Credits

The national-level crediting approach for REDD faces significant technical/accounting challenges which, if left unresolved, could lead to higher global emissions than would have occurred without REDD (see figure 1). If these challenges are not addressed properly, they could make the "credits" provided by REDD valueless from the perspective of the environment and, therefore, on the carbon market. This in turn would mean no financial flows to forests, to the detriment of both the climate and the forest outcomes being sought through a REDD mechanism.

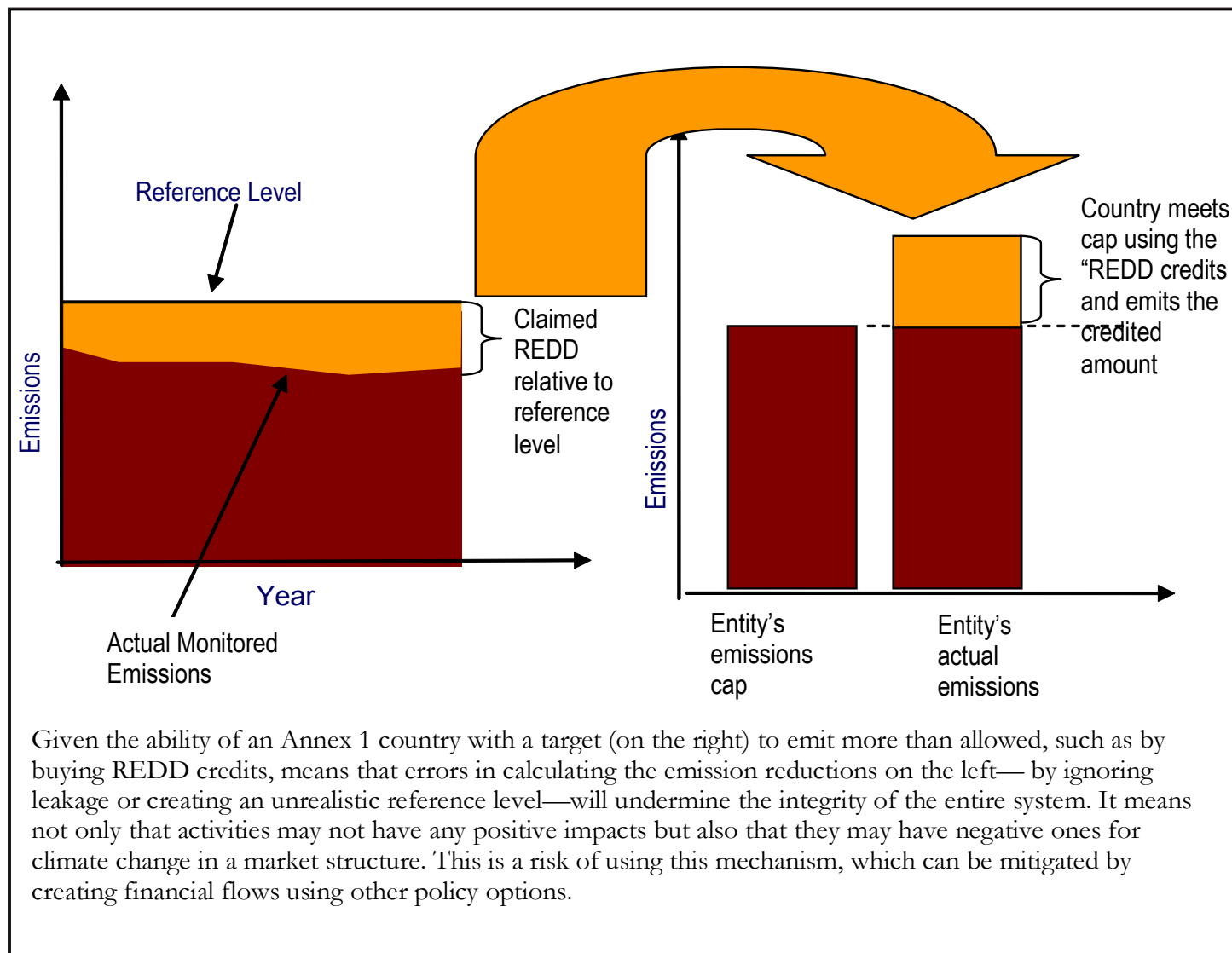
These challenges are relatively well known: the difficulty in characterizing the emissions from deforestation and degradation, the "leakage"<sup>15</sup> of deforestation activities from participating to nonparticipating countries, the difficulty of accurately monitoring improved performance, and the need to ensure that those forested areas that have generated offsets remain intact over time, or "permanence." Convincing responses to these challenges have proved elusive.

Caps on industrial emissions have been shown to lead to displacement, or leakage, of those emissions to other countries (the IPCC estimates a range of 5 to 20 percent<sup>16</sup>). Leakage is a particularly challenging problem for REDD. Unlike other types of emission reductions, REDD is limiting not a by-product of an economic activity but the activity itself. Also, REDD is trying to change activities on a fixed land base, where spillovers can easily occur, given the magnitude of the commodity markets (local, national, and international). Where deforestation is driven by demand for both timber and/or growing agriculture or fuel needs, studies show that at the project level, this leakage can be close to 100 percent, depending on the areas being considered.<sup>17</sup> Given the global nature of the markets that drive deforestation, and the no-regrets and voluntary aspects of the proposals regarding REDD to date, there is little reason to believe that this will change for a national-level program with international-level leakage<sup>18</sup> unless all tropical forest countries participate equally in REDD. Therefore, while advocates of the national-level approach argue that national coverage can solve the leakage issue, for REDD this may require further consideration, especially because modeling international leakage will be even more complicated than modeling national leakage.

For example, one mechanism design option that would start to address international leakage would be for forest countries to accept binding targets and for all forested countries to participate in the REDD mechanism.

It is unclear whether the technical issues identified so far can be resolved, so their impact should be the focus of continued investigation in the next few years. For example, what are the implications of high uncertainty around a reference level that includes degradation? What information could make reference levels more robust so that the risk to both the environment and the developing countries is reduced? These and other questions remain to be answered before the value of a carbon market mechanism for REDD can be evaluated.

Figure 1: False Emission Reductions Lead to Increased Emissions



## 5. Making Real Reductions: Understanding the Outcomes Sought and Gained

In addition to the technical issues outlined above, REDD proposals raise more fundamental questions about whether using the climate regime to fund the reduction of deforestation—either a carbon market or a compensation fund—will yield the expected outcomes.

A number of issues have already been flagged, such as ensuring that the forest's multiple values, and the people whose lives are affected by the actions taken, are taken into consideration.<sup>19</sup> Arguably, however, the main consideration should be implementing REDD in a manner that creates real change. This will require recognizing the different national circumstances, including the various drivers of deforestation and the governments' capacities in the short term to reduce deforestation at a national level, given that all the drivers, institutions, and

stakeholders are different.

The impact of using the national rate of deforestation as the performance metric, for example is one area where these concerns become clear. Although carbon emissions from land use change in forested areas can be calculated more accurately by using the rate of deforestation and degradation than by quantifying absolute carbon stocks. And looking at annual emissions from deforestation would make the REDD mechanism look more like other emission reduction programs. A program that rewards countries only for reducing their national rate of deforestation could keep countries from participating, for three reasons:

1. In the short term, some countries will not be able to overcome the high economic and political costs of implementing programs at the national level. Some countries will be able to undertake these changes in only some areas or only addressing some of the drivers or causes of deforestation. Thus under a national-level crediting approach, real and positive changes may be overlooked (see box 2).



2. A national-level approach will be limited if the goal is to protect forests (and carbon stocks) over the long term. Reducing the rate of deforestation may slow the destruction of the forests, but the mechanism will not necessarily stop forest loss. It is possible, for example, that a country with a high rate of deforestation could still lose most of its unprotected forests in twenty years if only the rate of deforestation and the related emissions are considered under REDD (see figure 2).

3. The question of fairness among countries (and, indeed, within countries) also arises. If historical rates of deforestation are used as a reference level from which to reward progress, those countries with a high rate of deforestation would have more opportunities for compensation than would those that have kept their rates low, even though their forests may be equally at risk in the future.

These reasons lead to a multitude of important structural design considerations. First, they emphasize that several tools will be required to achieve REDD. For example, under a REDD structure, two parallel tracks might be implemented, one that would fund forest conservation and one that would track the rate of deforestation.

## Box 2: Falling through the Cracks, a Good Project

When looking at the rate of deforestation at the national level as the performance metric, especially in the shorter term, one risk is that good projects may be implemented but not recognized because not enough time, funding, and/or capacity was available to change all drivers or causes of deforestation at the country level and therefore changes that are made are not captured by this metric.

For example, a country decides to make a particular forest area that is very valuable from a carbon, biodiversity, and ecosystem services perspective, into a national park. Calculating the potential REDD funding from the emissions reduced, the country feels it can use the funding to ensure that the people affected by this decision are adequately compensated, that trees can be planted on abandoned lands to provide a new source of timber and forest products to the local communities relying on the forest, and so forth. But despite these measures and the value of this project, other, completely unrelated, activities, such as those regarding agriculture commodity prices, drive up the rate of deforestation in another area of the country. The country may suddenly receive none of the expected funding from REDD.

This risk is likely if the World Bank's Forest Carbon Partnership Facility is implemented in its current form and so is one possible place where solutions should be sought and tested.

Several proposals speak to the forest conservation issue, such as calling for a "stabilization fund" or a carbon stock approach, which would offer incentives to countries to retain their existing stocks. However, more effort is required to combine both the rate of change and the carbon stock metrics into a meaningful REDD structure. In addition, creating levels of success for both these metrics over the short, medium, and long terms will be necessary to ensure that immediate actions are rewarded, even when a longer time frame is required to completely control a country's deforestation.

Certainly these considerations show that any approach will require either multiple components in one mechanism or a number of mechanisms that may, in some cases, need to work in concert.

## 6. Thinking about the Other Options

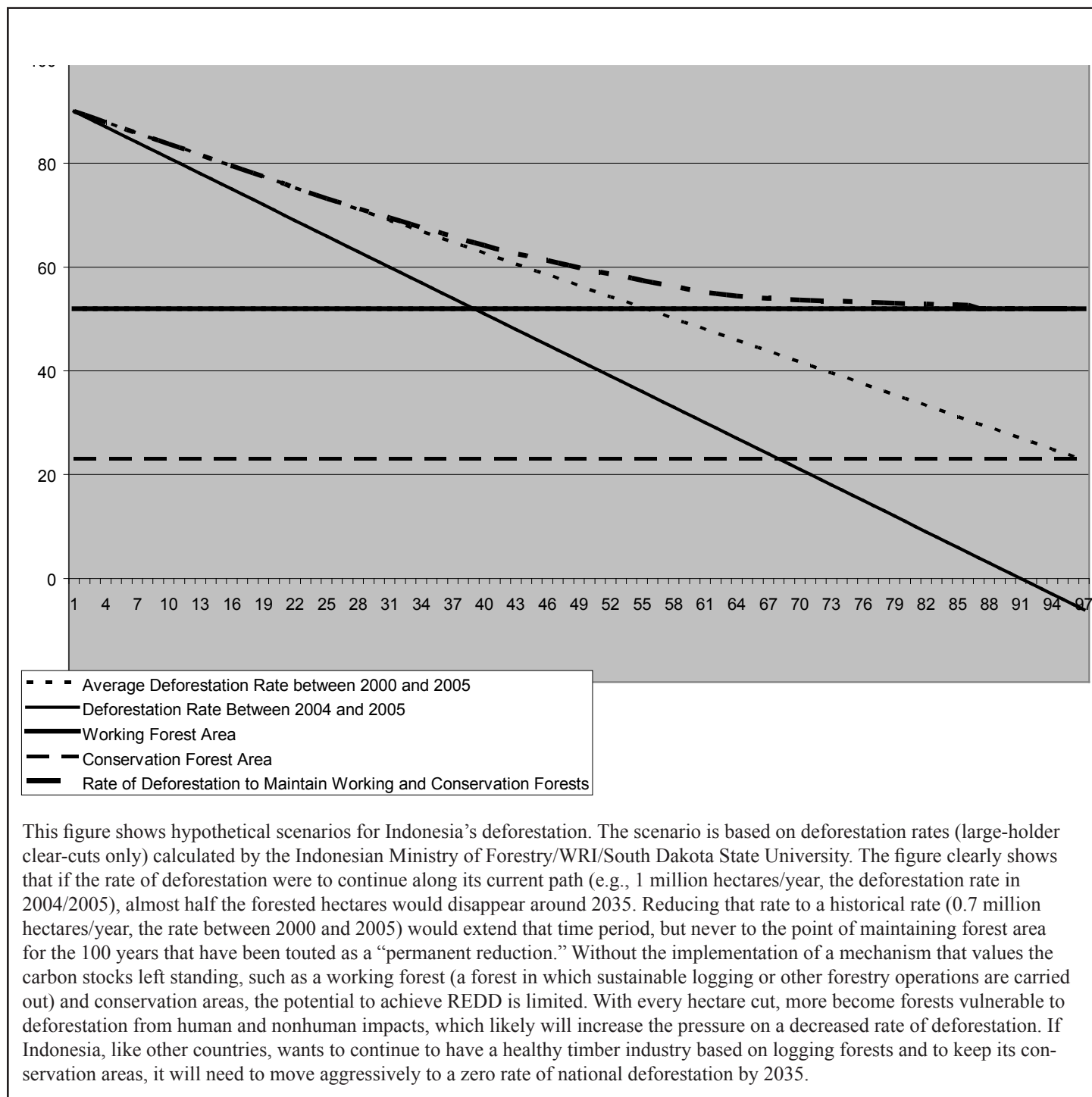
Given the technical and design considerations regarding REDD, more than one tool should be considered if the climate community agrees that global emissions from deforestation should be reduced. Overselling the potential for any one mechanism to generate great change at this stage may be counterproductive. More than likely, some of the necessary tools may be more traditional, such as demand-side initiatives and forest policy or capacity building funds related to REDD; others may be newer to the forest community, such as financial flows related to emission reductions or a national Sustainable Development Policies and Measures (SDPAMS) approach.

Below we discuss some of the options with a brief overview of how they might differ from a national-level crediting approach and therefore perhaps could be used to leverage the different components required to bring about positive change. None of these options needs to stand alone but could be woven into a broader REDD structure.

### A. Dedicated Funds for REDD

Rather than creating an offset mechanism linked to GHG emissions caps, Annex 1 (and other) countries could contribute money to a fund that would invest in emission reduction projects, programs, and policies in tropical forest countries. Such a fund would have both significant risks and potential advantages. The success of this approach depends on the ability of richer countries to significantly increase funding for forest activities without diverting existing flows of Official Development Assistance (ODA).<sup>20</sup> Proponents of carbon markets believe that large north-south transfers are more likely to take place through public and private sector transactions in exchange for carbon offsets. It is not clear on closer analysis, however, that this is the case as major carbon markets such as the EU and the US have not yet demonstrated appetite for such credits.<sup>21</sup> It is equally interesting therefore to explore the potential for managed funds to play an important role.

Figure 2: Getting the Rate Right ... And More Than a Rate Change Required



A fund approach, whether resourced from bilateral or multilateral commitments or a global mechanism, could offer three advantages:

1. Provide more certainty to recipient countries for a steady reliable stream of financing.
2. Allow differentiation among types of forest, policies, and programs by taking into account the country's particular circumstances.

3. Decouple carbon accounting and quantification issues from Annex I parties emission reductions targets, although they still would be important to judging the value of the project.

However, it is clear that developing a fund approach would require some additional thinking in terms of the structure, if any, it might live under.

## *B. REDD Activities in a SDPAMS*

One of the most prominent proposals for developing a country engagement in the post-2012 climate regime is “Sustainable Development Policies and Measures,” or SDPAMS.<sup>22</sup> This term refers collectively to actions proposed or implemented by developing countries to achieve domestic development goals on a lower carbon pathway.

Article 4.2 of the UN Convention on Climate Change stipulates that Annex 1 parties must adopt policies and measures to mitigate climate change. Article 2 of the UNFCCC calls for decisive global efforts to stabilize greenhouse gas (GHG) concentrations at levels that avoid dangerous interference with the climate system.

Article 3.4 specifies that policies and measures to protect the climate should be appropriate to the specific conditions for each party, particularly developing countries. This approach to mitigating climate change, implies a bottom-up and country-specific solution for developing countries. The World Resources Institute’s “Growing in the Greenhouse” also advocates this approach.

The SDPAMS concept is based partly on the idea that developing countries have too many other pressing needs to be expected to commit to climate change on the basis of its global benefits. Although these countries face serious development challenges, over the past several years, many non-Annex 1 countries have reversed their attitude toward climate change. China is a prime example. As recently as 2005, China considered climate change to be a problem only for the industrialized countries. Now, however, Chinese officials have recognized not only the devastating impacts that climate change will likely have on their country, but also China’s role as one of the world’s largest emitters, and in June 2007 they issued a national plan for climate change. As recognition of the scale and urgency of climate change grows, developing countries may increasingly feel the need to set aside the question of who is to blame for the problem and instead work to find a global solution.

The highest priorities of many developing countries are to improve their citizens’ health and access to electricity and clean air and water and to expand their economy. The SDPAMS approach starts from the premise that these policies can be implemented in a way that simultaneously reduces GHG emissions.

For example, the air pollution of many cities in the developing world is getting worse. As vehicle traffic increases and dirty industry and power generation grow, air quality declines, with related consequences for human health and welfare. Solutions to promote clean air—switching from coal to gas, driving more efficient automobiles, improving mass transit, and establishing process standards for industry—all can improve the local pollution problem while simultaneously reducing the GHG footprint.

From the developing countries’ point of view, the use of SDPAMS can have three advantages:

1. **Recognition.** Many developing countries have implemented policies and measures that bring significant climate benefits which, if implemented in industrialized countries, would be labeled as climate policy. Yet some industrialized countries often claim that developing countries are not contributing to the fight against climate change. SDPAMS offer the opportunity to dispel that impression and acknowledge the contributions of different countries.
2. **Learning.** Formally sharing and examining one another’s policies and measures is a way of exchanging best practice and other information.
3. **Promotion.** The chance to promote both development and climate goals in a way that reduces their total cost is a powerful incentive to both host and donor countries to support appropriate SDPAMS. The fact that these SDPAMS are not exclusively “additional” climate measures also opens up a wider range of sources for support.

Although the SDPAMS approach does not directly create financial flows for REDD, it may be used in these ways to increase donors’ confidence in the political will to take action and the ability to implement real change. If supported by a pledge and review structure connected to a fund that was created from, for example, the auctioning of allowances<sup>23</sup>, SDPAMS could be used as a way of channeling funds.

## *C. Supply and Demand Programs, Measures to Reduce Global Demand for Unsustainable Forest Products*

Addressing the supply end of the timber products markets is only part of the picture. Other combinations of regulatory and market based mechanisms, such as procurement policies and labeling schemes can provide a means for governments, companies and consumers to promote sustainable forestry practices around the world. A well-known example is IKEA, which assures its customers that it uses only sustainable woods in its products. Increasing these types of activities will again require commitment and resources both from Annex 1 and non-Annex 1 countries. When addressing the issue of REDD, though, to ignore the impact of the demand for products that are driving up the deforestation and degradation of forests is to ignore half the problem.

Demand for timber products is driven both by developed country markets such as the United States and the European Union and developing countries such as China. Addressing demand side questions may therefore offer an attractive opportunity to engender collaboration between Annex I and non-Annex I Parties in framing mitigation policies. Like the other approaches, however, this approach must be carefully handled, for example, by ensuring that inequity does not result because of the inability of some poorer producers to meet the criteria.

## 7. Taking the Next Steps

We need to approach the incorporation and design of reduced deforestation mechanisms within climate agreements with great care. First, when REDD is an outcome sought, ensuring the climate mitigation impact of the system is vital. Second, while a particular climate policy does not need to solve other problems such as biodiversity, non-climate-related ecosystem services, poverty, or corruption, we must be careful not to create a mechanism that makes these problems worse. In addition, if we implement a mechanism carelessly and the value of emission reductions is diminished, then both forests and climate, and mitigation efforts generally, will suffer from the inability to generate funds. The experience to date in the first commitment period of the Kyoto Protocol, with overallocation to the former Soviet Union countries, suggests that Annex 1 countries will balk at buying such cheap credits in volume if they are not convinced of their environmental benefits.

In the next two years, a number of research questions must be answered, and the following are a few recommendations:

1. A detailed study of the implications of each REDD mechanism option. For example, national-level and project-level market mechanisms would include

- a. Technical issues. Ensuring that the carbon implications of such a mechanism are positive will require more consideration of the technical issues. For example, what are the implications of high uncertainty regarding a reference level that includes degradation? How will degradation be monitored? What information could make reference levels more robust so that the risk to both the environment and developing countries is reduced? What will be the impact of international leakage, and over what time scale would the leakage occur?

- b. The cost of REDD activities. As advocates have noted, one of the main appeals of the carbon market approach for REDD is that buyers are likely to seek low-cost emission reductions. Many studies have found that this may apply to a large number of REDD activities. However, many of these assessments are more project based, and it is unclear how the cost of implementation and so on will play out when looking at reductions of deforestation at the national level.

- c. Projects versus national-level approaches. Although the national level-approach has been touted as more promising for REDD, it may be that a project approach will still be one of its components. Many of the technical issues that are relevant at the national level may be slightly different at the project level. Understanding how these two differ will also help in choosing the right level of approach.

2. Considering different performance metrics would include

- a. Understanding the link between policies and deforestation rates. What types of programs will affect the rate of deforestation? What is the time lag for change? Is there a difference between capturing the rate of deforestation from policies looking at a regional-level versus a national-level change? Is it possible to identify emission reductions related to specific policies? How do these relate to regional and national

emission reductions information from a change in the rate of deforestation?

- b. Recognizing different forest types. What is the impact of REDD-like activities on the shifting of activities between different types of forests?

- c. A carbon stocks approach. How would a carbon stock approach complement or differ from looking at the rate of deforestation?

3. Different policy tools can be consolidated in a REDD structure by, for example:

- a. Rates and stocks. Can both the rate of deforestation and carbon stock metrics be combined in a meaningful REDD structure? How can both these metrics succeed over the short, medium, and long term?

- b. Supply and demand. How can supply and demand approaches be integrated to provide a more balanced approach to achieving REDD? Doing this would include assessing the impact of the increased demand for certain goods, timber, and biofuels on forests in tropical countries, and how this demand might work at counterpurposes for climate change mitigation.

The importance, urgency, and complexity of the issue present the international community with a real challenge. This does not mean, however, that there is no solution, nor does it imply a single solution. Instead, the international climate community has a portfolio of options to consider, with great care.

This sets the UNFCCC and its country members a formidable task as well as an opportunity to bring about real change as a lasting solution to the trend toward deforestation, for the benefit of both developing countries and the climate. We cannot afford to fail.

### End Notes:

1. This document is the draft executive summary of a longer technical document being prepared by WRI. If you are interested in being an external reviewer of this longer document, please contact [fdaviet@wri.org](mailto:fdaviet@wri.org).
2. FAO, 2005, Global Forest Resources Assessment 2005. FAO Forestry Paper 147. Rome
3. *ibid*
4. Nepstad, D. 2007. Climate Change and the Forest. Special Report. The American Prospect September
5. Of which this document is only the executive summary. <http://www.unep-wcmc.org/forest/restoration/globalpartnership/docs/Mexico.pdf>
6. Winrock, 2001, 2001 Analysis of Leakage, Baselines, and Carbon Benefits for the Noel Kempff Climate Action Project, [http://conserveonline.org/docs/2003/01/Noel\\_Kempff\\_report.doc](http://conserveonline.org/docs/2003/01/Noel_Kempff_report.doc)
7. Although tools like valuing forests for their carbon storage have been used in the past, this is a relatively new option compared with others, like the certification of products or funds for forests.
8. Comparable to an emissions reduction target for Annex 1 countries.
9. Annex 1 countries are the industrialized countries and economies in transition undertaking specific commitments under



the UNFCCC and the Kyoto Protocol.

10. The Stern Report (2006) suggests that avoided deforestation should provide large volumes of cheap emission reductions. However, since forests are generally cleared to produce economic value, such as timber or agricultural land, the opportunity cost of not deforesting can be very high. Other recent studies, such as that by Per Anders Enkvist, Tomas Naucler, Jerker Rosander, “A Cost Curve for Greenhouse Gas Reduction,” McKinsey Quarterly 1, 2007, suggest that avoided deforestation is among the most costly of all abatement options. The cost of these emission reductions could ultimately affect the demand for these credits by Annex 1 countries. At least in the CDM, the tendency has been for buyers to focus on high-quantity, low-risk, low-cost projects to supply credits.

11. For a report of the Cairns meeting, see [http://unfccc.int/methods\\_and\\_science/lulucf/items/3896.php](http://unfccc.int/methods_and_science/lulucf/items/3896.php)

12. Amazon Institute for Environmental Research and Environmental Defense, 2005, Tropical Forests and Climate Change. [http://www.environmentaldefense.org/documents/4930\\_TropicalDeforestation\\_and\\_ClimateChange.pdf](http://www.environmentaldefense.org/documents/4930_TropicalDeforestation_and_ClimateChange.pdf)

13. For example see the IUCN paper, Forests and livelihoods, Reducing Emissions for Deforestation and Degradation at [http://www.iucn.org/themes/climate/docs/bali\\_redd.pdf](http://www.iucn.org/themes/climate/docs/bali_redd.pdf)

14. Leakage refers to the emissions that take place outside the project boundaries (in this case, the country) as a result of the REDD activities within the boundaries. For example, if timber exports are reduced in one country as a result of REDD activities,

these could simply shift to another country where REDD is being implemented less forcefully.

15. IPCC. 2001. Climate Change 2001: Synthesis Report. <http://www.ipcc.ch/pdf/climate-changes-2001/synthesis-spm/synthesis-spm-en.pdf>

16. [http://economics.uwo.ca/econref/WorkingPapers/researchreports/wp2004/wp2004\\_3.pdf](http://economics.uwo.ca/econref/WorkingPapers/researchreports/wp2004/wp2004_3.pdf)

17. Sohngen B. and Brown S., Measuring Leakage from Carbon Projects in Open Economies: A Stop Timber Harvesting Project in Bolivia as a Case Study, *Can J For Res* 34 (2004):829–839.

18. Indeed, many predict, based on past experience, that if many countries’ governance structures are not put in place to address business concerns as well as those of rural poor and indigenous people, REDD cannot be achieved.

19. REDD funds could be raised by setting aside a percentage of the money from auctioning off allocations within national GHG program. Funds could also be raised by a tax on, for example, certain goods.

20. Potential Source of Funding for Developing Country Mitigation. A World Resources Institute Working Paper (forthcoming).

21. For a detailed discussion of SD-PAMs see “Growing in the Greenhouse: protecting the climate by putting development first. Rob Bradley and Kevin A. Baumert (eds). 2005. World Resources Institute. Washington, DC.

22. See similar provision in Lieberman-Warner Bill, U.S. Senate.



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## Appendix 1: Indicative Proposals

Country / Organization	Proposal Incentive / Mechanism	Activity Rewarded
Bolivia, Central African Republic, Costa Rica, DRC, Dominican Republic, Fiji, Ghana, Guatemala, Honduras, Kenya, Madagascar, Nicaragua, Panama, Papua New Guinea, Samoa, Solomon Islands, Vanuatu	Non-Market and Market Mechanism. Funding: An Enabling Fund and a Stabilization Fund (supported from ODA, levies and taxes); Nationally-based REDD mechanism (a system of positive incentives - either market- or non-market based - for reduced emissions from REDD), combined with project-based CDM-A/R activities in the same country. Credit for early action. Methodology: Accounting of carbon emissions on a national level (over 5 years at least)	REDD, Afforestation and reforestation, Stabilization of existing forest areas.
Brazil	Non-Market Mechanism. Funding: Crediting from a fund for deforestation rates below a country-specific reference emission Rate (RER), applying Tier 2, use IPCC . Positive incentives that include transfer of technology. A debit-credit system of financial incentives . Methodology: Historical national reference level	Effective reduction of emissions from deforestation (verified in a transparent way ex-post, by comparing past and present emissions rates), rather than “avoided deforestation” or “afforestation”.
CCAP	Dual Market Mechanism. Funding: A carbon market for REDD based on % commitments from developed countries to buy credits, specifying which credits they will purchase. Partially fungible with Global Carbon Market	REDD
Costa Rica (also on behalf of Dominican Republic, Guatemala, Honduras, Mexico, Panama, Paraguay, Peru):	Non Market Mechanism Funding: Avoided Deforestation Carbon Fund (financed by levies and a carbon tax), awarding credits for try into the carbon market, Enabling Fund, Credit for early action, CDM and other market-based mechanisms Proposed in conjunction with a market mechanism	REDD, Avoided Deforestation
Environmental Defense	Market Mechanism Funding: Compensated Reductions: credits for reduction of deforestation rate below baseline through trading of reduction in a post-2012 carbon market. Methodology: Emissions accounting based on national baselines	REDD
Gabon (also on behalf of): Central African Rep, Cameroon, Congo, Equatorial Guinea	Non Market Mechanism Funding: Stabilization Fund, Enabling Fund (to finance implementation), Official Development Assistance, Credit for early action, Nationally-based REDD mechanism A mixed approach at a national, regional and/or sectoral level, depending on the cost efficiency of reducing emissions A synergy of CDM-A/R and REDD instruments Methodology: Emissions accounting on a national level	REDD Afforestation and Reforestation Reduced emissions from both deforestation and forest degradation
Dem. Rep. of the Congo	Non Market Mechanism Funding: Stabilization Fund, Enabling Fund (to finance implementation), Official Development Assistance, Credit for early action, Nationally-based REDD mechanism. A mixed approach at a national, regional and/or sectoral level, depending on the cost efficiency of reducing emissions. A synergy of CDM-A/R and REDD instruments. Methodology: Emissions accounting on a national level	REDD, Afforestation and Reforestation, Reduced emissions from both deforestation and forest degradation

## REDD Flags: Draft Executive Summary

Germany / EU (supported by): Bosnia and Herzegovina, Croatia, Serbia, The FYR of Macedonia, Turkey	Market and Non-Market Mechanism. Funding: Special Climate Change Fund, Adaptation Fund. Market and Non-Market Mechanism. Funding: Special Climate Change Fund, Adaptation Fund. Positive incentives (technology transfer and capacity building, voluntary funding, Activities Implemented Jointly, etc.). Temporary credits (e.g. CDM-A/R). Mandatory banking of a share of the emissions reductions. Synergies of national and local levels Methodology: A system based on national baselines	REDD. Preservation of carbon stocks. Land management and land-use changes
Indonesia	Market and non-market Mechanism. Funding: Forest Climate Related Mechanism (FCRM), Payments for environmental services at a national level, Community-based forest management schemes, CDM-A/R	REDD. Environmental services. Carbon stock enhancement. Enhancing soil capacity to stock carbon. Creating new forests. Rehabilitation of degraded lands through (non-CDM) afforestation and reforestation