

## REDD

REDD is a program which is posed to become an important part of the post-2012 climate treaty which will be negotiated in Copenhagen this December. REDD stands for “Reducing Emissions from Deforestation and (Forest) Degradation.” Deforestation refers to the destruction of forests by humans (as opposed to natural) in the form of logging or burning and is defined as the removal of more than 90 percent of tree cover (Davis, 2008). Anything less than 90 percent is technically degradation, which is more difficult to assess, but which has a significant impact on CO<sub>2</sub> emissions and the loss of biodiversity (Davis, 2008). REDD programs basically reward developing countries for reducing their deforestation rates (UCSUSA, 2009). It has been proposed as a type of CDM (Clean Development Mechanism) in which developing countries can partner with developed countries and receive incentives to conserve their forests. Through financing, technology transfer, and other economic incentives, the developed countries help developing countries to control deforestation, while receiving carbon credits in return.

Forests contain 70 percent of the world’s biodiversity, provide services such as soil protection and flood control, and support the subsistence livelihoods of up to 300 million people world wide (Davis, 2008). In addition, forests are a form of carbon sink which naturally sequesters a large amount of the carbon dioxide that might otherwise be in the atmosphere. It is estimated that forests hold about 50 percent of the world’s terrestrial carbon (Millennium Ecosystem Assessment, 2005, as cited by Davis, 2008). Deforestation accounts for approximately 17 percent of global greenhouse gas (GHG) emissions (IPCC, 2007). The effect is a negative feedback loop in which deforestation exacerbates global climate change through CO<sub>2</sub> emissions, and global climate change damages forests through an increase in drought and forest fires, which threatens forests’ ability to sequester carbon in the long term.

The main forces driving deforestation are development in the form of expanding agriculture and infrastructure such as roads, and a growing demand for forest products. Because of this, it is profitable to cut forests down. From deforesting one gets expanded land for agricultural use, and trees, which can then be sold to markets in wealthy countries. The problem of deforestation is especially critical in the two countries with the biggest share of the world’s tropical forests: Brazil and Indonesia (Santilli et al., 2005). In order for conservation to work, there need to be incentives to conserve that overwhelm the incentives to deforest. As laws and regulations can be difficult to enforce in many of these countries, a global REDD system of incentives could work better.

In spite of this, the Kyoto Protocol did not include any mechanisms to combat deforestation. It did include an “Afforestation and Reforestation” clause in its Clean Development Mechanisms under LULUCF (Land Use, Land-use Change and Forestry) (Fletcher and Parker, 2008). Afforestation is the planting of forests in areas that were not previously forested and reforestation is planting forests where there were once forests. In general, these are good concepts; however, conservation is preferable for various reasons. One is that the issue of reforestation, if not carefully managed, can include projects which are not actual forests, but things such as palm tree plantations and other monocultures (Santilli et al., 2005). Another is that existing forests capture and store carbon more efficiently than reforested or afforested ones (Cairns and Meganck, 1994). Economically speaking, it is more cost effective to conserve forests than to reforest, both in sense of real cost and efficiency in carbon sequestration.

REDD is posed to become a key issue at the upcoming COP15 in Copenhagen this December. Some constituencies under the UNFCCC, such as the Least Developed Countries

and the youth groups are looking to make a push for a stronger commitment for reducing deforestation in the post-2012 agreement, and REDD would be an important part of such an effort. One model of the REDD mechanism is the JUMA project in Brazil, which has been successful in partnering indigenous peoples of the Amazon with the Brazilian government and international governments in a system where the indigenous people get direct financial compensation for their conservation efforts (Viana, 2009a). Not all projects are as successful as JUMA, however, and there are a number of challenges posed in drafting the post-2012 climate change protocol in regards to REDD. There are issues which need to be thoroughly considered before any project is approved to ensure that the REDD program is actually encouraging conservation, and that it is resulting in a net decrease in carbon emissions before carbon credits are awarded.

There are many issues related to carbon sequestration. Despite the benefits of conserving forests, there have been questions and concerns about carbon sequestration as a strategy for mitigating the adverse effects of GHG emissions. One of these concerns is permanence. Permanence is the guarantee of forests' ability to withstand anthropological threats, climate change, and natural hazards. Global warming is making tropical forest more vulnerable. Severe droughts throughout the Amazon and Indonesia 1997-1998 caused by El Niño episodes lead to a large amount of forest destruction due to forest fires (Santilli et al., 2005). The destruction of forests causes changes to the local climate in addition to the effects of climate change, contribute to reoccurrences of drought, and in turn, have an effect on the forests' permanence (Santilli et al., 2005). The increase of degradation impedes forests' ability to sequester carbon, as well as decreasing their resilience. Studies show that in spite of climate change, these forests will still serve as carbon sinks, and immediate and aggressive policy towards the reduction in deforestation can significantly decrease the risk of degradation (Gullison et al., 2009).

Another concern about REDD and policies that prevent deforestation is leakage. Leakage is "a reduction in carbon emissions in one area that results in increased emissions in another" (Viana, 2009a). Regulations and restrictions may offset deforestation in designated areas, but may sometimes lead to deforestation in other areas. Since under the Kyoto Protocol Non-Annex I countries were not credited for their carbon sinks, or penalized for deforestation, the countries had no incentives for preventing deforestation. The implementation of carbon insurance could be adopted to provide more financial security that offsets will remain viable (Santilli et al., 2005). Leakage exists on multiple levels: regional, national, and international. Currently, we have systems to prevent leakage at a regional level, and with an international carbon scheme, leakage could be controlled at an international level.

Policies under REDD must not only include mechanisms that address the issues of permanence and leakage, but must also establish a baseline, address the issue of additionality, and include funding for implementation and enforcement. Additionality refers to the protection of forest which are vulnerable to deforestation in contrast to protection of forests which are not going to be deforested in the near future. In other words, regions should not receive credit for the protection of forest that would otherwise not be cut down. If the post 2012 agreements include provisions to provide carbon credits for land that is not threatened, there will be a flood in the carbon market (London, 2009).

The Eliasch Review found that US\$17-33 billion must be invested in order to halve deforestation by 2030. US\$7 billion are needed to pay for the cost of implementation of deforestation prevention programs (Viana, 2009a). Currently, the global carbon market is worth US\$30 billion (Davis, 2008) and it is estimated that a global carbon market could

supply US\$7 billion to fight deforestation by 2020 (Viana, 2009a). The funding gap could be filled by market sources; however, these are sensitive to market fluctuations and require monitoring, which can be supplied by the government (London, 2009). This could result in a positive alliance of forces: the state provides the monitoring and enforcement, while the market provides the diverse sources of investment quickly and efficiently.

Financing REDD programs can be accomplished through aid (from governments, international organizations, NGOs, and other private sources) or through market mechanisms, as part of the International Carbon Market (Eliasch Review, 2008). Both avenues have distinct advantages and disadvantages that need to be considered (Eliasch Review, 2008). An example of aid-based financing program is Norway's Climate Change and Forestry mechanism which has an initial budget of US\$2.5 billion for the next five years (Viana, 2009a). However, in most cases, there would be some sort of market-based funding, such as in the case of the JUMA project in Brazil, which has successfully partnered market funding with government implementation and monitoring, allowing Brazil to conserve its sovereignty (London, 2009). The JUMA project is an example of a successful site-based project in Brazil that distributed US\$8.1 million per year to 6,000 families in return for their agreement to avoid and prevent deforestation in the area (Viana, 2009b). REDD projects can also be implemented by governmental incentives, such as a program in Costa Rica that pays families to sustainably manage their land, discouraging deforestation (Davis, 2008). However, the success of national programs such as this one depends on each country's institutional and technological capacity to monitor and enforce the programs (Gullison, 2007).

Financing REDD CDM projects using a market-based approach has the advantage of being able to be implemented more quickly due to market demands, as well as the advantage of being more efficient at a lower cost (Viana, 2009a). However, if REDD projects are administered by market mechanisms, there is less incentive for the development of improving governmental regulation on deforestation and sustainable forest management (Viana, 2009a). Because of the lack of unified control it can be difficult to monitor the permanence and additionality of a patchwork of market funded projects and to prevent leakage into other forested areas (Viana, 2009a).

Government implementation of REDD projects is more likely to prevent domestic leakage by having a unified baseline and management strategy (Viana, 2009a). Not only does government sponsorship of REDD programs increase the development of domestic land use policy, but it also facilitates an organizational structure that fits more easily into the post-2012 international carbon market (Viana, 2009a). However, there are drawbacks for government funding of programs, because they are less flexible than market strategies, which are more adaptive to regional circumstances. Therefore it is important that market-based projects be partnered with government for oversight and monitoring, as well enforcement. Integrating these collaborative nation-wide programs into the post-2012 agreements may undermine national sovereignty due international governance and regulation.

Successfully including REDD as a potential alternative CDM will require financial platforms to be flexible and accommodating to fluctuating availability of funding sources and each country's unique circumstances (Eliasch Report, 2006). First, there need to be efforts to increase financial capacity and efforts to find funding for resource gaps mainly through market mechanisms (Eliasch Report, 2006). Currently the majority of CDM investment has been concentrated in countries with more wealth, which indicates that there is a large opportunity for expanding market mechanisms into many least developed tropical forested countries (Viana, 2009a). Because REDD is considered a risky investment (Eliasch, 2006), baselines and protection mechanisms in the form of carbon insurance could

incentivize companies by guaranteeing them offset credits for their investment (Santilli et al., 2005). Secondly, there needs to be improvements in government land use laws, resource tariffs, monitoring programs, establishing national emissions reference levels, and general tax incentives to discourage deforestation while linking programs to local and regional carbon markets (Eliasch Report, 2006). The international community needs to work with national governments to establish baseline levels for each country and targets that are not debilitating economically, but encourage carbon sequestration and best management practices, like in the case of Costa Rica's program (Eliasch Report, 2006). Finally, there needs to be more integration of developing countries and their respective REDD programs into the global carbon market (Eliasch Report, 2006). To date, the programs that have been implemented can be considered pilot programs, not yet integrated into an international carbon trading scheme (London, 2009).

For these projects to contribute considerably to decreasing net emissions globally they will require a global structure which could be included in the post-2012 agreement. It is important to note that even if REDD schemes are not funded in the agreement, there are still chances for countries like the U.S. to contribute aid directly to site-based REDD projects (The Economist, 2009). However, site-based projects not under the post-2012 agreement are vulnerable to corruption on various levels, leakage, and are inherently limited by the local circumstances for implementation (London, 2009). Additionally, without the strength and large scale of an agreement similar to the Kyoto Protocol, there is less potential for reducing the funding gaps, overall emissions, biodiversity loss and sustainable development. Therefore, it would be preferable to have a REDD mechanism under the post-2012 regime.

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