

**“REDD Blues”: Trading In Forestry Carbon Credits Without Trading Off
Sustainability**

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1.0 Background: Climate Change, CDM, and REDD

Climate change has been dubbed as one of the most daunting challenges that humanity has ever faced. International community has unanimously resolved to work collectively for addressing threats of climate change, a resolve manifested in 192 countries ratifying the United Nations Framework Convention on Climate Change (UNFCCC), which came into existence in 1994. However, it was only under the Kyoto Protocol adopted on 11 December 1997, and entered into force on 16 February 2005, that legally binding measures have been adopted. At the time of writing this paper, 180 nations have ratified the protocol, which sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas (GHG) emissions². The proposed reductions amount to an average of five per cent against 1990 levels over the five-year period 2008-2012.

Clean Development Mechanism (CDM), one of the three market-based mechanisms³ within Kyoto Protocol, allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol (Annex B Party)⁴, to implement an emission-reduction project in developing countries. Such projects can earn saleable certified emission reduction (CER) credits, each equivalent to one tonne of CO₂, which can be counted towards meeting Kyoto targets. CDM is seen by many as a trailblazer, “a momentous shift in the forest policy making arena” (Rudel, 2008). It is the first global, environmental investment and credit scheme of its kind, providing the standardized emission offset instrument of CERs. A CDM project activity might involve, for example, a rural electrification project using solar panels or the installation of more energy-efficient boilers. The mechanism is expected to stimulate sustainable development and emission reductions, while giving industrialized countries some flexibility in how they meet their emission reduction or limitation targets.

Operational since the beginning of 2006, more than 1,000 projects have been registered under CDM, and are anticipated to produce CERs amounting to more than 2.7 billion tonnes of CO₂ equivalent in

¹ Author acknowledges the comments from participants at Workshop Mini-conference, and the Indiana University Political Science Graduate Student Conference (Public Policy Panel) where this paper was first presented. Rob Holahan, Shanna Dietz, Prof. Kerry Krutilla gave valuable suggestions which improved this paper. Usual disclaimers apply.

² The greenhouse gases, or Kyoto Protocol gases, as they are sometimes referred to as include CO₂, Methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride (Wara, 2007)

³ The other two are: 1- Emissions trading – known as “the carbon market” and, 2- Joint implementation (JI)

⁴ For reasons not clear to the author, Annex B is commonly referred to as Annex 1. I will use Annex B throughout the paper.

the first commitment period of the Kyoto Protocol, 2008–2012. A majority of the projects implemented so far are related to renewable and non-renewable energy projects, with afforestation and reforestation contributing a miniscule less than 1% of the projects. This scenario is bound to change significantly following the ‘Bali Roadmap’ 2007, which sees a much more prominent role for ‘Reducing Emissions from Deforestation and Forest Degradation’ (REDD). To the extent that REDD proponents argue in favor of retaining the trade in forestry carbon credits as the fundamental component of REDD, its basic mechanism will mimic CDM. Therefore, any lessons that could be learned from existing CDM projects will be relevant to the ongoing efforts at designing institutional arrangements for the proposed REDD Interventions. Lessons are also drawn from forestry carbon projects that weren’t officially registered as CDM projects but followed very much in its footsteps.

CDM is designed to meet three specific goals (Anon, 1998):

1. Assist developing countries in sustainable development;
2. Contribute to the overall environmental goals of the UNFCCC; and
3. Help developed countries in achieving compliance with their quantified emission limitation and reduction commitments.

It is important to notice and emphasize that sustainable development has been explicitly mentioned as one of the important objectives of CDM. However, at the outset, many analysts have been concerned for long about the difficulties of employing a market-based mechanism to promote sustainable development (Stavins, 2005). By implication, such concerns also relate to the proposed initiative of REDD. Participants at the ninth meeting of the Conference of the Parties (COP 9) expressed concerns that REDD may not necessarily meet objectives of biodiversity conservation, meet poverty reduction goals, and they suggested that care must be taken so that rights of indigenous and local communities as laid out in national laws and applicable international obligations are respected (CBD, 2008)⁵. For those concerned, sustainability of an international regime is seen not only in terms of economic viability of REDD interventions but also, and arguably, even mainly, in terms of the legitimacy of REDD regimes in the eyes of forest users. It is this link between the behavioral implications of the institutional arrangements of CDM like arrangements that this paper throws some light on.

The next section briefly lays the theoretical framework for institutional analysis. Section 3.0 analyzes key-non market institutions related to CDM and its operations, with particular reference to its inter-governmental operations. Section 4.0 scrutinizes the micro-economic foundations of CDM and how the institution of market has shaped up in CDM operations. Section 5.0 brings into relief the imperatives of

⁵ <http://www.cbd.int/forest/redd.shtml>

sustainable development in the context of CDM projects. Finally, I conclude in section 6.0 with a bifurcated view of the future interventions such REDD. With a belief that REDD, or a similar arrangement is going to play an important role in international efforts towards forest conservation, I recommend ‘institutional remedies’. On other hand, I also reflect on, the fundamental contradictions between the philosophical underpinnings of market-based instruments and that of sustainable development initiatives.

2.0 Theoretical Framework for analyzing CDM

A great deal of consensus exists over the fact that institutions matter (Bardhan, 2005; Knight, 1992; D. C. North, 1990) even though there seem to be significant difference of opinion on which particular institutions matter the most (Bardhan 2005). One of the most widely cited definitions of institutions comes from Douglas North (1990 p.3): “institutions are the rules of the game in society or, more formally, are the humanly devised constraints that shape human interaction”. By implication, a particular policy must be studied to see how it may fit into the existing ‘rules of the game’, not only within a given policy domain, but also from other areas of socio-political and economic life.

The Institutional Analysis and Development (IAD) Framework is a broad framework for institutional analysis that has been used in a wide variety of settings requiring institutional analysis (Elinor Ostrom, 2005). A key component of IAD framework is *action arena*, understood broadly as the site of interplay of actors in an action situation, and ranging from a small local group to the global level depending on the objectives and scope of the analytical undertaking. Action arena is thus constituted of the *actors* involved and the *action situation* that define their interactions. CDM outcomes depend on important actors situated at very different scales - COP and CDM board at the global level to the local communities, and layers of actors and agencies working in between these two levels. The *action situation* helps focus attention on positions held by the actors, allowable actions, the control exercised by different actors, information available, and incentives or deterrents faced by different actors (Elinor Ostrom, 2005). I employ the analytics of IAD to reflect upon institutional dynamics and implications thereof for CDM and its potential for success.

Institutions, by their very nature, promote stability and continuity and therefore, sub-optimal and undesired institutional arrangements may often sustain far longer than anticipated (de Soto, 2000; Knight, 1992; Douglass C. North, 1990; Pierson, 2003). Thus, the ‘success’ of institutional arrangements may only be understood with reference to specific goals/evaluative criteria that the analysts works with. Institutional analysts may focus on one of several possible evaluative criteria (E. Ostrom, 2007): economic efficiency; equity through fiscal equivalence; redistributive equity; accountability; conformance to general morality; and adaptability. Such an analysis helps resolve ambiguities about what to make of particular institutional

outcomes. Under what circumstances, for instance, the need to ensure smooth functioning of markets (from an efficiency perspective) may militate against the goals of sustainable development (in which case the criteria of legitimacy/general morality and redistributive equity may yield important insights)? What kind of alternatives may be available to resolve such a trade off? Or, if tradeoffs cannot be resolved easily, what policy options must be preferred given a particular problem orientation? The analysis in this paper focuses on the institutions that are at the foundation of quasi-markets in forestry carbon credits: markets and property rights; and on institutions of national and international governance that impinge strongly on the implementation of CDM, and the proposed REDD.

3.0 Analyzing Key Non-market Institutions

Most discussions of CDM discuss problems of measurement, and market operations. However, learning from discussion of PES by Wunder (2005) and others (Wara, 2007), it doesn't take one long to assess that CDM is not just a market-based instrument. Following the “PES like” terminology suggested by these authors, CDM could at best be regarded as a “market-like” instrument, a point that I elaborate here. In this section, I focus on the important non-market institutions that are crucial to its operations.

3.1 CDM's Organizational and Institutional Structure

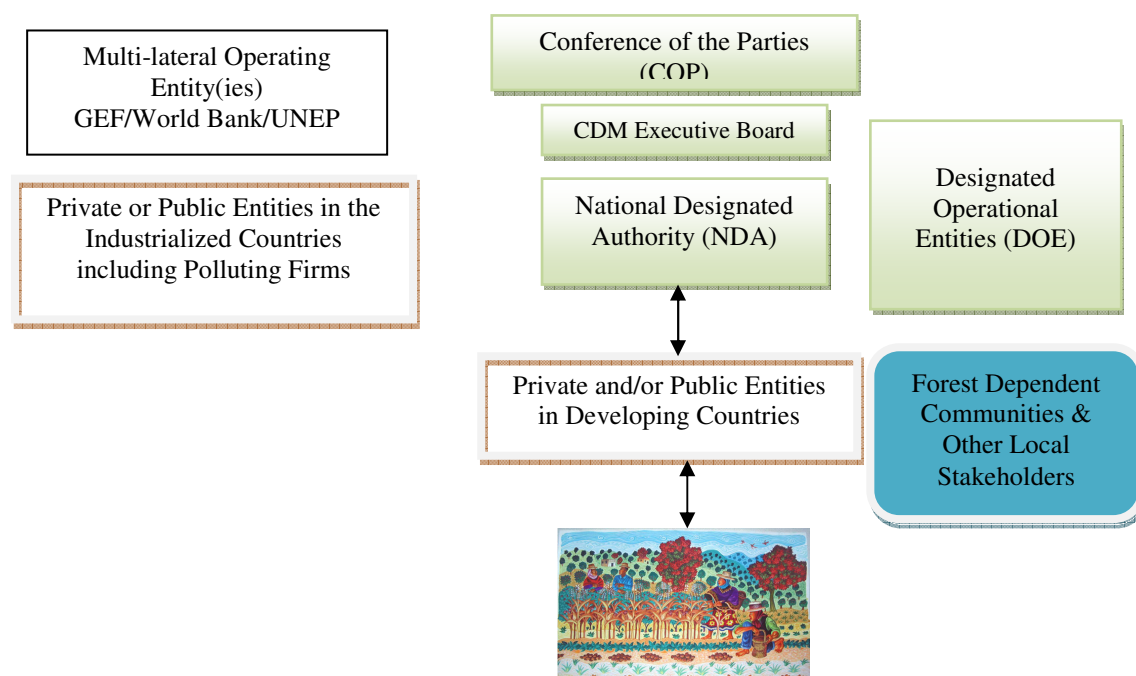
The governance and operational structure of CDM depicted in a schematic diagram in Figure 1. Governed by a set of rules and regulation that are agreed upon multilaterally, CDM will operate under the supervision of an inter-governmental board of governors under the overall leadership of Conference of Parties (COP), which is group of all the signatory countries. COP serves as the meeting of the Parties to the Kyoto Protocol. This is referred to as the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP). There are two other important entities constituted under Kyoto protocol that are relevant to a discussion on CDM. The compliance regime consists of a Compliance Committee made up of two branches: a Facilitative Branch and an Enforcement Branch. Clean Development Mechanism (CDM) Executive Board supervises the CDM under the Kyoto Protocol and prepares decisions for the CMP. It undertakes a variety of tasks relating to the day-to-day operation of the CDM, including the accreditation of Designated Operational Entity (DOE).

DOE is either a domestic legal entity or an international organization accredited and designated to validate and request registration of proposed CDM project activities. A DOE also verifies emission reduction of a registered CDM project activity, certifies as appropriate, and requests the Board to issue

Certified Emission Reductions (CERs) (UNFCCC⁶ 2007). The list of approved DOEs include Japan Quality Assurance Organization (JQA), British Standards Institution (BSI), Spanish Association for Standardisation and Certification (AENOR), and PricewaterhouseCoopers (PwC).

DOEs is expected to synchronize its priorities with the national priorities set by the Designated National Authority (DNA), that each participating government must constitute. DNAs serve as the national nodal authorities for ongoing CDM operations and DOEs must have received written approval of voluntary participation from the DNA prior to the submission of the validation report to the CDM Board. Such a report would also include confirmation by the host party that the project activity assists it in achieving sustainable development.

Figure1: Governance and Operational Structure of CDM



Finally, public and private agencies in both industrialized and developing countries may participate at various stages of CDM projects, either as concerned line departments, such as the forestry departments where forests are predominantly held in public ownership (Ravindranath, Pandey, Murthy, Bist, & Jain, 2001), or as agencies that benefit from CDM projects, such as private firms on either side. Readers should note that article 12 of the protocol doesn't specify the exact relationships between national and international actors other than the formal, i.e. who may do what under within CDM, or even how exactly it would operate (Toman, 2001). For instance, something as basic as channeling of project finance has been left hanging between Annex B countries, DOEs, and private firms within the Annex B countries.

⁶ <http://cdm.unfccc.int/DOE/index.html>

3.2 Imperatives of Intergovernmental Cooperation

Global environmental change has opened up new dimensions of ecological interdependence (Biermann & Dingwerth, 2004). CDM and other international efforts related to climate change are inter-governmental interventions of unprecedented scale. Institutional arrangements are subject to negotiations and hard bargaining between sovereign nations (Young, 1989). Experts, including economists do indeed affect these negotiations and outcomes – as anticipated in a conception of epistemic communities – communities of experts that collaborate and consult across borders to influence their respective governments (Haas, 1990). This notwithstanding, international environmental agreements aren't yet beyond sovereign interests completely, even as the notion of bounded sovereignty has gained ground (Sand, 2004). Given this, a full understanding of the current operations and design of CDM is only possible through a historical understanding of the emergence of Kyoto Protocol.

Among the early proponents of a 'fund', Brazil proposed a radical restructuring of the Kyoto Protocol that would determine maximum tolerable emission levels for each of the Annex B parties and a 'compulsory contribution' that each Annex B party exceeding its emission ceiling were liable to make to a 'clean development fund'. This would have been akin to a Pigouvian tax, which would in turn create a fund available for supporting sustainable development interventions in developing countries (Werksman & Cameron, 2000). This proposal was strongly opposed by the U.S. delegation that favored a project based joint implementation with non-Annex-I parties. In tune with neo-liberal principles, it also opposed the proposed fund being tagged as a compliance enforcement mechanism. In the ensuing negotiations during COP-III in Kyoto in December 1997, it became clear that compliance tagged 'clean development fund' wouldn't garner required support among participating nations. Hence, a 'Clean Development Mechanism' in its current form was accepted by COP. Seen as a 'flexible financing instrument' and a 'trading system' by the head of U.S. delegation, CDM eventually helped clinch the deal on Kyoto Protocol (Werksman & Cameron, 2000). This mechanism based on the idea of a Coasean bargain between contracting parties, still affords, at least theoretically, significant autonomy for national governments in determining the nature and content of CDM projects. Designated National Authorities (DNAs) are empowered to ensure that the projects approved do indeed contribute to the *national efforts* towards achieving sustainable development.

This brief glimpse into CDM history has two major implications: One, it is clear that CDM is an outcome of a process of geopolitical contestation and institutional bargaining (Young, 1989), not merely a technical solution to a problems of market failure. Such an understanding of CDM history is important for contextualizing 'implementation failures', as well as for any future attempts at 'reforming' CDM's

institutional architecture. Second, attention must be paid to the consequences of combining a market-like mechanism with implications of the control exercised by sovereign states in determining the contents of CDM projects, and a *proper strategy* for project formulation and implementation. This is evident from a lack of involvement of the CDM secretariat in monitoring progress on sustainable development goals of individual CDM projects, which is said to be the exclusive domains of the Designate National Authorities (CDM Secretariat, Email Correspondence 2008). National governments may better know the context within which sustainable development may be pursued within national boundaries but it doesn't necessarily mean that they will be successful at perusing those strategies (Also, see Section 5.0). In the next section, we take a closer look at the institution and organization of DNA and how it may affect the agenda of sustainable development in CDM.

3.3 Designate National Authorities (DNA) –Pursuing Sustainable Development?

The Seventh Conference of Parties (COP-7) to the UNFCCC decided that parties participating in CDM should designate a national authority to coordinate CDM activities at national level. These authorities, called Designated National Authorities (DNAs), hold a key power - all CDM project proposals must include “written approval of voluntary participation from the DNA in each country and must confirm that the project activity assists the host country in achieving sustainable development (www.CDMIndia.com).” In addition to this crucial provision, non-Annex-B parties may vest additional powers in their respective DNAs.

India, the biggest host country in terms of the number of CDM projects registered so far (See Figure 1), has empowered its DNA to: recommend additional requirements to ensure that the project proposals meet the national sustainable development priorities, the projects are compatible with the local

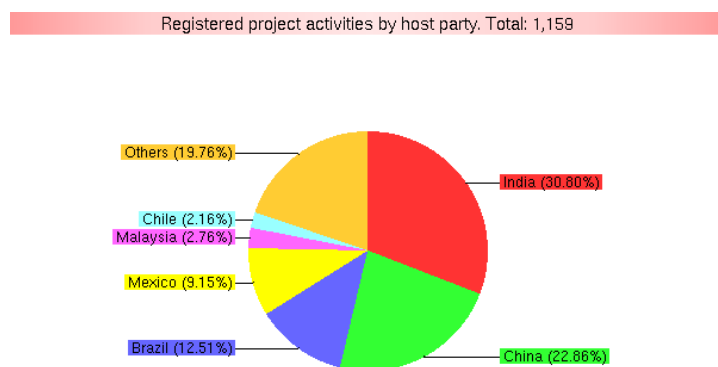


Figure 1: Registered CDM Projects

<http://cdm.unfccc.int> (c) 12.09.2008 19:53

priorities and stakeholders have been duly consulted. Moreover DNA will carry out the financial review of project proposals to ensure that the *market environment of the CDM project does not lead to under-valuation of Certified Emission Reduction (CERs)*(CDM India, 2007; emphasis added).

The role accorded to DNAs does help bring diverse national perspective to bear upon the operations of CDM. Second, the provisions made by India's DNA also indicate that there is some fear that markets may actually

undervalue forestry carbon credits. This notwithstanding, DNAs’ role in promoting sustainable development needs to be contextualized. CDM provisions related to stakeholder participation are quite elaborate in that it requires that stakeholder comments are invited and addressed, and that there are no externalities, including transboundary impacts (Report of the COP, 2005 (p.14). Monitoring and enforcing these requirements is a daunting task for DNAs, which are often short on resources. This is particularly true for some of the biggest CDM beneficiaries such as India, China, or Brazil. The process of stakeholder consultation is extremely difficult, time consuming, and often without commensurate rewards even in the developed countries such as USA with its high educational achievements, minimal levels of poverty, and comparatively low levels of information asymmetries (Jacqui Bauer, 2007 Pers. Comm.; Author’s personal observations⁷). DNAs in developing countries face much difficult context for monitoring public participation. There is significant evidence to suggest that commercial firms participating in CDM may be taking advantage of these limitations.

For instance, some investigative reportage by India’s national environmental weekly *Down to Earth* found that two CDM beneficiary companies located in neighboring states of Rajasthan and Gujarat, asked exactly the same questions during their stakeholder consultation and the answers to those questions were verbatim including the spelling mistakes (R. Gupta, Kazi, & Cheatle, 2005). Similarly, project proposals of four different Indian biomass power projects prepared by private consultants PriceWaterhouseCoopers and Ernst and Young repeated, word for word, alleged favorable comments made by respective village heads in four different sites located hundreds of kilometers apart (Caruso & Reddy, 2005). In neither of these cases, these apparent irregularities were prevented neither by the DNA nor by the competitive tendencies within the forestry carbon credit markets.

Some analysts may be quick to label these as aberrations it should be a cause for concern if these failure are rooted in the institutional structure of CDM and DNAs. National governments are supposed to pay for the operations of their CDMs, raising possibilities of understaffing and under-financing, simply because CDM is treated as a source of foreign exchange for the national governments without costing them significantly. Second, depending on where the DNAs are located within the federal governments, may influence the incentives before a DNA to be earnest in the pursuit of sustainable development objectives of CDM. South Africa is a good case in point. After claims, contestation, and intra-government lobbying on whether the Department of Environmental Affairs and Tourism (DEAT), the Department of Trade and

⁷ The author attended a public hearing conducted by a team of experts appointed by Forest Stewardship Council for certifying a public forest around Bloomington. Deliberations during the public hearing revealed that the difference between public participation in developed and developing societies is of the extent of the problems, not their nature or content. Some of the complaints that the participants raised during this public hearing – failure to pay heed to public’s concerns, failure of the forest service to allow public participation, and failure of the forest stewardship council team to allow sufficient time and space to properly hear and act upon local grievance – were very similar to the issues that may be raised in any of the developing countries during similar hearings.

Industry (DTI), or the Department of Minerals and Energy (DME) hosts DNA, the cabinet decided to award it to DME. Indeed environmentalists within South Africa believe that DMEs interest lies in promoting energy related CDM projects, not in seriously scrutinizing them and cutting down on projects that may not contribute or even harm prospects of achieving sustainable development (Erion, 2005). Moreover, it is important to ask if any government agency would work towards scrapping projects that may bring CDM revenues irrespective of their contribution to sustainable development. Historically, government agencies, including those in the developed world, have been reluctant to behave as a neutral monitor in case of environmental impact assessments, for instance (Boyce, 2000; Portney, 1993; Tang, Tang, & Lo, 2005).

To conclude, DNAs formal responsibility in regulating CDM projects, in order to meet goals of ‘sustainable development’, does indeed contradict CDM’s conception as a market mechanism. At the same time, DNAs may not even be equipped or interested in genuinely promoting the agenda of sustainable development, as is indicated from the discussion above.

4.0 The Calculus of Equi-marginality and the Market in Forestry Carbon Credits

Economists’ advocacy for market-based instruments is based on their faith in the benefits of the eqimarginal principle. The principle holds that “with multiple polluters, efficiency in pollution control requires that the marginal costs of control be same for all polluters, provided the emissions from each polluter contribute to damage in the same way” (Kolstad, 2000 p.132). Clearly, marginal costs of controlling GHG emissions vary from country to country and industry to industry. Given that, and a global efficiency criteria applied to all types of GHG emissions, firms where it is costly to control emissions may contribute to global emission reductions by paying for activities that bring about same level of emission reductions elsewhere at a cheaper cost. Thus, requirements of a perfect equilibrium must be met for equi-marginal principle to hold true. The foundation of market-based incentives for CERs is thus based on a singular criterion of efficiency. However, given existing national and international institutional structures, how feasible it is to expect such markets will come into operation. Second, does an emphasis on market-based transactions in CERs harm prospects of achieving sustainable development through CDM? Such an emphasis takes the debate away from the notion that the limited success of and major problems with CDM projects may be attributed to bureaucratic processes involving DNAs and CDM boards. This section, which offers the core arguments of the paper, critically scrutinizes requirements for a perfect market, and what it may entail for different actors involved in CDM markets.

4.1 The Product

Surprisingly little attention has been paid to the nature of the product that is at the center of CDM and proposed REDD arrangements. The product involved is Certified Emission Reductions (CERs), which

is ‘produced’ either by creating means of capturing already emitted GHGs (by way of planting forests that sequester carbon, for instance), or by avoiding emissions (by way of avoiding deforestation and degradation, for instance). Let us look at the demand side of the CER commodity chain.

Kyoto Protocol sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas (GHG) emissions to an average of five per cent against 1990 levels over the five-year period 2008-2012 (UNFCCC, 2008)⁸. Moreover, CDM is the cheapest abatement option available for Annex B countries and their firms. At least one analyst believes that without CDM, Kyoto protocol would not have made much headway (Werksman, 1998), others call CDM as the loophole that firms in Annex B countries are exploiting to get away without actually reducing their own emissions. This has serious implications for how incentives operate in CDM markets, particularly market for the forestry carbon credits. It may be stating the obvious but a buyer firm in Annex B country doesn’t actually need possession of forestry carbon credits. Indeed firms may be able to capture potential gains even if the CERs that it paid for didn’t actually materialize. Such possibilities itself may alter incentives for Annex-B firms.

Assume for once that the CERs bought by our firm are eventually not produced in the amount claimed or are not produced at all. How does that affect the firm? It is not a commodity that affects firm’s business in any direct sense. As Repetto (2001 p. 309) argues, “neither the seller nor the buyer of the credit has a private interest in the actual delivery of the service. ...as long as the buyer receives title to the emissions reductions in the form of a certified credit for use or sale, he has no private interest in whether or not actual emission reduction took place”. CER certificates may serve dual purposes. One, it helps the firm meet its emission reduction obligations that its national government may have set. Second, the certificates also help the firm promote its products and services as “green”, not an insignificant advantage in many countries.

The firm may indeed be affected adversely if such fraudulent CERs (or spurious credits, in words of Repetto (2001)) are detected and reported by the Designate Operational Entities (DOEs) or Designate National Entities (DNAs). We have discussed above how incentives and capacity of DNAs aren’t necessarily helpful in effective monitoring of CDM projects. In the next subsection we consider the incentives that the DOEs are faced with.

4.2 Consultants and Monitors: who will guard the guardians?

We have discussed seen how project reports prepared by reputed consulting firms such as PriceWaterhouseCoopers, and Ernst &Young seem to have been simply copied and pasted for different sites that they appraised. This is worrisome because in the first place, presence of international consulting firms, even if they are a party to the proposal, may be considered reassuring. However, one could think of several

⁸ Information available on UNFCCC website http://unfccc.int/kyoto_protocol/items/2830.php accessed on September 05, 2008

reasons for a lax scrutiny of project realities before compiling a proposal. First, project consultants are hired by a project owner who may not hire the consultant if they don't carry a reputation of 'getting the project through' irrespective of its eligibility. A closer inspection of some of the project reports make it clear that spurious claims regarding the contribution a project may make towards biodiversity conservation and sustainable development may be far easier to get by than one would imagine. For instance a project report on agro-forestry interventions in five villages in Nagpur district in India (Reforestation Project at Shree Nasik Panchavati Panjrapole (SNPP), Nasik, India; Project report) cites district level data on endangered species and forest conservation without making any connection whatsoever as to how exactly the given project proposal would contribute to conservation of those threatened species.⁹

Second, because of the heavy data collection and reporting requirements, CDM projects must be of a significant scale for high-profile international consulting firms to get involved. If claims on proposed CERs are scrutinized and cut back, many forestry projects may no longer remain viable. This is a situation which every single player (consultants, DOEs, DNA officials, and of course project proponents) want to avoid.

Third, neither DNAs nor CDM board has any wherewithal to monitor the validity of project reports submitted by consultants on behalf of project owners. It is infeasible for these national and global bodies to monitor thousands of projects scattered all over the world. And, as stated before, CDM secretariat doesn't interfere with the sustainable development aspects of CDM projects. They depend entirely on DNAs to scrutinize and monitor a project's contribution to goals of sustainable development. With a slim staff and insufficient means to verify claims made in project documents, as a member of the India's DNA said, project rejection was usually not the norm in (DNA) meetings because “consultants like PriceWaterhouse Coopers give good project design documents (R. Gupta et al., 2005).”

The strongest monitoring arrangements within CDM hinge upon Designated Operational Entities (DOEs). This is an avenue that DNAs can also tap into although exact institutional relations between DOEs and DNAs are far from clear (Robert Repetto, 2001). A DOE¹⁰ has two primary functions (UNFCCC, 2008):

1. It validates and subsequently requests registration of a proposed CDM project activity which will be considered valid after 8 weeks if no request for review was made.
2. It verifies emission reduction of a registered CDM project activity certifies as appropriate and requests the Board to issue Certified Emission Reductions accordingly.

However, it is not clear from this description if 'validation of a proposed CDM project activity' includes validating the contribution that a CDM project may make to sustainable development in the host

⁹ Project report available at

<http://www.google.com/url?sa=t&source=web&ct=res&cd=1&url=http%3A%2F%2Fcdm.unfccc.int%2FProjects%2FValidation%2FDB%2F4BKDL3MXQJGEHOF4IYYCEWBQ4OKP0&ei=qw7MSPHLJYz-NMv1iZQB&usg=AFQjCNFuCviE2NTBfeiI8vmFmzDKp4Ao4Q&sig2=T6COnRpv0ltbBvQiWYYRw>

¹⁰ A list of DOEs recognized by CDM board is available at <http://cdm.unfccc.int/DOE/list/index.html>

country. Although there is some indication that DOEs should adapt their assessment techniques to account for national priorities set by DNAs, going by CDM project cycle¹¹, DOEs get involved only after DNAs have verified a project’s sustainable development potential (UNFCCC 2006). Given this, it is not surprising that a validation report prepared by Det Norske Veritas Certification AS (DNV) for the CDM project proposed by SRF Fluorochemicals in India states that “(DNV) is not responsible for whetting sustainable development criteria” (R. Gupta et al., 2005). Two CDM projects visited by Gupta et al., and discussions that they had with neighboring communities revealed that the projects didn’t meet requirements of mandatory public consultations, neither did they seem to contribute to ‘sustainable development’ criteria laid down by India’s DNA. In fact, one of the projects visited (Gujarat Fluorochemicals Limited) was continuing to contaminate local groundwater supplies so much so that a school hand pump had to be marked as “unsafe for drinking”. By virtue of environmental impact assessment requirements laid out in Marrakesh Accords, this project doesn’t qualify for CDM benefits (ibid.). However, monitors seem to have been unaware of such perilous pollution impacts right in the vicinity of the factory (which may have been a factor of the price tag attached to the time they could spend on getting independent information on environmental impacts). Alternatively, the monitors seem to have had insufficient motivations and incentives to raise red flags. Theoretically, latter may be a possibility as well because just like project consultants, DOEs are also hired by and paid for by the project proponents/owners. Such conflict of interest and misalignment of incentives should have been obvious to CDM architects.

These possibilities must be taken seriously because in many cases third party monitoring has shown that CDM projects didn’t deliver what their proponents claimed. Moreover, in none of these cases discussed in this paper, official monitors were able to raise and register objections against the claims made by project owners (Caruso & Reddy, 2005; R. Gupta et al., 2005; Lohmann, 2006). Concerns about many of the forested countries having unfavorable transparency international rankings only add to the potential problems that CDM monitoring may be fraught with. It should not come as a shock if “many private companies involved in CDM transaction as principals or brokers may put short-term profit motives uppermost” (Robert Repetto, 2001), and take advantage of corruption within public agencies in order to realize potential rents. However, it is not unreasonable to argue that corruption and profit motives are universal phenomenon beyond our control, at least in the short run. Granting that, it is important to scrutinize other requirements for markets in CERs to function smoothly, a topic that I discuss in the next subsection below.

4.3 Competitive Markets

¹¹ Detailed project cycle available at <http://cdm.unfccc.int/Projects/pac/howto/index.html>

For the markets to be competitive, in addition to existence of clearly defined property rights (a subject that I reserve for subsection 4.4), three major conditions must be met: low information asymmetries, low transaction costs, and atomistic participants (Kolstad, 2000). While these conditions are never met perfectly, no market can afford to violate all three of these conditions at the same time, which seems to be the case with markets in forestry carbon credits. Here, I focus on the first two conditions.

4.3.1 Information and Power Asymmetries: Forest areas most suitable for REDD interventions or future CDM-like interventions, that (Chomitz, 2007) refers to as “the last great expanses of tropical forest”, the Amazon and Congo basins for instance, are also among some of the remotest regions globally and are inhabited by some of the world’s poorest people. These communities are placed at the bottom of CDM hierarchy, particularly the poorest within them, are often illiterate and poorly connected to the mainstream media or government and non-government agencies. Many of these communities are persuaded to participate in CDM projects by promising apparently attractive income and employment prospects, without the opportunity to make an informed decision based on the entire project cycle (Lohmann, 2006). Such asymmetry is reinforced by the involvement of international consultants and firms whose interface with local communities is often mediated by local project proponents. Such conditions, combined with incentive incompatibilities discussed in the previous subsection, neither project proponents nor the other international players involved have incentives for dissemination of full information to local communities to help them make an informed decision.

The second layer of asymmetry is rooted in the technical nature of contracts in the forestry carbon markets. Even the day to day contracts entered into by equally powerful firms can entail serious transaction costs, and very little is known about the influence that contracts may have on market competitiveness (Coase in (Williamson & Winter, 1993). In a quasi-market with an intangible commodity such as CERs, contracts mean more than they do in case of normal commodities. CERs being an intangible commodity, its valuation hinges significantly on the terms of reference stated in a contract. Experience in some of the ongoing forestry CDM projects has shown that information asymmetries between international carbon trading firms and the local community organizations result in unanticipated contracting problems over long-term maintenance of forests, occurrences of large forest fires, and poor rates of seedling establishment. As a result, contracts written up by market intermediary PROFAFOR for five communities in Ecuador featured high penalties with penalty/disbursement ratios as high as 300%. In these communities more than 45% of the promised funds were deducted to compensate for plants and technical assistance (Granda in (Lohmann,

2006)). Community’s requests for information about the rate at which technicians were being paid by the PROFAFOR were dismissed as administrative matters not open to community’s scrutiny (ibid)¹².

In CDM, as in other investment opportunities, international corporations have greater bargaining power, with the threats of locating the investment elsewhere if a competitive rate for carbon credits is not offered (R. Repetto, 2001). Considering the resource scarcity, and the extent of corruption in some of the most forested countries, it is possible that a race to bottom is triggered in selling carbon credits at the cheapest possible rates. Once the market is dominated by buyers, it may be difficult for even well informed sellers to strike a favorable bargain.

For instance, when a Ugandan official tried to negotiated higher pay off for carbon sequestration projects proposed for “12,000 hectares in the Kikonda forest reserve with the Institut für Entwicklung und Umwelt, a German company headed by a former politician in the European Parliament, the company refused, saying: ‘Our plane to Germany leaves tonight; if you don’t sign now, there will be no deal.’” (Eraker in (Lohmann, 2006)). If national government officials may be pressurized like this, it is easy to visualize how buyer-seller asymmetries may work against the carbon credit producers, local communities in large part, because they happen to be located towards the wrong end of information highway.

Similarly, communities visited by Gupta et al., and Caruso and Reddy knew nothing about climate change, or carbon trade even though they were supposed to have benefited from a CDM project. In one particular case, a women’s group in Andhra Pradesh, India shot to international acclaim for having earned valuable dollars (\$645) for offsetting emissions from a World Bank workshop. However, group members were unaware of the CERs they were producing or its connection with climate change. Similarly, communities living close to UWA-FACE carbon plantations in Mount Elgon region didn’t know at all about carbon trade. Uganda’s deputy commissioner of forestry Ignatius Oluka-Akileng revealed to an interviewer that he and his staff knew little about carbon trade into which state forests were being pledged. The commissioner requested the interviewer to help him with the information on CDM (Caruso & Reddy, 2005).

These statements are not surprising to those who are intimately aware of the way in which critical information is *controlled* by powerful actors involved in lucrative deals, particularly so in developing countries. Although getting into the exact cause of information asymmetries is beyond the scope of this paper, analysts often mistake information that is controlled deliberately with an inherent lack of awareness among rural/tribal communities because of illiteracy and ignorance. Many among these communities are extremely knowledgeable about global geopolitical events, the information to which they have an easy access through newspapers and BBC Radio’s Hindi Service. However, information in specialized fields such as carbon forestry is not made available to those not vested in the business.

¹² Similarly, Down To Earth’s queries regarding the rate at which CERs were being sold by two Indian CDM projects were turned down on the pretext of the information being ‘confidential’.

Other than these information and power asymmetries that may be rooted in local, national, and international political economy, there are uncertainties involved with the nature of information/knowledge that is key to the calculation of output (CERs), and by implication financial rewards from CDM projects. Calculating the exact amount of carbon sequestered owing to a given CDM activity, and the baseline emissions level to which new emission levels are compared is a gray area, to say the least. Bob Watson, the former chairman of IPCC expressed his doubts about the ability of scientists to measure carbon sequestration “down there to a few percent” as he flew over “complex landscapes” (Lohmann, 2006). Given this statement from the IPCC chairman, and all the scientific uncertainty surrounding carbon accounting, how communities selling forestry CERs would know the levels of yield. How does the yield vary with different kinds of plantations – monoculture v/s old growth natural forests (as proposed to be conserved under REDD initiatives). It leads to peculiar kind of economic phenomenon probably witnessed in very few other cases. Sellers (community groups protecting forests) would be completely clueless about the magnitude of product/service being produced as well as the potential price that they should command in a market.

Existing discussions of information asymmetry focus mainly on two kinds of asymmetry (Akerlof, 1970): Sellers are privy to the information that buyers aren't. Buyers of used cars for instance, have no way of finding out if the product being sold to them will turn out to be a “lemon”¹³. Very often such sales are made under “as it is” conditions in the buyer-seller contract. The second type of information asymmetries relate to the information that buyers are privy to but sellers have no access to. These kinds of information asymmetries are generally confronted in the insurance industry where only buyers are fully aware of the riskiness of their behavior. Post-facto, insurance coverage may lead those covered by insurance to be careless with their health or reckless in their driving (the problem of moral hazard). In this case, part of the problem is taken care of by risk premium that the seller charges.

However, forest protecting communities don't have any of these safeguards. Most often, transactions are carried out through intermediaries on a sly, and communities aren't even aware of the true value of the services they are rendering. In worst of the cases, communities are paid below statutory minimum wages while intermediary consulting and trading firm command significantly higher prices in the market. In the ITC case cited elsewhere in this paper, farmers don't gain any extra premiums while ITC is able to charge handsome premium on their raw material supplies. Therefore, the cases of sellers kept in dark specifically to the local communities, a factor that must be considered particularly ominous for proposed REDD interventions. Scientific community's efforts are invariably fraught with certainty and imperfect knowledge, which in itself wouldn't be a problem if such uncertainties were dealt with in a transparent

¹³ Since Akerlof's article, private entrepreneurs have developed ways of providing information about the history of a used vehicle at a cost. www.carfax.com is one such facility commonly used by buyers. Various states in the USA have also passed “Lemon Laws” to deal with the problem.

manner and the burden of uncertainty were shared equally among all concerned actors (J. Gupta, Olsthoorn, & Rotenberg, 2003; Masera et al., 2003). Failing that, it is likely “dishonest dealings.....drive honest dealings out of the market” (Akerlof, 1970 p.495). If sincere sellers, particularly community groups in desperate need of financial and legal support for their forest conservation efforts, are not rewarded suitably, it is likely that REDD market will be flooded by spurious credits of the likes supplied by ITC and Plantar Corporations.

4.3.2 Transaction Costs: Since the publication of Coase’s (1937) seminal paper, micro-economics has been a discipline waiting to be revolutionized by transaction cost economics. Such revolution hasn’t occurred yet, but transaction cost economists have sure made us aware of the importance of transaction cost for economic analysis (Williamson & Winter, 1993). Transaction costs are the costs “of arranging a contract to exchange property rights ex ante and monitoring and enforcing the contract ex post” (Matthews, 1986 in (Cacho, Marshall, & Milne, 2005). How may transaction costs associated with CDM projects affect various actors?

Owing to the highly uncertain nature of the scientific knowledge on carbon storage, and various other factors described in this section, CDM board has come out with extensive guidelines for each of the sectors involved with CDM project to make sure that CDM projects do achieve intended levels of carbon sequestration. Notwithstanding that these are sincere attempts at addressing some of the problems described in this section, to maintain credibility and deter manipulations (R. Repetto, 2001), high transaction cost is a necessary consequences of these safeguards. Transaction costs in developing countries may be substantial, particularly if the strict norms for public participation and consultation are adhered to. Hardner et al. (2000) cite World Bank studies that suggest that transaction cost for carbon offsets in developing countries could be as high as 30 percent of the total costs. Even then, most often project reports, such as the one carried by Community Forestry International (CFI) in India (Poffenberger et al., 2002), do not mention how those transaction costs will be met or will affect the returns that communities may be able to get.

Cacho et al. (2005 p.601-602) analyze various transaction costs involved in CDM, which include search costs (incurred as investors, project developers, and hosts seek partners for mutually advantageous projects), negotiation costs (costs of reaching an agreement), approval costs (time delays incurred after submission of project design documents), administration costs (resources expended in administering the translation of a project design into practice), monitoring costs (costs of verifying compliance with the agreed terms of the transaction), Enforcement costs (expenses of insisting on compliance if monitoring detects divergences from the agreed terms of the transaction), insurance costs (the risk of project failure and its consequences for buyers and seller of CERs). These costs are going to be particular high for small-holders who may want to get involved in CDM projects; more so if transaction costs involved in project

preparation and entering the markets are taken into account. A comment made by president of a major emissions trade firm is instructive:

“You need a deal of a couple of million tonnes, at a fairly high price of carbon, before money starts flowing to the landowners. No-one has brought me a proposed CDM transaction that’s large enough” (Landell-Mills citing Nicholls, 2002).

At the same time, implementing CDM would require expertise in environmental accounting and reporting which is practically non-existent as of now. This expertise is available with only the big multilateral agencies such as the World Bank and GEF, which may not adequately serve a highly diffused global community of forest managers and forest owners. Other players, particularly international development and environmental NGOs must get involved with the task of building these capacities at a much wider scale. However, there is a downside to these expectations. Development agencies such as CARE, were reportedly considering redirecting their resources from ongoing extension activities to pay out consultants working on developing carbon accounting methodologies (Wittman in (Lohmann, 2006), raising possibilities of hurting the success of the ongoing sustainable development efforts. The transaction costs that CARE is incurring in order to build its own capacities relevant to participation in CDM, are therefore imposing externalities on its ongoing sustainable development programs.

On the other hand, attempts at reducing the complexity of measurements that the project proponents face, may also lead to other kinds of distortions. For example, because it is easier to calculate carbon credits for mono-crop plantations, these plantations are favored as compared to the natural forest conservation projects which yield greater ecological and developmental gains. Such lopsided effects may in turn have negative ecological and social problems associated with mono-cropping of fast growing exotics in the tropics (Smith, 2002). This was witnessed by large scale plantation of Eucalyptus monoculture stands by a CDM project operated by the Plantar S.C. Corporation. This led to an undesired landscape and ecological change of significant scale affecting local environmental services and local livelihoods adversely. Oddly enough, the Eucalyptus plantations supported under CDM project were being harvested to produce Eucalyptus Charcoal (Lohman 2006)!

Other set of distortions may have to do with the attempts by project proponents to avoid cost of actively pursuing the objectives of sustainability and public participation. (Report of the COP, 2005 (p.14)):

“...Comments by local stakeholders have been invited, a summary of the comments received has been provided, and a report to the designated operational entity on how due account was taken of any comments has been received...”

Monitoring and enforcing these requirements is a daunting task for DNAs, which are often short on resources. This is particularly true for some of the biggest CDM beneficiaries such as India, China, or Brazil. The process of stakeholder consultation is extremely difficult, time consuming, and often without commensurate rewards even in the developed countries such as USA with its high educational

achievements, minimal levels of poverty, and comparatively low levels of information asymmetries (Bauer, 2007 Pers. Comm.; Author’s personal observations). Stakeholder consultations are bound to be much more costly and time-consuming in most of the remote forested regions in the developing countries. Thus attempts at meeting the requirements of stakeholder consultations, have the potential of altering the CDM project time-frames many times over. Evaluated from the vantage point of economic efficiency, such consultations will not make sense unless ways to meet these additional associated costs are institutionalized. After all, market mechanism, by definition precludes an organized stakeholder ‘consultation’ exercise.

Finally, the processes of stakeholder consultation may be politically contentious because of the existence of a large number of differentiated interested and highly unequal social hierarchies (Edmunds & Wollenberg, 2001). State agencies have traditionally gone by formal written titles often ignoring customary rights of communities over forests and other resources. Commercial firms proposing CDM projects may neither be interested in nor capable of dealing effectively with such conflicts.

4.4 Property Rights and bargaining power of ‘local communities’

Along with the requirements already discussed above, one of the most important pre-requisites for well functioning markets is the existence of “a well-defined, transferrable , and secure set of property rights...for all goods and 'bads' in the economy....(wherein) all the benefits or costs must accrue to the agent holding the property right” (Kolstad, 2000 p. 62). A discussion of property rights is particularly germane to the issue of carbon emissions, as “ the evolution of the emissions trading can best be understood in terms of a struggle over the nature and distribution of property rights” Hahn (1989 p.101). In the context of the market in forestry carbon credits, two sets of property rights are important: 1)- property rights in forests, and 2)- property rights over carbon credits.

CERs may not be owned by the same entity that owns the forests. For instance, the Indian Tobacco Company (ITC), one of the largest paper and pulp companies in India, enters into buy-back contracts with local farmers to gain an assured supply of raw material for producing pulp and paper. Farmers plant trees on their own land, under ITC’s ‘social forestry initiative’. However, ITC and not the farmers are shown as the ‘owner’ of CDM project approved by CDM board. Please note that ITC doesn’t add any value to the product. It merely markets them to the interested buyers through institutional arrangements within CDM. Shouldn’t the extra income go to the farmers rather than ITC that is merely doing what it would have done in any case for an assured supply of raw material? Why does ITC deserve CDM related incentives for securing its own raw material even as farmers continued to be paid as usual for their supply of raw pulpwood:

“Under this project, the 4773 Ha private wastelands owned by rural poor (tribals) is developed for raising plantations with eucalyptus. The identified NGO grouped the tribal beneficiaries into a Sangha (User Groups / Society) for taking up the project who plant and maintain the plantations. The ITC provides quality planting

stock¹⁴, free extension service to the beneficiaries apart from financing the entire project activity. ITC will buy back the wood at market price and the entire proceeds of wood sale will be given to the Sangha, who in turn meet their economic needs and sustainably manage the plantations apart from developing new plantations.” (Project Concept no. 307, CDM India. Downloaded from <http://cdmindia.nic.in/cdmindia/projects/PCN%20307.pdf> on September 13, 2008)

If plantations are being made by farmers on their own land at their own expenses, what makes ITC the owner of CDM project based on such plantations? Clearly, ‘project ownership’ may be determined more by an agency’s ability to play the system in their favor than the actual ownership of the resource. If this sounds like a tough issue to resolve, implementing property rights over CERs emanating from public forests is many times more complicated.

A study by White and Martin shows that on an average more than 75% of the global forest estate is administered and controlled by governments (White & Martin, 2002) See Table 1). This also holds true for developed countries as a whole. United States is an exception where more than 50% of its forests are in private ownership (ibid.).

Table 1: Who Owns the World’s Forests

<i>Categories</i>	<i>Public/ Administered by Government</i>	<i>Public- Reserved for Community/Indige nous Forest</i>	<i>Private Community/I ndigenous</i>	<i>Private Individual/Fi rm</i>
Global Forest Estate	77	4	7	12
Developing Countries	71	8	14	7
Developed Countries	81	1	2	16
Countries with Tropical Forest	71	6	13	10
Top 17 Megadiverse Countries	65	6	12	17

Source: White & Martin 2002

State ownership of forests around the world has important theoretical implications. There is a broad-based consensus among economists that public ownership of resources is not conducive to competitive markets because it fundamentally alters the incentive structures, including high potential for rent-seeking (Damania, 1999). Second, in China, Mexico and Bolivia, three of the 11 most forested countries, a significant proportion of forests is under community ownership or community administration (White & Martin, 2002). Other than these countries, several developing countries have witnessed forest land tenures being the subject of intense contestation between conservationist who want forests to be designated solely for conservation purposes and indigenous groups who claim customary rights in the forests (Dowie, 2006).

¹⁴ In a typical contract, including in this case, farmers pay for the planting stock.

Customary tenures have often been ignored in delineating public owned forest lands in most tropical countries, particularly those with a colonial history (Nancy Lee Peluso, 1995; Rangarajan, 1994). Such contested tenurial relations have not only led to forest degradation but have also been implicated in serious governance problems (Bruce, Fortmann, & Nhira, 1993; Turner, 1999), which would further weaken the potential of facilitating a competitive market in the “production” of carbon credits in forested regions concerned.

In many cases, the problem has been officially recognized in government circulations but has rarely been resolved to a satisfaction (Kashwan, 2006; Li, 2000; Migot-Adholla, Hazell, & Blarel, 1991). Heated debates and disputes that the recognition of customary rights in forest lands in India has generated is a testimony to these power differentials, and their implications for the politics of sustainable development (Bijoy, 2008; Sekhsaria, 2007). The fact that India’s central government had to wait for 60 years after its independence to recognize these rights suggests that such rights may be ignored if the right-holders are not politically and economically influential (Dove, 1993; N. L. Peluso, 1992).

How should CDM proponents deal with such thorny issues (Caruso & Reddy, 2005)? According to one prominent Payment for Ecosystem Services (PES) expert, scarce PES resources should not be channeled to local communities that are not sufficiently strong - economically and politically – to pose real threats to the resource (Sven Wunder, 2007). Consider Wunder’s logic about choosing one out of three potential beneficiaries of a PES project- a poor indigenous community that has protected its forest, a rancher who is cutting down forests, and a big farmer who wants to put his forest to soybean cultivation:

“All three are equally valuable for biodiversity, but unfortunately restricted funding will only make it possible to fund one initiative. From a fairness point of view, the indigenous community would seemingly have the strongest cases. But no credible internal or external threat to their biodiversity exists...The large soybean farmer ..(t)hrough his aggressive continuous forest clearing..constitutes a real threat to biodiversity – and making him a conservationist would clearly be “additional”. But because net yearly per-hectare profits from soybean-cultivated land are in four-digit figures, using the \$100,000 to cover his opportunity cost would effectively only buy a tiny piece of land for conservation. The largest conservation “bang for the buck” would be achieved in the cattle-rancher setting...But it seems certain that neither the community that fully safeguards its environment nor the impoverished farmer too poor to do much damage will emerge on the scene as major sellers of the environmental services.”

Indeed Wunder’s thesis vindicates the position taken by critiques of market-based instrument for sustainable development who have argued that the logic of markets is inherently contradictory to the goals of sustainable development. Dove (1993) argued that when a product becomes valuable it is invariably appropriated by economically and politically more powerful entrepreneurs.

This notwithstanding, CDM has been widely touted as a win-win solution, including Wunder’s ((2001 p.1828) earlier suggestion that “the current “free-rider” character of forest eco-services is detrimental both to the forest-dwelling poor (who lose a potential income), to global interests (who irreversibly lose environmental assets), but also to the tropical poor outside of the forests.....poverty-alleviating forest services can be built upon in the search for “win-win” niches.” How may have Wunder

come to reconsider his position so thoroughly is an interesting puzzle on its own sake. However, control of forest resources, by unaccountable triangle of state officials, logging companies, and local political elites is one of the fundamental causes of local communities’ weak bargaining power in the new Wunderian view of the world.

Even though extensive discussion of the socio-political context of this weakness is beyond the scope of this paper, it is germane to recall Ribot and Peluso (2003)’s attention to “bundle of powers” and “constellation of means, relations, and processes that enable various actors to derive benefits from resources” (Ribot & Peluso, 2003). Caruso and Reddy(2005) offer an excellent empirical exposition of these issues within the Indian context but their findings are echoed by other documents emerging from other countries (Lohmann, 2006).

5.0 Sustainable Development in CDM

Most of the discussion in the paper so far has revolved around the pre-requisite for successful operations of markets in CERs. Analysis above has shown quite forcefully, if not conclusively, that there are significant market related barriers in achieving efficient emission reductions through a market in CERs. Analysts have dubbed it a very “inefficient subsidy” (Wara, 2007). A market-based mechanism by itself may not absorb negative externalities that our generation creates for future generations. Coase’s (1960 p.42-43, italicization added) prescription for an approach to resolve externality problems entailing ‘social costs’ can be summed up as follows :

“Analysis in terms of divergences between private and social products concentrates attention on particular deficiencies in the system and tends to nourish the belief that any measure which will remove the deficiency is necessarily desirable. It diverts attention from those other changes in the system which are inevitably associated with the corrective measure, changes which may well produce more harm than the original deficiency.....In this article, the analysis has been confined, as is usual in this part of economics, to comparisons of the value of production, as measured by the market. But it is, of course, desirable that the choice between different social arrangements for the solution of economic problems should be carried out in broader terms than this and that the *total effect of these arrangements in all spheres of life should be taken into account.*”

Coase’s insights apply most aptly to situations that are full of “positive transaction costs”, a description that fits forest conservation programs (Williamson & Winter, 1993). However, it is rare to see researchers bringing in discussion of those myriad ‘sphere of life’ that are affected by a market-based emissions trade in CDM (cf.Gundimeda, 2004). Second, owing to its complex mandate, sheer diversity of institutions and organizations involved in the process, a truly global scale of operation, and cost/benefit implications for the current and future generations, CDM has to be considered as an intricate multi-institutional arrangement, wherein the ‘market’ is only one of the several institutions involved (Landell-Mills & Porras, 2002). Thus, analyses that treat CDM primarily as market-based instrument are incomplete at best and faulty at worst.

Since pursuing sustainable development requires going beyond parroting well worn economic argument rooted in a reified view of efficiency (D. W. Bromley, 2007), other disciplinary lenses, such as the institutional analysis approaches taken in this paper, must be used to dig deeper into the micro-analytics of the problem at hand. Moreover, it requires analysts looking beyond CER measurements and financial cost-benefit analyses. Other criteria suggested in institutional analysis include legitimacy (general morality), and redistributive equity, both of which are very relevant to the sustainable development goals of CDM, particularly with respect to its forestry projects (Gundimeda, 2004; Lehtonen, 2004; Srivastava, 2006). Uganda offers an extreme example where a poor understanding of and respect for local community's dependence on and rights over forests led to serious human rights violations:

“300 families were evicted from disputed land by park rangers in Wanale, Mbale district.

Complaining that they had lived on the land for 40 years, with some even holding government land titles, the families said that they were forced to seek refuge in neighboring villages where they now live in caves and mosques. Fires have to be kept burning the whole night in the caves to protect against cold, and school-going children have had their studies disrupted. Dodging armed ranger patrols, children slip back to their families' former gardens to steal what they regard as their own food” (Byakola in Lohman 2006).

This may be a particularly grotesque example of CDM gone wrong, but the very fact that institutional arrangements under CDM because of their overambitious coverage, leave open such possibilities should raise red flags. Less serious but disturbing reports are available about the large scale plantation of Eucalyptus monoculture stands created by the CDM project operated by the Plantar Corporation discussed earlier. Local communities there had to come on to the streets to make their voices heard. A local leader of an environmental NGO subsequently received anonymous death threats for opposing Plantar (Gillbertson in Lohman 2006).

Even in cases where significant community displacements are not involved, high levels of current community dependence on forests for fuel wood and fodder demand additional precautions to be taken in enclosing forests without permitting subsistence extraction from the forests (Gundimeda, 2004). Elsewhere in Tanzania, community members working on a carbon forestry project implemented by Norway's Tree Farms company were paid wages equivalent to \$1 a day, much below the statutory minimum wages set by the national government. Moreover, the wages were kept overdue for as long as 8 months. When asked about overdue wages, the company told villagers that “the money came from a place far away and that there was nothing that could be done about it” (Stave 2000 cited in Lohman 2006). Although this author has not seen the project document, it is not improbable that the company touted these abysmally low wages contributing to ‘sustainable development’. Clearly, CDM, in this case and in several others recounted in this paper, has failed grossly on account of the evaluative criteria of ‘general morality’ and redistributive

goals. If anything, these projects seriously hurt the prospects of achieving sustainable development founded on principles of equity and justice (Conca & Dabelko, 2004).

6.0 Conclusion: CDM, REDD, and Sustainable Development

Analysis in this paper shows that CDM projects, and any market-based forestry carbon projects such as proposed REDD, are potentially fraught with high transaction costs, remarkably high incidences of opaque dealings, perverse incentives for buyers, sellers, and intermediaries, and local communities being short-changed in what seems to have become a phenomenon quite different from theoretically posited quasi-markets that promised to rectify existing market failures. Two different types of implications emerge from the analyses presented in this paper: One, how institutional design could be improved to take care of the concerns that have emerged from the experience so far. Two, I raise a more fundamental question and ask if it is even wise to look up to a quasi-market framework for seeking correction of market failures.

6.1 Institutional Remedies for Problems with CDM

One of the key questions, that one may ask is if emission taxes make more sense in the case of restricting GHG emissions? This question must be given serious consideration as we move ahead to promote REDD. The evidence regarding the comparative advantages of charges (taxes) and marketable permits in the review conducted by Hahn (1989) points to an interesting and intriguing conclusion: “Charges and marketable permits have played fundamentally different roles in meeting environmental objectives. Charges are used primarily to improve environmental quality by redistributing revenues... Marketable permits are used primarily to promote cost savings” (Hahn, 1989; p.108). It is fair to argue that CDM’s performance in altering environmental quality (particularly from a sustainable development perspective) has been far less satisfactory than its role in helping developed countries save on abatement costs. However, considering the impending threats of climate change, most significant impact of which is believed to be the equity implications (Pachauri, 2007), it may be wise to pay more attention to bringing about improvements in environmental quality and improving effectiveness of local communities in dealing with the problem of deforestation and degradation. I propose a three step transition for REDD interventions:

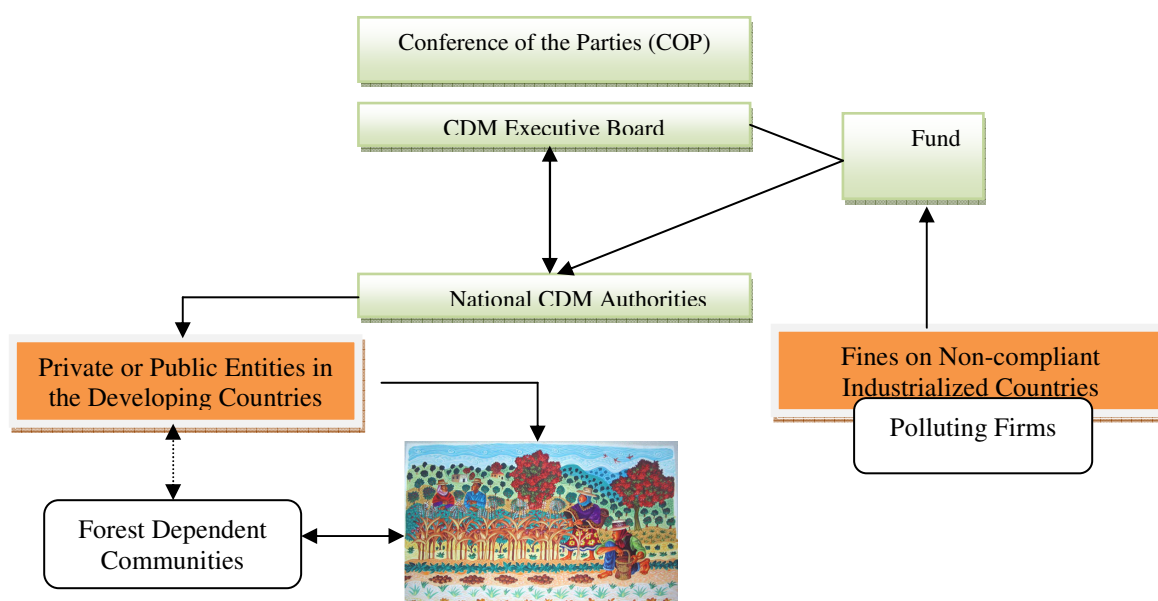
a. Revert to a fund rather than a market-based mechanism

It is worthwhile to recall of CDM’s origins in a proposal by Brazil. The Brazilian model provided for a clean development fund financed by a pollution tax imposed on each industrialized country that exceeded its effective emissions ceiling (Werksman, 1998). A schematic representation of such a simplified CDM is

depicted in Figure 4. This model was proposed with the intentions of raising resources for sustainable development and CO₂ mitigation projects by taxing the polluting industries in the industrialized countries. Prima-facie, such a simplified institutional and financial mechanism will reduce transaction costs, and the number of intermediaries involved in the trade of carbon credits, without adding on new institutional problems that are not present in the existing model.

Most importantly, it will curb many of the perverse incentives available to both buyers and sellers in the current arrangement, a situation that is aggravated by treating CDM largely as a market mechanism even while the production end of CDM is hardly organized in a market framework. This suggestion is extended largely based on the evidence from Africa, Asia, and Latin America surveyed in this paper. However, at a broader level and in principle, I would go with the approach suggested by (R. Repetto, 2001) who has recommended using different models for different countries (including the one with a predominantly market-based approach for countries such as Singapore) based on criteria that include governance and the primary form of economic organization.

Figure 4: A Simplified, Low Transaction Cost Forestry¹⁵ CDM



b. Reduce Transaction Costs and Entry Barrier for Community Groups

Probably the most under-studied part of the CDM interventions have been the transaction costs associated with the entire process. It turns out that clever players of CDM game have resolved the issue of transaction cost by minimizing the information released, negotiations conducted, and consultations carried out. Poor

¹⁵ Forestry CDM should be separated from energy and other industrial CDMs to ensure the focus on sustainable development.

monitoring systems fraught with incompatible incentives have only allowed this to go on unchecked.

Learning from Cacho et al. (2005), I propose the following steps be taken to curb these tendencies:

- I. Curbing Information-hoarding: Information on projects being proposed, project approved, CERs earned and finances involved be made public through a variety of local, regional and national media including the internet. No participants should be allowed to hoard information in the name of corporate confidentiality as witnessed by *Down to Earth* reporters researching CDM projects in India (R. Gupta et al., 2005).
- II. Create local capacities for Carbon Accounting and Project Documentation: Possibly the biggest cost saving avenue is in curbing the role of international consulting firms who project owners must involve to undertake various kinds of documentation and appraisal in CDM projects. It is nothing but commonsensical to question involvement of high profile consulting firms in projects that bring less than minimum wages for local community members. For a REDD arrangement focused exclusively on forests, these functions should be accomplished by local civil society groups in collaboration with community groups.
- III. Organizing Local Community Groups into Regional/National Federations: Nepal’s Federation of Community Forestry Users (FECOFUN) has been able to secure group certification for Non-timber Forest Produce (NTFPs) collected by its member committees (Biggs & Messerschmidt, 2005). If similar regional and national federations, organized and constituted democratically, are involved in REDD projects, it is likely to lead to better transparency in addition to saving costs of various functions undertaken by high profile consultants.

c. **Increased Role for Civil Society Watchdog Groups in Monitoring**

Condemning the excesses of command and control regulatory regimes, economists have often touted market-based incentives as the way forward. Analysis in this paper has shown that quasi-market instruments such as CDM are capable of creating equally serious, and at time more serious problems of rent seeking, centralization, and information-hoarding. On the other hand, Most of the empirical studies cited in this paper were conducted by civil society groups such as the Center for Science and Environment (CSE) in India, The Dag Hammarskjöld Centre in Sweden, The Forest Peoples Programme, and Nor Watch. Therefore, monitoring functions should be vested in civil society groups whose interests are not vested in the ‘business’ of CDM.

However, care must be taken to avoid problems rooted in international political economy of competitive foreign aid that has led to the ‘NGO scramble’ and cut-throat competition for international funding (Cooley & Ron, 2002). Second, care must also be exercised in promoting the notions of global trusteeship of environmental resources. This view is based on the perspective that while it is important to

give developing countries sufficient autonomy in deciding the broad forms of sustainable development programs that suit their particular social and economic context, ensuring accountability of National CDM authorities is of vital concern. This dilemma speaks to the debate regarding a proposed international treaty on introducing public trusteeship of critical environmental resources and other global commons. In the words of Sand (2004): “The essence of transnational environmental trusteeship, as embodied in the convention, is the democratic accountability of states for their management of trust resources in the interest of the beneficiaries—the world’s “peoples,” in Rawlsian terms” (p. 58). However, it is unclear how Sand weighs accountability of national governments to its own peoples vis-à-vis accountability to the rest of the world. Should the national governments be accountable to the rest of the world without or before being accountable to its own people? Threads of answers to these questions may lie in the dilemma posed by Robert Keohane: “Global governance can impose limits on powerful states and other powerful organizations, but it also helps the powerful, because they shape the terms of governance” (Sand, 2004 p.58).

One way is to bring in better representation of local communities, and civil society groups working into the DNAs. This is certainly possible in some of the top CDM host countries such as India and Brazil that also feature a very active civil society. Those may be good places to start this experimentation with. With specific reference to the operational aspects of CDM, it has been suggested that working with community groups and civil society agencies that help organize them would reduce transaction cost without the fear of losing participation of the smallholders (Kerr, Foley, Chung, & Jindal, 2006). Finally, the solution to the biggest problems may lie in smaller steps taken at smaller scale of human organization as much as it does in the collective resolve of the humanity as a whole.

6.2 Rethinking the tenets of Environmental Economics

I conclude this paper by reflecting upon the intellectual foundation of CDM and REDD, and a host of other market-based instruments proposed for environmental conservation. In this I rely on the work of institutional economist Daniel Bromley who have been arguing in favor of a new foundation for public policy, including environmental policy formulation (D. W. Bromley, 1991; Daniel W. Bromley, 2004; D. W. Bromley, 2006). In a recent paper Bromley (2007 pp.676-77) argues:

“The notion of market failure is the defining metaphor in environmental economics. Atomistic choices in the status quo institutional setup (invariably called “the market”) are found to produce outcomes—smoke, toxic fumes, pesticide-laden fruit and groundwater, noise, chemical discharges into rivers—that impose unwanted costs on others. These spillovers (harms) are then said to represent a market failure.....If democratic governments, under pressure from the victims of externalities, are going to alter the extant institutional arrangements (linguistically privileged by the label “the market”) for the purpose of addressing the visitation of environmental harms on others then those changes (linguistically prejudiced by the labels “regulations” or “government interference”) must pass a benefit-cost test. It is only with the aid of benefit-cost analysis that we

will be certain of the “rationality” of new environmental policies.....Many environmental economists will assert that if we allow this sort of political maneuvering to occur then society will end up with “too much” environmental quality—the air and water will be too clean, fish will have too few chemical residues in their edible flesh, and there will be too many hectares devoted to wildlife and waterfowl habitat. In other words, we will hear complaints of politicians “meddling” in the economy.”

Clearly, Bromley is questioning the very world view that is at the foundation of environmental economics that dabbles in carefully controlled models of market and government failures. In his alternative world-view ‘market failures’ are to be corrected through ‘volitional pragmatism’ and not through ‘prescriptive consequentialism’ (Daniel W. Bromley, 2004). Bromley goes on to argue that environmental economists must develop new tools that are no more locked-into statism of a compartmentalized view of polity and economics. He argues for doing away with the path dependence of well worn tools of cost-benefit analysis and pareto-optimality that “deprives environmental policy of the dynamic adjustments necessary for achieving sustainability” (ibid. p. 678). Climate change may well be the challenge that will force us to look for such fresh ideas not only in environmental economics but policy studies as a whole.

It is easy to see why such a revolutionary transformation of entire disciplines may not be pragmatic. A good start is to lay out the trade-offs between different goals. Wunder’s (Sven Wunder, 2007) careful review of payment for environmental services (a generic term for the whole gamut of market-based instruments), discussed earlier, is exemplary from such a vantage point. His message is clear: it is either efficiency or equity. However, in the ultimate scheme of things, I would defer to Bromley’s suggestion (ibid. p. 681):

“Environmental sustainability can be assured only when the role of science (and of scientists¹⁶) has been subordinated to the imperatives of democracy.”

¹⁶ Bromley is discussing economics and economists in his article. ‘Science’ therefore refers broadly to include social as well as natural sciences.

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