

Carbon Conservation

Climate Change, Forests and the Clean Development Mechanism

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Part I. Carbon Conservation: Climate Change, Forests and the Clean Development Mechanism

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A. Overview

This report identifies problems and solutions that emerged from the experience with joint implementation (JI) forest projects in Costa Rica, and discusses their significance to the design of the Clean Development Mechanism (CDM) established by the 1997 Kyoto Protocol.¹ It also addresses some of the concerns of project developers, environmentalists, and Parties as they grapple with defining the CDM and the role of forest management in climate change mitigation.

The findings in this report are based on the first-ever, on-the-ground review of actual carbon sequestration projects. During 1996 and 1997, the Center for International Environmental Law (CIEL) and the Centro de Derecho Ambiental y de los Recursos Naturales (CEDARENA) reviewed the general policy framework and four specific forest projects adopted under Costa Rica's Joint Implementation (JI) Program. This review was based on examination of project documents, discussions with project sponsors and government officials, and visits to project sites. Costa Rica was selected because it hosts more JI Projects than any other country, and because it has the most highly developed JI program of any non-Annex I (developing) country.² The resulting case study describing these projects is included as Part II of this study.

Based in part on the results of the Costa Rica case study as well as general policy concerns raised during the negotiations over the Kyoto Protocol, this part of the Study addresses major issues raised by the proposed CDM. The report's recommendations, contained in Part I.E, are intended to shape the future legal and institutional framework of the CDM.

We conclude that, *given the right legal and institutional framework*, CDM forest projects could be potent tools in achieving climate benefits while protecting forests and benefiting local communities. We support linking a full range of forest and climate strategies through the CDM, not only because we believe this approach can work, but because we fear that any other approach will fail. If the legal and institutional framework for the CDM is not carefully designed, with both climate and other environmental and social impacts considered, the resulting investments and incentives could undermine both forest conservation and climate change goals. Furthermore, we believe that the CDM must provide socio-economic benefits for recipient countries, and especially for local communities. Otherwise, long-term support for CDM projects cannot be guaranteed, and projects may not last.

1. Climate Change and Forests

Profound links exist between climate change and forests. Climate change can cause deforestation; deforestation, in turn, can exacerbate climate change. Forests can be sources, sinks, or reservoirs of greenhouse gases (GHGs), the gases that cause climate change. When forests are damaged or destroyed, they release carbon dioxide (CO₂)—the principal GHG—as well as other GHGs into the atmosphere. When forests are restored, they remove CO₂ from the atmosphere.

Recent conflagrations in Indonesia, Brazil, and Mexico demonstrate the magnitude of the dangers linking both forest loss and climate change. In Indonesia alone, six months of uncontrolled burning released more GHGs into the atmosphere than all sources in the

European Union combined during an entire year.³ Moreover, many experts attribute the severity of these fires in part to climate change.⁴ Recognizing the close linkages between forests and climate change, negotiators have included forests and their management as critical components of the climate regime.

2. The Climate Regime and the Clean Development Mechanism

The 1992 United Nations Framework Convention on Climate Change (FCCC) deliberately embraced forest issues as integral to the overall effort to address climate change.⁵ The objective of the FCCC, for example, is “to achieve ... stabilization of greenhouse gas concentrations in the atmosphere.”⁶ The Convention specifically did not choose the narrower objective of reducing greenhouse gas emissions, which would have virtually excluded a major role for forests. Moreover, the FCCC requires all Parties to “promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases.”⁷ The 1997 Kyoto Protocol continued to include forests in the overall regime. Article 3 of the Protocol, for example, includes deforestation, reforestation and afforestation activities in determining countries’ emission reductions.

Forest conservation activities were also considered among those eligible for joint implementation (JI) under the FCCC. JI was initially believed to be the mechanism that would allow industrialized (Annex I) countries to meet their own obligations by financing or undertaking activities in developing (non-Annex I) countries. For example, the United States would be allowed to meet its obligations under the Convention by investing in energy efficiency in China. In 1995, the FCCC Conference of the Parties adopted the *Berlin Mandate*, which further endorsed joint implementation and established some clearer parameters for a JI pilot phase to end before the year 2000. During this pilot phase, Parties were encouraged to continue to experiment with JI, but no credits would be made available for carbon emission reductions achieved during the pilot phase. JI, like emissions trading, has the possibility to lower the overall costs of meeting climate obligations. Critics, however, are concerned that monitoring JI may be impractical and that proving a project has contributed additional climate benefits may be impossible. Because of the many issues surrounding JI, particularly JI forest projects, CIEL and CEDARENA commenced of this study.

During the negotiations of the Kyoto Protocol⁸, however, JI with developing countries was supplanted by the creation of a new Clean Development Mechanism⁹

to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments.

See Box 1. For the moment, the CDM remains largely undefined; it is possible the CDM does not even include forest projects. Article 12 of the Kyoto Protocol, which establishes the CDM, speaks only of “certified emissions reductions” being achieved through the CDM, although it does not expressly limit these reductions to the energy sector. Thus, in addition to energy projects, Article 12 may include forest conservation projects (i.e. projects that result in reduced carbon emissions). At present, the language appears to exclude projects that remove carbon

from the atmosphere (eg. reforestation and afforestation projects). Limiting the CDM to conservation projects seems inconsistent with other provisions of the Protocol, including for example Article 2, which requires Annex I countries in achieving their emission reductions to promote “sustainable forest management” and Article 3, which includes deforestation, reforestation and afforestation to be counted in evaluating an Annex I country’s achievement of emission reductions.

Given the ambiguity that still surrounds the Clean Development Mechanism, it is not yet clear whether the CDM will differ significantly from JI as it was originally conceived. Regardless, if the CDM recognizes emission reductions (and removals) from forest projects, lessons learned from the JI Pilot Phase can be invaluable for designing and implementing forest projects under the CDM.

3. The Costa Rica Joint Implementation Pilot Projects

As noted above, beginning in 1996, CIEL and CEDARENA reviewed forest sequestration projects in Costa Rica to learn whether CDM forest projects could simultaneously:

- deliver quantifiable, verifiable, and durable climate change benefits;
- enhance protection for forests and biodiversity; and
- provide socio-economic benefits for recipient countries, especially for local communities.

Costa Rica has been the world’s leader in developing pilot projects that mitigate emissions of greenhouse gases under the FCCC. Costa Rica’s JI projects can be divided into three phases. First Phase projects are specific and discrete, privately designed and financed projects, in which the government’s only role is project review and approval. Subsequently, the government of Costa Rica through Oficina Costarricense de Implementacion Conjunta (OCIC), the country’s official Office for Joint Implementation, developed two larger scale, nationwide JI “umbrella” projects—called the Private Forestry Project (PFP) and the Protected Areas Project (PAP). These projects represent the “Second Phase” and “Third Phase” projects, respectively. These projects, as well as the four projects reviewed under the First Phase are summarized in Box 2, and described in detail in Part II of this study.

While the lessons learned from Costa Rica’s JI experience can instruct the design and implementation of CDM projects, careful attention must be paid to the specific conditions of each country’s economy and ecosystems to ensure project sustainability and success. The Costa Rican experience clearly points the way for future research and provides many lessons for countries interested in developing approaches to carbon sequestration for the purpose of participating in the CDM.

B. Ensuring Climate Benefits of Forest Sequestration Projects

Article 12 of the Kyoto Protocol highlights four major issues that must be addressed in the design and implementation of the CDM (or any other similar mechanism) to ensure that actual climate benefits are achieved through forest sequestration projects. These questions include:

- Are the climate benefits additional?

- Are the climate benefits quantifiable?
- Are the climate benefits verifiable?
- Are the climate benefits durable?

Lessons learned from the Costa Rica JI pilot phase can shed substantial light on these questions.

1. Are Climate Benefits Additional?

For emission reductions to be certified by the CDM, Article 12 of the Kyoto Protocol requires that they be “additional to any that would occur in the absence of the certified project activity.” This is known as additionality. Early JI forest projects in Costa Rica demonstrated additionality of projects, rather than of emissions reductions, by applying a financial test. They argued, probably correctly, that without the interest in JI, funding would not have been available for these projects, particularly funding provided by utility companies or investors seeking a profit.¹⁰ As discussed in the next section, projects also must demonstrate and quantify net reductions in GHG emissions. This is known as environmental additionality.

2. Can Climate Benefits from Forest Projects Be Quantified?

Article 12 of the Kyoto Protocol requires that emission reductions resulting from CDM project activities be “measurable.” It is not enough to show that a project is likely to provide climate benefits; the benefits must be carefully quantified before credits from the project can be certified. While scientists can measure some things quite precisely—e.g. above-ground carbon on a small-to-medium size project site—the amount of carbon that would have been sequestered without the project (the baseline), or the offsite effects on the carbon cycle (leakage), are more difficult to quantify.

a. Baselines

Experience from Costa Rica suggests that deriving baselines from historical experience on or near the project site is complicated, but can help eliminate guesswork. However, deforestation and land-use change may fluctuate in response to external factors (for example beef prices), and historic rates will not always be an accurate guide to future trends.

The early (phase one) forest projects in Costa Rica vary widely in the complexity of their baseline calculations. The baseline for the BIODIVERSIFIX project, which involves restoration of forest on degraded pastures, is straightforward. It presumes that, without intervention, virtually no regeneration would occur on these pastures within the lifetime of the project. Similarly, the KLINKIFIX project, which creates plantation forests on degraded pasture, also assumes that these pastures will not naturally regenerate and, further, that they will continue to degrade and the soil will continue to lose carbon. While the developers assume that the project will slow the rate of carbon loss from the soil, they do not take any credit for soil carbon improvements.

The underlying assumption of these projects—that abandoned pastures will not regenerate naturally in Costa Rica—is controversial. The extent of regeneration may be influenced by many factors, including proximity to existing forests, density of existing ground cover, and soil and climate conditions. On the one hand, some natural regeneration of pastureland probably would occur, so the baseline should probably not be zero. On the other hand, well-designed intervention can accelerate natural regeneration, and the uptake of GHGs could be enhanced by these projects for many decades.¹¹

ECOLAND is a pure forest preservation project—it does not involve reforestation or management—hence the baseline is the estimated rate of future deforestation in the region. The historic deforestation rate might have served as a predictor of future rates, but in the case of ECOLAND the recent deforestation rate has been low due, according to the developer, to anticipated government buyouts. The government has been unable to raise the funds needed to accomplish these buyouts, however, and the developer's discussions with landowners revealed frustration with the government and an interest in resuming land clearing.

Without the project, ECOLAND project developers assumed that 100% of the forest eventually would be lost. It is difficult to test this assumption, as it seems to be based on a unique set of circumstances existing at the project site. The larger picture in Costa Rica tends to confirm one of the underlying premises; the government probably does not have adequate resources to protect all remaining primary forest. Of course, all forests not protected by the government would not necessarily be lost. Many Costa Rican landowners have set up private reserves and adopted such protective measures as conservation easements. This trend is accelerating as the value of ecotourism increases and that of alternative uses, such as ranching, decreases.

The CARFIX project utilizes a complex formula for its baseline. For its forest protection component, it assumes a continuation of the observed annual rate of 6% deforestation outside fully protected areas. Within protected areas it assumes a rate of only 2.8–4.1%, depending on proximity to roads and other factors.

b. Leakage

The potential for “leakage” introduces another element of uncertainty into JI and CDM projects. Leakage occurs when the project itself causes net emissions to increase off the project site. For example, protecting an area of forest from logging may simply drive logging activities to another location, resulting in no net reduction in logging or carbon emissions.

The specific forest projects studied here generally do not devote much attention to the question of leakage in their project documents, and it is difficult to assess how leakage was accounted for in the design of the projects. The ECOLAND project raises the possibility that landowners might move out of the park, only to purchase and deforest land elsewhere. Several factors mitigate against this, however. First, forested land has become quite expensive in Costa Rica. Second, there is little economic incentive to deforest, given the depressed price of beef. Of course, this could change in the future if beef prices go back up. Third, the government is providing payments for environmental services to landowners that protect their forests. It should be noted that these assumptions appear to contradict somewhat the assumptions used to develop the baseline.

KLINKIFIX is unlikely to cause significant leakage because it does not appear to displace any existing or future economic activity. It merely provides incentives for landowners to plant trees on degraded lands. Similarly, BIODIVERSIFIX should not cause leakage in the near term, although it is harder to predict long-term effects. While it replaces an economic activity, the decline of that activity—cattle ranching—was already occurring and was not caused by the project. As long as beef prices remain low, ranching will probably not move offsite. If, prices go back up, however, leakage could be a problem. Again, government payments for environmental services are intended to prevent this occurrence.

CARFIX appears to have devoted more attention to leakage than other phase one projects. It does not displace landowners, but rather provides them with sufficient income to compete with cattle grazing. Importantly, it avoids promoting demand-driven offsite logging by ensuring that onsite timber production does not diminish but actually increases.

To some extent, the potential for leakage is a function of the size of the project or “system” boundary; the larger the boundary, the greater the likelihood that all impacts will be accounted for.¹² Hence, another approach to reducing leakage is to move to ever larger system boundaries. Larger boundaries could also help reduce uncertainty connected with project baselines, since rates of harvesting and deforestation may more easily be predicted for large areas than for small ones.

Costa Rica has steadily expanded its system boundary. In fact, under its nation-wide Protected Areas Project (PAP), Costa Rica has developed national baselines for one class of projects—forests in protected areas. Even some pre-existing forest conservation projects are included. The PAP generates “certified tradable offsets” (CTOs), which are based not just on the maintenance of the forest on a specific site but on the maintenance of all designated protected areas within the country. Costa Rica is currently marketing its CTOs through the Chicago Board of Trade for \$10-20 per ton of carbon. In the future, Costa Rica plans to take a similar approach to privately owned forests and energy projects.

Expanding the system boundary also provides greater certainty for the investor, for if a forest on a specific site is damaged or lost, forest in other parts of the country can compensate. In fact, Costa Rica is setting aside approximately 15% of its protected forests as “insurance” under the PAP against loss of forest within the protected areas and the resulting loss of CTOs. The amount of land set aside is adjusted to reflect uncertainty in the baseline and other factors.

Once it had taken a national approach to JI forest projects, Costa Rica could have adopted several methods for devising its baseline. For example, the national rate of deforestation could have been used as a uniform baseline for all areas within the country, adjusting the baseline over time, since rates of deforestation change. However, like many developing countries Costa Rica does not own most of the land in areas designated by the government as “protected.” It barely has enough resources to protect the lands that are publicly owned, and it lacks both the resources and the legal authority to protect private lands.¹³ Costa Rica recognized that all lands did not face the same degree of threat, or the same rate of anticipated deforestation, so the government devised a complicated formula for determining baselines for different areas within the country.¹⁴ In the end, though, all the complex calculation must add up to a national baseline that reflects historic, current and anticipated deforestation rates throughout the country.

c. Sequestered Carbon

Doubts continue regarding the accuracy of carbon sequestration estimates, particularly on a large scale. The larger the project, the more difficult it is to develop precise estimates of sequestered carbon. Nonetheless, many experts maintain that we already have the tools to measure above-ground carbon to a high degree of accuracy, and work is now going on to improve measurement of carbon in soil and refine large-scale monitoring techniques, such as aerial surveillance and remote sensing.¹⁵ It will be for the Intergovernmental Panel on Climate

Change (IPCC), the UN body responsible for investigating scientific issues related to climate change, to evaluate these techniques and ultimately to determine the viability of carbon calculations from forests. Meanwhile, forests projects should proceed on the basis that, where uncertainty exists, conservative estimates will be used. Even below-ground carbon, which is the most difficult to quantify, can be counted as long as the most conservative estimate is used. Clearly, the amount of below-ground carbon is some number greater than zero.

Another issue that could introduce high levels of uncertainty is whether and how to include long-lived forest products, such as furniture and some building materials, in calculating the carbon benefits. While IPCC guidelines do not take such carbon into account, the issue is currently under review.¹⁶ To include such carbon for credit, it would be necessary to show, among other things, that carbon is accumulating in products more rapidly than those products are decaying in landfills and elsewhere. It also might require tracking wood products from cradle to grave. These will be extremely difficult, if not impossible, tasks. For the present at least, carbon sequestered in products probably should not give rise to additional credit.

Adopting conservative estimates means discounting to factor in uncertainty. The requirement that project developers and investors discount for uncertainty provides an additional incentive to conduct *ex post* reviews of projects to measure sequestered carbon, verify baselines, look for leakage, and adjust credits accordingly.¹⁷ If initial estimates of benefits are conservative, such *ex post* review and adjustment is likely to benefit investors and developers.

3. Can Climate Benefits from Forest Projects Be Verified?

JI poses a moral hazard, in that both the buyer and the seller have a financial incentive to exaggerate the environmental benefits of the project. Certification of projects and verification of emissions reductions could mitigate this problem, particularly to the extent that such “truing up” occurs after the reductions have been achieved. Article 12 of the Kyoto Protocol states that, to be certified, emissions reductions from CDM project activities must be “real.” In other words, it must be possible to verify them. Unfortunately, Article 12 of the Protocol provides only limited guidance. It seems to require *ex ante* certification of projects,¹⁸ *ex post* certification of reductions,¹⁹ and third party auditing and verification of project activities,²⁰ but it remains for the Conference of the Parties serving as the meeting of the Parties (COP/MOP) and the executive committee of the CDM to sort out what types of certification and verification will be required, when they will be required, and who will perform these functions.

Ex post assessment of emissions benefits and third party verification by independent auditors would go a long way toward reducing uncertainty and eliminating the moral hazard, but they cannot eliminate these problems entirely, as a simple hypothetical demonstrates.²¹ Suppose a developer undertakes to protect forest A. For the baseline, he calculates that without his project half of forest A would be lost in ten years. The project proceeds and *ex post* investigation shows that after ten years forest A is intact, but forest B, which is adjacent to forest A, has been entirely wiped out. We may conclude that leakage occurred, and that all the harm that would have occurred in forest A was displaced to forest B, in which case there was no net benefit, and our developer should receive no credit. On the other hand, we may conclude that the problem was not leakage but an overly conservative baseline estimate. But for the project, forest A would also have disappeared, so the developer is really entitled to double his credit.

Is there a way out of this conundrum? The World Resources Institute argues that leakage often can be anticipated, its causes identified, and protection taken to avert it or to account for it in calculating the credit that the project earns.²² This may offer a partial solution, but the determination of leakage, even after the fact, will never be a certain science. Even where harmful impacts can be traced to CDM projects, it will be difficult to quantify how much of the impact is directly attributable to the project, and what would have occurred in the absence of the project, both onsite and offsite.

The accuracy of baselines should be verified based on prior experience in the region and, where feasible, ongoing comparison to control plots. The latter approach raises a question, however, whether baselines should be static (i.e., determined at the start of the project and unchanged during the course of the project) or dynamic (recalculated during the life of the project). A dynamic, after-the-fact approach would yield greater accuracy in assessing actual climate benefits, but many potential investors prefer the certainty that comes from a static, forward-looking approach to baseline determination. Nevertheless, if the rules are clearly defined at the outset, and conservative estimates of climate benefits are made wherever uncertainty exists, a dynamic approach to baselines—and leakage—may provide sufficient certainty for investors.

4. Can Climate Benefits from Projects Be Sufficiently Durable?

Article 12 requires that CDM project activities produce "long-term" climate benefits. Climate change is a long-term problem, as GHGs can remain in the atmosphere for decades, in some cases even centuries. Therefore CDM forest projects must also be long-term and durable. Emissions benefits from CDM forest projects must fully account for both the quantity of GHGs being offset and the length of time the GHGs have been in the atmosphere.

Several approaches are available to account for the temporal dimension of forest projects. "Real-time" accounting requires that, for each ton of carbon emitted, the polluter must sequester a ton of carbon and keep it sequestered for the length of time that the emitted carbon remains in the atmosphere. The ideal forest project would perfectly track the residency time of the carbon in the atmosphere. The emitted carbon will gradually be re-absorbed into terrestrial sinks (forests, oceans, soil, etc.), but since some of the carbon will remain in the atmosphere for a century or more, the project must remain on the ground for a century or more.

The project also must account for the life of the polluting activity, so a forest project designed to offset emissions from a power plant with an operating life of fifty years will have to last approximately 150 years!

Even where projects are planned for sufficiently long periods, legal instruments may not be adequate to ensure that these commitments are met. Legal mechanisms exist, however, that can give greater assurance that carbon will remain sequestered. Conservation easements, for instance, are recorded in the deed and obligate all future owners of the property to protect the forest. Creative contracting arrangements can also be devised. For example, money held in escrow during the life of the project can ensure that cash is available if needed to pay for replacement carbon. The insurance industry is also likely to develop products to ensure against future carbon offset deficiencies.

Some existing forest projects are designed to store carbon for a century or more—indeed, protected areas are planned to store carbon in perpetuity—but offset commitments usually are for much shorter periods. The lifetimes of the phase one projects are registered with the Secretariat of the FCCC: CARFIX 25 years; ECOLAND 16 years; KLINKIFIX 40 years; BIODIVERSIFIX 51 years. While commitments to investors may lapse at the end of the project life, the forests themselves should remain standing, for Costa Rica plans to maintain its forests, particularly those in protected areas, in perpetuity. It is important to note, however, that investors may lose some protections after the project ends. For example, the Protected Areas Project warrants the carbon it sells for a period of 25 years—the life of the project—by maintaining an extra stock of forest as a buffer. This buffer only insures investors during the life of the project, however.²³

Real-time accounting requires the polluter to pay for most of the sequestration before it accrues. Polluters may be unwilling to do this unless the risk of project failure is placed on the seller, who would presumably have to purchase credits or otherwise make up for any offset deficit if the project fails before the emissions have been completely accounted for (i.e., removed from the atmosphere). Sellers also may be unwilling or unable to assume this risk, and those that do may be unable to make restitution if the project fails.

"Ton-year" accounting is another approach. This method equates one ton of emitted carbon with x ton-years, where x is the residency time of carbon in the atmosphere. For example, if the residency time is taken to be 100 years, one ton emitted is equivalent to one hundred ton-years. Under ton-year accounting, one ton emitted could be offset by one ton sequestered for 100 years, by two tons sequestered for fifty years, or by fifty tons sequestered for two years. As an example, suppose a polluter decides that, for each ton emitted, he will sequester 100 tons for one year. Assume, further, that his source emits a thousand tons of carbon per year and will operate for fifty years. Then he must sequester 100,000 tons of carbon per year for fifty years. At the end of fifty years, his obligation is discharged.

Which approach is better—real-time or ton-year accounting—is difficult to say for certain. The ton-year approach delivers its carbon benefit earlier, provides greater certainty that emissions will be fully offset and may lower transaction, insurance, and other costs for the investor. On the other hand, real-time accounting more accurately tracks the actual atmospheric residency time of the emissions being offset. Which ever approach is chosen, the CDM must require full consideration of the temporal dimension early in the project's life.

C. Promoting Sustainable Development in Non-Annex I Countries

The CDM should be viewed in the context of sustainable development, and, indeed, the CDM has an explicit mandate to assist non-Annex I Parties to achieve sustainable development.²⁴ Although a precise definition of sustainable development is beyond the scope of this paper, we maintain that at least with respect to forest projects, fidelity to the concept of sustainable development requires that the CDM give a preference to projects that provide additional forest and biodiversity benefits or that provide economic benefits to local communities. At the very least, CDM forest projects should not cause any additional harm to global environmental values, such as biodiversity conservation, as recognized in various multilateral environmental agreements. Given the potential that CDM investments could interfere with legitimate claims of land titles held by indigenous peoples, we would also add a requirement that CDM projects proposed on lands subject to the claims of

indigenous communities only be conducted with the full consultation and participation of indigenous communities. We recognize that the inclusion of these additional conditions on the CDM (and the exclusion of others) is somewhat subjective, but we believe that these issues are closely tied to the concept of sustainable development.

The FCCC at least generally supports such an approach. An objective of the Convention is to “allow ecosystems to adapt naturally.”²⁵ It would be inconsistent to allow projects that mitigate climate change to adversely affect forests and biodiversity. Another objective is to enable economic development to proceed in a sustainable manner.²⁶ Parties must “employ appropriate methods,” . . . “with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment.”²⁷

1. Enhancing Protection for Natural Forests and Biodiversity Protection

Obviously, not every “forest” project considered for its climate benefit will deliver the same amount of other environmental and socio-economic benefits; indeed, some previous attempts to reduce forest loss have produced unanticipated adverse affects. For example, financial incentives offered previously to encourage reforestation in Costa Rica and elsewhere in Latin America prompted some landowners to cut down native forest in order to clear land for new trees that would qualify for the incentives.²⁸

Costa Rica has attempted to avoid such perverse incentives in its new Forestry Law, and its JI projects have aimed to enhance biodiversity and provide incomes for local landowners, as well as reduce or sequester GHG emissions. The BIODIVERSIFIX project, for example, was specifically aimed at regenerating forests in areas known for their unique ecosystems. The CARFIX project was designed to make it cost effective for landowners to conserve and regenerate forest by providing an annual income for environmental services they provide. This concept was taken up by the Private Forestry Project, which, under the provisions of the new Forestry Law, issues “Forestry Environmental Services Payments” (FESPs) to private landowners who plant, conserve and manage forests. The provision of incomes to landowners will help maintain the capacity to monitor and manage forests over the long periods necessary for carbon sequestration to be effective.

We should not be lulled into a false sense of security by these projects, however. Future forest projects could bear little resemblance to existing projects unless the proper legal framework is established. The incentives that previously existed to undertake such projects are not the same as those that exist today, and even less like those that will exist in the future. When these projects were initiated, any financial return from carbon sequestration was highly speculative. Investors could not be certain that they would ever be able to use the carbon credits from their investment or, for that matter, that polluters would ever be required to reduce their emissions. The few companies that invested in these projects did so largely for public relations purposes or for the learning experience.

Furthermore, these projects were frequently promoted by a few individuals and organizations who saw JI not as a financial opportunity but as a potential source of additional funding for the conservation, regeneration, and sound management of forests. Many of the activities they sought to fund through JI were already on the drawing board as conservation projects, or had already been initiated with other resources. Gaining climate benefits was, at most, a secondary concern.

Future projects may be quite different. Now that governments and private entities are faced with obligations to reduce their emissions, and crediting is imminent, the search will begin in earnest for cost-saving opportunities to cut emissions. Inevitably, polluters will turn to forest projects as potentially inexpensive alternatives to domestic emissions reductions. Some entities will see the challenge merely as finding and acquiring the cheapest GHG reductions or offsets, which could spell disaster for both climate and forests. Activities that strengthen the project, such as monitoring and enforcement, may be viewed as costly, and project developers may seek to minimize them.

The CDM should adopt strong rules to ensure that forest projects provide more than mere sequestration. At a minimum, to be consistent with its own mandate to assist sustainable development, the CDM must ensure that its projects do not harm natural forests, biodiversity, or other environmental assets. Environmental assessments should be conducted to identify both positive and negative environmental impacts. Where opportunities are identified to enhance biodiversity, though at a higher cost, co-financing arrangements, for example through the Global Environmental Facility, should be explored to cover the incremental costs.

2. Ensuring Consistency with Global Environmental Priorities

There is now an increasingly comprehensive set of international environmental agreements that reflect global environmental priorities. Investments that could flow through the CDM have the potential both to promote and to undermine the environmental priorities reflected in these agreements. Most Parties to the FCCC are also parties to many of these other international environmental agreements, including for example the Biodiversity Convention, the Desertification Convention, and the RAMSAR Convention on Wetlands.²⁹ To ensure that CDM projects do not gain their climate benefits at the cost of undermining other global environmental priorities, the CDM should require that projects be consistent with the requirements of other international environmental agreements and that countries only be allowed to participate in the CDM to the extent they are in substantial compliance with other major environmental agreements to which they are Parties.

3. Providing Benefits to Local Communities

To promote sustainable development, CDM projects should benefit non-Annex I Parties in ways other than protecting their forests and biodiversity. In addition to issues of equity and fairness, projects that provide substantial socio-economic benefits, particularly at the local levels, will be more likely to succeed in providing long-term climate benefits. Providing economic incentives for conservation at the local level may be the best way to ensure, for example, that protected forests are not poached and poverty pressures do not change land-use patterns over the long-term. In general, widespread political support for the CDM will only come if developing countries are satisfied that CDM investments will contribute to sustainable, long-term, locally driven economic development. We suggest that the CDM include requirements that facilitate direct benefit sharing, capacity-building and technology transfers with local communities.

a. Direct Benefit Sharing

The CDM and similar mechanisms promise substantial investment flows into developing countries. As suggested above, current global commitments to sustainable development suggest that more attention must be given to poverty alleviation and issues of equity.³⁰ The CDM offers an important opportunity to ensure that future investment flows provide more direct benefits to local communities than has investment in the past. Moreover, as noted above, ensuring that CDM projects provide local economic incentives will help ensure the long-term success of the project with its resulting long-term climate benefits.

b. Building Capacity

To promote sustainable development, the COP/MOP must ensure that local communities and governments, as well as NGOs and business leaders, have the technical capacities, information and financial resources to participate fully in the CDM. Technical capacity should be developed in all sectors—public, private and government—to ensure that all stakeholders are able to play a role in mitigating and adjusting to the effects of climate change. Thus, for example, the COP/MOP must effectively promote the development of domestic institutional capacities to allow national regulators to evaluate the merits of proposed CDM projects and to monitor their outputs. Forestry projects must be monitored and managed to ensure that carbon sequestration is durable and co-benefits are attained.

Endogenous technological capacities can be developed through training, skills sharing and education to allow for the planning, assessment and systematic observation of CDM projects. This includes capacities: 1) to evaluate the suitability of technology being offered; 2) to make informed choices among alternative technologies; 3) to set standards and undertake ongoing reviews and evaluations of CDM projects; and 4) to ensure that CDM projects meet the goals of the FCCC and complement domestic policy objectives.

Relative to its size and population, Costa Rica may be unique among developing countries in the amount of technical expertise that exists within the country for forest management, agricultural research and development, and biodiversity protection. The KLINKIFIX, BIODIVERSIFIX, and CARFIX projects all have training components to disseminate this expertise to local communities and landowners.

c. Technology Cooperation

Several general principles should guide the CDM in all activities involving the exchange of information and the transfer of hard and soft technology. The CDM should promote the development and transfer of technologies that provide significant climate change benefits while complementing the social, economic and technical settings of host countries. When technology is designed or selected, attention must be paid to the specific local conditions where the technology will be deployed. In selecting appropriate technologies, project developers should begin by determining what is already domestically available, what is familiar, and what has been shown to work. If appropriate technology cannot be located within a country where a CDM project is being designed, technology that has been successfully deployed in similar applications in other developing countries should be investigated. Technologies developed in the South are most likely to succeed in the South. Conversely, Northern technology developed for use in the North is least likely to prove satisfactory in CDM host countries. Technologies developed in the North for southern applications should be thoroughly tested before any substantial commitment of CDM resources is made. Technologies

that are either obsolete or highly experimental will rarely be appropriate, although some experimentation in CDM forest projects may be needed, particularly to adapt to the specific context of the project.

Technology transfers should be supported by ongoing technical assistance, education and training, and by adequate financial resources (see Capacity Building above). Project success hinges on a long-term commitment to the project, not just a one-time transfer of information or equipment. Flexible arrangements and contingency funding often will be required as well.

In addition to having a high level of technical expertise, Costa Rica has much of the technology it needs to implement successful forest projects. There already exists a high level of North-South information exchange, and many organizations based in the North are actively working in the field in Costa Rica. While three of the four phase-one projects received technical assistance from the North, all three are highly collaborative and probably could have been executed as well by national teams. The situation will vary dramatically from country to country, however, and while the Costa Rica experience is instructive, each project must be shaped by the national context in which it will be implemented.

D. Making the CDM a Success

1. Ensuring a Transparent and Participatory CDM

a. Informed and Effective Public Participation

The importance of informed and effective public participation in environmental decision-making has achieved international recognition. The 1992 United Nations Conference on Environment and Development (UNCED) recognized the many benefits of public participation to government, local communities, regulated entities and society as a whole. The Rio Declaration and Agenda 21 both endorsed the principle of public participation as a crucial component of sustainable development.³¹ Both public and private development projects have frequently gone awry because local people were not informed or consulted, even when projects that directly affect them are being designed and developed.

Through these international processes, informed and effective public participation has been defined to include three equally important components: access to information, public participation in decision-making and access to justice. Informed and effective participation requires that the affected public has the right to access to information, subject only to necessary, limited and explicit restrictions, that they know that a decision is being made, and that they have a right to participate in that decision. Notice of a pending decision must come early enough in the process for the public to review relevant materials, inform themselves on the issues and prepare their input. Notice must be made in a way reasonably calculated to reach the affected public. Moreover, the process must allow adequate time for the decision-makers to process the public input and incorporate it into their decision-making process. For the public to be willing or interested in participating they must be certain that their views will be taken into account in the decision-making process. Finally, there must be some independent (or at least quasi-independent) body for reviewing decisions and ensuring that the requirements for informed and effective public participation have been followed.

The FCCC Parties, while committed, at least on paper, to promoting access to information, public awareness and NGO participation,³² could and should go farther in incorporating informed and effective public participation into CDM decision-making. They should commit to provide early notice to all potentially affected constituencies—local peoples, NGOs, businesses, and governments — about which areas and resources are being considered for CDM projects and a meaningful opportunity to participate in project design, implementation and monitoring. Such a commitment should take the form of a written policy on information access, public consultation and monitoring. They should provide for a transparent and appropriate process for involving locally affected peoples in decisions on CDM projects as well as in CDM project design, implementation and monitoring. The CDM must pay particularly close attention to issues of notice and consultation at the local level—especially with indigenous peoples and other long-term occupants directly dependent on forest resources being considered for inclusion in a CDM project.

b. Access to Information

Within the CDM there are two important aspects of access to information: notice to and consultation with the affected public about the design and certification of a CDM project. The CDM local constituencies, especially indigenous peoples and other long-term occupants directly dependent on forest resources being considered for inclusion in a CDM project, should be informed of that fact and brought into the decision-making process as early as possible.

NGOs and other individuals and groups seeking to review and assess JI projects and programs have encountered difficulties obtaining information. There is no central repository for project documents and other information about JI. Governments have also tended to view project proposals, peer reviews, and other project documents as confidential and generally have not made them available to the public, although some governments have revised this policy and now make at least some documents public. Even governments do not have access to all the critical information about the projects they review and approve. The United States, for example, does not require project developers or investors to reveal any financial information about projects, even after approval, thereby making it impossible to determine whether the project was profitable enough to be commercially viable on its own. A sufficiently high rate of return would raise questions about additionality and might require the developer to demonstrate that other factors, such as unusual risk, limited the project's commercial prospects.

Full public access to information about projects is critical to enable independent verification by local communities and NGOs that the CDM is working as intended, and that individual CDM projects are providing environmental and socio-economic benefits to local communities and furthering national environment and development objectives, including the goals of the FCCC. CDM projects' legal obligations should be publicly available, so that local communities and affected peoples know their rights and the obligations of project sponsors. Making these agreements public will also facilitate implementation, compliance and monitoring by local communities.

These issues can be addressed through the adoption of a clear, written information disclosure and access policy for the CDM. Such a policy should establish the presumption that all information related to CDM projects is public, unless subject to certain necessary, limited and clearly-defined exceptions. Where private businesses are concerned, some information

may legitimately be considered business confidential. However, business confidentiality must be carefully defined and narrowly construed; the locally affected public's interest in disclosure of information must be carefully weighed against the private interest to be protected by non-disclosure.

c. Public Participation and Consultation

In addition to being informed, the CDM local constituencies, especially indigenous peoples and other long-term occupants directly dependent on forest resources being considered for inclusion in a CDM project, should be consulted in project design and invited to recommend modifications or better alternatives. Their informed consent to the project should be required before a project can be certified. They should likewise be provided with opportunities to comment on and improve proposed project designs. CDM projects should not involve any involuntary resettlement of indigenous and other long-term occupants.³³

Local NGOs, businesses, and governments also need to be consulted. To participate meaningfully in the CDM, they will require increased information and financial resources. At present, these requirements effectively preclude broad-based participation. Only a small number of well-financed, comparatively large NGOs and business groups are participating in JI project development and implementation. An even smaller number of organizations are involved in review of JI projects and programs.³⁴ The CDM mechanism should ensure that local NGOs, businesses and governments are not excluded from consultation in the CDM process due to financial constraints or lack of information. The CDM should follow the lead of the GEF and establish a fund to promote participation of NGOs and local communities.

By nationalizing its program, Costa Rica has expanded the number of concerned constituencies that will be able to participate and receive benefits from the CDM. Initially, only a small percentage—perhaps fewer than 5%—of Costa Rican NGOs had the capacity to initiate and implement projects. Participation by small landowners and other stakeholders in forest resources were similarly limited. Under Costa Rica's new Forestry Law, however, participation should increase markedly, as small NGOs, landowners and others will be able to receive incentives from the sale of CTOs without having to initiate and carry out individual projects.

To its credit, Costa Rica integrated several NGOs into its JI program from the beginning. The decree establishing the Costa Rican Office for Joint Implementation, OCIC, also established the Non-Governmental Specialized Technical Sector to provide technical and operational support for OCIC.³⁵ Various NGOs have benefited. The Foundation for the Development of the Central Volcanic Range (FUNDECOR) is one example; it is responsible for assisting in the development of forest resource inventories and in developing "estimates of storage and fixation rates of biomass and its equivalent in carbon." The Costa Rican Coalition of Development Initiatives (CINDE) is another example; it is responsible for assisting in defining international marketing strategies for JI projects as well as international promotion to attract investment in approved JI projects. In addition, the Earth Council, an international NGO based in Costa Rica, is assisting in marketing CTOs from the PAP.

The issues concerned with public consultation and participation in decision-making should also be addressed through a set of clear, written and binding guidelines. Such guidelines will assist locally affected constituencies in understanding their rights and points of

access and will assist project sponsors and national governments in understanding their obligations to inform and consult with project-affected communities.

d. Access to Justice

The effectiveness of the CDM in reducing emissions of greenhouse gases will depend on how well projects are implemented and their compliance with the rules of the CDM. The CDM should include some form of review mechanism that can provide a remedy to locally-affected peoples, if CDM project sponsors fail to comply with the terms of their agreement, or to follow the requirements for information disclosure and consultation with locally affected peoples. Such a review mechanism should be independent or at least quasi-independent.

2. Encouraging the Evolution of the CDM

From early on, JI was thought of as an interim mechanism, which could lead to more comprehensive approaches, such as full-scale emissions trading. Emissions trading, however, requires participating countries to adopt national, or at least sector-wide, emissions caps, which at present non-Annex I countries are unwilling to do. The CDM should be structured to provide incentives for non-Annex I countries to gradually increase their participation in the Protocol while providing greater assurance of the soundness of CERs. This would put the CDM on a more even footing with emissions trading between Annex I countries under Article 17 of the Protocol, thereby simplifying the emissions trading regime and reducing administration and transaction costs.

Costa Rica's regime is illustrative. As shown in Box 2, Costa Rica's JI program has evolved through three phases. In phase one, Costa Rican JI forest projects were like those of other countries; they had restricted system boundaries, baselines limited to project sites, minimal involvement of the national government, and investments linked to specific project sites. In phase two, the country began to organize its JI forest-based activities into larger projects, although investments remained site-specific. The Private Forests Project (PFP), financed by Norway, is an example of a phase two project. In phase three, Costa Rica utilizes full national baselines, and individual investments are replaced by the sale of CTOs on the open market. The Protected Areas Project is a phase-three project.

If Costa Rica continues this process, it eventually could have all of its forest and energy based emissions included in one national baseline. By requiring Costa Rica to keep its national GHG emissions below a certain level to continue to sell CTOs (or CERs), the baseline would function just like an emissions limitation commitment, with one important exception: Costa Rica would not be in violation of any international agreement for exceeding its baseline. The only consequence would be suspension of CTO/CER sales until the country gets its emissions back on track.

Phases beyond phase three can also be envisioned. A fourth phase might require participating countries to adopt emissions scenarios that allow continued economic growth, but require actual emissions to be less than business-as-usual by some pre-determined percentage, if the country wishes to continue selling CERs. This can be more easily accomplished if proceeds from credit sales are directed to additional emissions reductions.

In the fifth phase, developing countries that are prepared to do so could take on all the remaining obligations of Annex I countries, with two exceptions: first, developing country caps might still not be binding, but would only require them to suspend sale of CERs if exceeded;

second, they would not take on any new financial obligations under either the Convention or the Protocol. Taking on full inventory and reporting obligations under Articles 5 and 7 of the Protocol would further reduce uncertainty and could make such countries eligible to participate fully in the Annex I emissions trading regime. Constraining requirements, such as discounting for uncertainty, could be dispensed with.

The Parties must be careful, however, that as developing countries phase into the Protocol, they do not introduce more of what has been dubbed “hot air” into the system. That is, national baselines and CDM “caps” must reflect realistic business-as-usual calculations in phase three and real reductions from business-as-usual in phase four.³⁶ Eventually, country-by-country negotiations likely will need to be replaced by a global cap with a formula for allocating emissions allowances amongst participating countries.³⁷

3. Efforts by Annex I Countries

Article 12 allows Annex I Parties to use CERs to meet “part” of their emissions reduction or limitation commitment, but does not specify how large a part. We suggest that, in the beginning of its operations, the CDM be limited to 5% of Annex I Parties’ assigned amounts. If the CDM part is too large, it could reinforce developing country fears that they will bear most of the burden of averting climate change to the detriment of their economic development. As one of the stated purposes for the CDM is to promote sustainable development in non-Annex I countries, the rules should provide participating countries with assurances that their development needs will be a primary concern, and that the CDM will not be abused by Annex I countries.

Another reason Annex I countries should accomplish most of their reductions at home is to create domestic incentives for research and development of new technology and disincentives for further development of, and investment in, technologies and activities that are harmful to the climate. The technology gap between rich and poor countries remains wide enough that, in theory at least, CDM projects can be undertaken using technology that is no better, and possibly even worse, than technology that would be deployed under a business-as-usual scenario in Annex I countries.

Several other considerations suggest that Annex I countries should have a limit on their use of the CDM. One is that the CDM itself could suffer if it is too ambitious in its early stages. If projects proliferate too rapidly, they may overwhelm the ability of the CDM to conduct adequate *ex ante* assessment and certification of projects and *ex post* certification and third-party verification of emissions reductions. Also, it will be some time before it will be possible to evaluate adequately the performance of early projects. The proliferation of projects should be constrained to allow time to learn from early projects and to use that knowledge in improving the design of later projects.

The simplest and most equitable approach is probably to allow countries to purchase CERs up to 1% of their assigned amount. Of course some countries will choose not to use their CDM purchase rights. Presumably, these countries will be able to transfer CERs amongst themselves anyway, by adding them to their assigned amounts and then selling an equivalent portion of their assigned amount through the Article 17 emissions trading mechanism. Alternatively, each year the CDM could auction an amount of CERs equivalent to 1% of Annex I Parties’ assigned amounts.

As methodologies are developed and tested, as the CDM matures institutionally, as independent evaluation provides lessons from existing projects, and as reduction commitments get more stringent, the CDM could expand its operations as well as the percentage of Annex I countries' assigned amounts that can come from CDM activities. This presupposes, of course, that the CDM proves to be a success.

4. Balancing Energy and Forest Projects

The CDM must maintain a balance between forest and energy projects. Helping developing countries obtain clean, sustainable energy services is as important as helping them protect their forests and other natural resources. Because forest projects may be able to deliver certified emissions reductions at prices that would be difficult for energy projects to match, constraints may need to be placed on the use of forest projects.

Costa Rica's approach offers a solution to this dilemma. By encouraging investors to purchase certified tradable offsets, which sell for a fixed price regardless of the source of the offset, Costa Rica has eliminated a major incentive for investors to prefer one project type over another. This suggests that negotiators should consider providing the CDM with some price-setting authority, or alternatively, allow the CDM to auction CERs.

5. Cost Effectiveness

Delivering cost-effective GHG reductions and removals is a primary objective of the CDM. Naturally, businesses will want to fulfill their GHG reduction obligations at the lowest possible cost. Cost effectiveness does *not* necessarily mean GHG reductions or removals at the cheapest possible cost, because projects may be cheap precisely because they do not include adequate safeguards for ensuring long-term climate benefits.

Forest projects, for example, can be designed to deliver carbon credits for pennies per ton. Despite the allure of such cheap projects, they may not be effective in the long term without certain safeguards—such as monitoring, enforcement, and verification—that can quickly increase the cost of the project. Environmental and socio-economic co-benefits may add additional costs. While monitoring, verification, and enforcement are staples of a functioning climate protection regime, even the costs of providing environmental and socio-economic benefits have a climate justification. Such benefits will encourage local communities to take “ownership” of projects, which will help ensure their long-term success.

Some of the early JI projects skimmed on management, monitoring, and enforcement and were able to deliver GHG benefits at extremely low prices as a result. For example, ECOLAND relies on the government to manage and protect the lands it purchased, though it did not provide the government with any new resources to offer such protection. While the government does have a legal obligation to provide such protection, it currently lacks the human and financial resources to do so.

This problem has been recognized by the government, and appears to have been remedied in their Protected Areas Project (PAP) and their Private Forest Project (PFP). The PAP takes an approach similar to the one pioneered by ECOLAND—it uses money from the sale of CTOs to purchase private in holdings in designated parks and other protected areas. The price of a CTO, which ranges from \$10-20 per ton of carbon equivalent, is sufficient to provide substantially more protection to acquired lands. A significant portion of this money will go into a trust fund for the support of government monitoring and enforcement activities.

The price of carbon offsets from the BIODIVERSIFIX project was considerably higher—in the same range as CTOs. It is also more ambitious than the ECOLAND project and takes an entirely different approach to both sequestration and forest management. It is an effort not merely to protect an ecosystem, but to rebuild one that is on the verge of collapse.³⁸ Unlike ECOLAND, which sets the forest off limits to all economic activities (with the possible exception of ecotourism), BIODIVERSIFIX is designed to be a protected area, a working forest, a biological preserve, and a scientific research center all in one. A large portion of funds raised through the sale of offsets will go towards management and protection. The project hires and trains local citizens to manage the forest, replacing some of the jobs that have been lost in the region as cattle ranching collapsed. While it provides fewer jobs than ranching did, the jobs it does provide are higher paying and higher skill.

A comparison of ECOLAND and BIODIVERSIFIX raises an important question: given that the two projects existed at the same time, and in close proximity, why would an investor pay the high price of carbon offsets from BIODIVERSIFIX rather than the lower price offered by ECOLAND? The question may reveal an inherent flaw in the purely “free market” approach to CDM projects. Just as in any competitive market for a product, without regulation CDM projects could externalize production costs, such as leakage, biodiversity loss, soil-erosion, wetlands loss and socio-economic damage.

Another related danger is that, in an unregulated carbon market, projects and governments will compete against each other to sell their offsets, bidding down the price in the process. To a degree, of course, this is how emissions trading and related approaches, such as the CDM, reduce overall costs. Without the proper safeguards, however, the price could easily drop below the level where the project provides any benefit to the host country or even the level at which climate benefits can be assured. Hence, it is imperative that all national benefits and safeguards mentioned here—management, monitoring, enforcement, verification, and environmental and socio-economic co-benefits—be mandated in the rules of the CDM.

Beyond that, it may be desirable for the CDM to include in its functions some ability to set prices, as Costa Rica does with its CTOs. This will help prevent price wars amongst project developers and host governments and maintain a price level that provides benefits to the local community, the host country, and the planet.

There is another category of costs—the cost of transacting CDM projects—which benefits neither the investor nor the environment. While due diligence requires a certain amount of time and expense to protect all the parties to the transaction, efforts should be made to reduce these costs as much as possible. High transaction costs not only will limit the environmental benefits that projects can deliver; they also could greatly reduce the number of participants in the CDM. Local NGOs and businesses may be particularly hard pressed to raise the money necessary to develop expensive projects.

Without diminishing the importance of the environmental and socio-economic benefits inherent in Costa Rica’s nationalization of JI, this approach may have been adopted more for the purpose of lowering transaction costs than to reduce uncertainties stemming from baselines and leakage. In any event, we can say that Costa Rica’s national approach both to developing and marketing projects: 1) provides greater certainty with respect to climate benefits; 2) ensures that projects provide environmental and socio-economic co-benefits; 3) provides a stable price for offsets and prevents damaging price wars; and 4) lowers transaction costs, thereby increasing the efficiency and cost effectiveness of projects.

6. Independent Evaluation

Independent evaluation of current AII projects is essential in carrying lessons learned from the pilot phase over to future JI and CDM projects under the Kyoto Protocol. The concept underlying JI and the CDM—of using investments in other countries to help satisfy a Party's climate obligations—is both unique and ambitious. A full independent evaluation should be conducted to inform the design of the JI and CDM mechanisms before their final structures become crystallized.

The need for independence in the evaluation process is critical. At present, the main source of information about pilot phase JI projects are reports from host and sponsor countries who have every incentive to over-state the benefits of projects. Neither the secretariat nor any other third party verifies or evaluates these reports. As a result, the reports may lack balance and rigor, making them unsuited to provide comprehensive information upon which an informed decision may be made by the COP regarding the future of JI projects and the CDM.

The evaluation should be comprehensive and inclusive, inviting the views of a wide range of sources other than the current national authorities. It must enlist the inherent interest of local communities in ensuring that projects meet their needs and the interest of NGOs in ensuring that environmental objectives are being achieved. The process must also enable greater sharing of information between project participants and educate policymakers as they elaborate the CDM framework.

The current lack of systematic project evaluation is clearly unsatisfactory in light of the importance of the decisions that have still to be made regarding JI and the CDM. Policy makers must decide critical issues relating to climate change, development and North-South relationships on the basis of inadequate data. Any limitations in drawing conclusions from the pilot projects are well understood and can be factored into the evaluation process.

Independent evaluation should not only instruct the design of the CDM, but should be an integral part of the institutional structure that oversees its activities in the future. Periodic evaluation would help ensure that resources provided through the CDM are being used efficiently to obtain the maximum social and environmental benefit.

E. The Legal and Institutional Framework

A legal and institutional framework must be in place before project crediting can begin. If this framework is not in place and project credits are accepted, investors and host countries will create a de facto framework through their actions. This could lead to serious imbalances and flaws in the framework, threatening the integrity and legitimacy of the CDM.

Article 12 lays out the beginnings of an institutional framework. The CDM is to be subject to the authority and guidance of the COP/MOP, which must:

- elaborate modalities and procedures with the objective of ensuring transparency, efficiency, and accountability through independent auditing and verification;

- ensure that a share of the proceeds from certified project activities will cover administrative expenses and assist in meeting the costs of adaptation for particularly vulnerable developing country Parties;
- determine what “part” of Annex I Parties’ quantified emissions limitation and reduction commitments may be met with CERs.

An executive board is to supervise the CDM, and emissions reductions resulting from project activities are to be certified by operational entities.

1. The Executive Board

Article 12 of the Protocol calls for establishment of an executive board to supervise the CDM. While it is not expressly stated, the task of establishing the board probably falls to the COP/MOP.

- The structure and composition of the executive board must reflect a careful balance between developed and developing country interests. Several such executive bodies already exist for other institutions. One is the Council of the Global Environment Facility. Another is the Executive Committee of the Montreal Protocol Multilateral Fund. Both of these institutions utilize a two-tiered voting structure that gives developed and developing countries equal say.
- The executive board should coordinate its activities with the GEF Council to ensure that the work of the two institutions is complementary and not competitive or redundant. There is a natural divide between GEF and CDM projects. The GEF could finance cutting edge projects utilizing technology that might be deemed inappropriate for CDM projects. It also could fund infrastructure development and capacity building to support CDM activities. The GEF even has a mandate to assist vulnerable developing country Parties with adaptation.
- As reflected in Article 12, the executive board should provide “guidance” for both public and private projects.

2. Operational Entities

The COP/MOP must also designate operational entities that will certify project activities and emissions reductions. To avoid conflict of interest, operational entities should not be organizations that are themselves helping to finance projects (e.g., the World Bank and regional development banks). If such institutions are designated as operational entities, however, certification should be limited to an interim determination that the project meets all the specified criteria and guidelines and a periodic or final determination that the project and all resulting emission reductions have successfully passed a full independent audit.

3. Criteria for Certification

For CDM project activities to be certified, climate benefits must be real, measurable, and long-term; and the resulting emissions reductions must be additional to any that would occur in the absence of the certified project. As discussed in this report, this means that:

- as far as possible, additionality should be based on objective, clear criteria;
- these criteria should be established by technical advisory panels of experts acting in their own capacity;
- where uncertainty exists, estimates of benefits must be conservative, and CERs must be discounted for that uncertainty;
- emission reductions may be certified only after they have accrued and been verified by an independent audit;
- the temporal dimension of greenhouse gas emissions must be fully accounted for on a ton-year basis.

4. Contributing to Sustainable Development

Project activities also must contribute to the sustainable development of non-Annex I Parties. This means that:

- activities must not harm natural forests, biodiversity, or other environmental assets;
- environmental impact assessments should be conducted to identify both positive and negative environmental impacts;
- where opportunities are identified to enhance biodiversity, though at a higher cost, co-financing arrangements should be made available;
- the CDM should require that project benefits be shared with local communities and long-term forest dwellers;
- the CDM must promote the development of domestic institutional capacities to allow host countries to evaluate proposed CDM projects and monitor their outputs;
- the CDM must promote the development and transfer of technology that provides maximum environmental benefit while complementing the social, economic and technical settings of host countries;
- the CDM should maintain a balance between forest and energy projects to ensure that the CDM promotes sustainable development in both these key sectors.

5. Ensuring Transparency and Public Accountability

Article 12 requires the CDM to be transparent, efficient, and accountable. This requires that:

- independent auditing and verification be required and all complete audits made available to the public;
- the COP/MOP must also develop clear, detailed modalities for independent auditing and verification, so as not to exacerbate existing problems of incomplete data and lack of comparability between reported information;
- All affected constituencies must receive early notice about which areas and resources are being considered for inclusion in CDM activities. These constituencies must have a meaningful opportunity to participate in project design, implementation, and monitoring;

- in particular, long-term occupants directly dependent on forest resources being considered for inclusion in a CDM project must be asked for approval and invited to recommend modifications or alternatives and to share in the benefits of the project;
- projects should not be planned on indigenous lands without their prior consultation and approval. Involuntary resettlement of long-term residents is not an option.

6. Covering Administrative Expenses and Assisting in Adaptation

The CDM will need to raise sufficient funds to cover the cost of administrative expenses and assisting in adaptation. This means that:

- proceeds from auctioning CERs (or similar mechanisms) should be used to assist in arranging funding of certified project activities, as required by Article 12.6, and covering administrative expenses and assist in meeting adaptation costs. The CDM could acquire the necessary funds by retaining a certain share of CERs generated by projects.
- the cost of CERs should be linked to the cost of adaptation to climate change; hence the greater the need for countries to adapt, the higher should be the price of CERs.

7. Determining What Part of Annex I Commitments May Be Met with CERs

The COP/MOP must determine what “part” of Annex I Parties’ quantified emissions limitation and reduction commitments may be met with CERs. The CDM should start small and grow as it learns. Initially, CERs should probably be limited to no more than 1% of a Parties’ assigned amount. If the CDM is successful in achieving climate benefits during a pilot phase, this number could increase. When the 1% cap is reached, the COP should evaluate the CDM to determine whether the cap should be increased.

Some have objected that it would be very difficult to administer a cap on CDM projects. A simple approach would be for the CDM to auction CERs. No country need be limited in the amount that it buys, except to the extent that the total amount of CERs sold could not exceed the cap. Since Annex I countries presumably could purchase CERs from each other, no purpose would be served by limiting the portion of the total that could be purchased by any of them. Auctioning also might allow the CDM to assist in arranging funding of certified project activities, as required by Article 12.6, and would help non-Annex I countries capture some of the difference between the marginal price of reductions in Annex I and non-Annex I countries.

8. Financial Additionality

Financial additionality requirements should be mandated as well. Government funds to the CDM must be additional to GEF, IDA and other existing development assistance. This is very important because donor countries may have more incentive to finance the CDM than other development assistance institutions. For example, Annex I Parties, faced with the choice of financing the GEF and receiving global benefits, or financing the CDM and receiving CERs, will be tempted to put all their money in the CDM.

9. Increasing Non-Annex I Participation in the Protocol

After the pilot phase, the CDM should review the need for conditioning the participation of non-Annex I Parties in the CDM on their agreement to increase their level of participation in the CDM and the rest of the Protocol regime, including developing sectoral or national baselines below business as usual, adopting full inventory and reporting requirements, and perhaps establishing national caps.

10. Consistency with International Norms

Project activities should not undermine other international environmental and human rights norms. This means that:

- the CDM should require that projects be consistent with the requirements of other international environmental agreements and international human rights norms;
- countries should only be allowed to participate in the CDM to the extent they are in substantial compliance with other major environmental agreements and international human rights norms to which they are parties;
- CDM project activities should not be allowed on indigenous lands or territory without their informed consent and participation in the design and implementation of the project.

11. Vintaging of CERs

The location, date and project resulting in certified emission reductions must be identified on each CER. Tracking of CERs through this type of vintaging is essential for maintaining the integrity of the CDM. Identification of the project also allows buyers to choose the projects in which they want to invest, based on type of activity, integrity of project infrastructure and likelihood of project success.

12. Early Start for the CDM

Article 12.10 permits emissions reductions obtained between 2000 and 2008 to be used during the first commitment period *provided* that they have been certified by operational entities. These entities are to be selected by the COP/MOP, however, which means they are unlikely to be operational by 2000, or perhaps even much before the start of the commitment period. Consequently, any projects that begin before that date do so at their own risk. This suggests that:

- the COP, prior to the first meeting of the Parties, should provide guidance regarding what types of projects will be eligible for certification, possibly including retroactive certification.

13. An Interim CDM Pilot Phase

The CDM, and all of its institutional parts, should operate an interim pilot phase for the first several years. Other similar financing mechanisms, including the GEF, the Montreal Protocol Multilateral Fund, and activities implemented jointly under the FCCC, have gone through pilot phases. While they experienced varying degrees of success, all of these

mechanisms were either improved during their pilot phase or, in the case of AIJ, replaced by a different and hopefully better mechanism. An interim phase would give the Parties an opportunity to experiment with and evaluate the mechanism, and make mid-course corrections where needed.

14. Independent Evaluation of AIJ and Pilot Phase of the CDM

The CDM should be informed by experience of the JI pilot phase (AIJ). Much work has already been done on methodological issues, such as additionality, baselines, leakage, project duration, monitoring, and verification. This information should be considered in the design of a set of standard methodologies for CDM projects. This could be accomplished as part of an independent evaluation of existing AIJ projects. In addition, any CDM pilot phase should be subject to an independent review and evaluation.

In conclusion, the CDM should require that all projects internalize all social and environmental costs, over the long-term. Subject to other principles elaborated herein, projects should be selected on their basis of cost-effectiveness in achieving climate benefits, taking into account all social and environmental costs.

Endnotes

¹ *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, December 10, 1997, FCCC/CP/1997/1.7/Add.1 [hereinafter referred to as *Kyoto Protocol*].

² Throughout this report, we will refer to countries as Annex I countries or non-Annex I countries. Annex I countries, which currently include all developed countries and countries in economic transition, have accepted specific obligations under *the United Nations Framework Convention on Climate Change* and the *Kyoto Protocol*. Non-Annex I countries, which generally are the developing countries, have not accepted any quantified emission limitation or reduction commitments under the climate regime.

³ Thoenes Sander, "In Asia's Big Haze, Man Battles Man-Made Disaster" *Christian Science Monitor* (October 28, 1997). See also World Resources Institute, "Resources at Risk" *1998-99 World Resources* and Daniel Nepstad, "Modeling the Susceptibility of Amazonian Forests to Fire," (1997).

⁴ Miko Kirschbaum and Andreas Fischlin, "Climate Change Impacts on Forests" in *Climate Change 1995 - Impacts, Adaptations and Mitigation of Climate Change: Scientific, Technical Analyses* by the Intergovernmental Panel on Climate Change, Working Group II", (1995).

⁵ *United Nations Framework Convention on Climate Change*, 29 May 1992, 31 I.L.M. 894 (1992) [hereinafter *FCCC*].

⁶ *Id.* at Art. 2

⁷ *Id.* at Art. 4.1(d)

⁸ The concept of JI was controversial from its inception. The negotiations in Kyoto, specifically the discussions that produced the CDM, attempted to reconcile the differences of opinion and the varying interests surrounding the JI mechanism

⁹ *Kyoto Protocol*, *supra* note 7, at Art. 12. The Protocol allows JI between Annex I countries only. See *Kyoto Protocol* at Art. 6.

¹⁰ When the funder is a not-for-profit conservation organization, as is sometimes the case, the issue is less clear cut. Funds not invested in JI may be invested in other projects that have the same, or similar, carbon benefits. Once the CDM is in operation, however, it is unlikely that much of its funding will come from non-profits. Furthermore, the decision to invest in projects that generate carbon credits is probably one that should be left for these organizations to make for themselves.

11 Of course, if the final result of both natural and enhanced regeneration is equivalent (mature forest of the same species mix), there will be a point in time when removals of GHGs from enhanced regeneration are less than they would be under natural regeneration.

12 The “system” is the project plus all area where impacts from the project can be anticipated.

13 See Part II.D.3.c for a discussion of the Supreme Court’s ruling that it is the obligation of the government to compensate individuals whose lands are affected by highly restrictive environmental regulations, such as those in national parks and biological preserves.

14 For the PAP the baseline was estimated for 1997 based on existing land use (primary forest, secondary forest or pasture), legal status of protection (national park or biological reserve), life zone (10 in total), current land tenure status (7 categories in total), carbon potential and local deforestation rates.

15 Trexler and Associates, *Forestry as a Climate Change Mitigation Strategy: The Report of a Workshop*, (September 1997).

16 Intergovernmental Panel on Climate Change. *Experts Meeting on Methodologies for Estimation of GHG Emissions/Removals in Harvested Wood Products (GHG Inventories)*, Dakar, Senegal (March 1998). <http://www.usgrcp.gov./html/ipccmtgs.html>.

17 While Costa Rica does not modify its baseline *ex post*, it does adjust the size of its buffer to account for uncertainty related to the accuracy of the baseline.

18 “Reductions in emissions [shall be] additional to any that would occur in the absence of the *certified project activity*. . . .” (emphasis added). “The clean development mechanism shall assist in arranging funding of certified project activities as necessary.” *Kyoto Protocol* at Art. 12.6.

19 “Emission reductions resulting from each project activity shall be certified by operational entities to be designated by the Conference of the Parties serving as the meeting of the Parties to this Protocol” *Kyoto Protocol* at Art. 12.5.

20 “The Conference of the Parties serving as the meeting of the Parties to this Protocol shall, at its first session, elaborate modalities and procedures with the objective of ensuring transparency, efficiency and accountability through independent auditing and verification of project activities.” *Id.* at Art. 12.7.

21 This conundrum was devised by Franz Tattenbach, the director of Oficina Costarricense de Implementacion Conjunta, Costa Rica’s JI office.

22 Paige Brown, Bruce Cabarle and Robert Livernash. *Carbon Counts: Estimating Climate Change Mitigation in Forestry Projects*, (1997).

23 See CIEL, *The Assumption of Responsibility under the Flexibility Mechanisms* (June 1998) for a discussion of buyer/seller responsibility.

24 *Kyoto Protocol* at Art. 12.2

25 *FCCC* at Art. 2.

26 *Id.*

27 *Id.* Art. 4.1(f).

28 In Chile, for example, foresters have been criticized for planting radiata pine over large areas without diversifying to other species, and for removing native forests to make room for plantations. See Castilleja (1993) in Jan Laarman, *Government Policies Affecting Forests in Latin America* (1997).

29 The Biodiversity Convention, for instance, requires Parties to cooperate, as far as possible and as appropriate, regarding matters of mutual interest for biodiversity conservation and sustainable use, through competent international organizations where appropriate. Clearly any activities relating to biodiversity within the CDM would fall into this requirement. The Biodiversity Convention also requires Parties to integrate, as far as possible and appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programs and policies. See *Convention on Biological Diversity*, 5 June 1992. 31 I.L.M.818

(1992) at Art. 5. The decision whether to include forest projects in the CDM, and the design of such projects if they are included, would seem to fall within the scope of these obligations.

³⁰ *Rio Declaration on Environment and Development*, 13 June 1992, UN Doc. A/CONF.151/26 (vol.I) (1992). [hereinafter *Rio Declaration*]. *supra* note 28, at Principle 5.

³¹ *Rio Declaration*, at Principle 10.

³² *FCCC* at Art. 12; *Kyoto Protocol* at Art. 10 (c) and (d). See also *Rio Declaration*, at Principle 10.

³³ See The World Bank, *Resettlement and Development: The Bankwide Review of Projects Involving Involuntary Resettlement 1986-1993*, (1994). See also Michael M. Cernea, "Understanding and Preventing Impoverishment from Displacement" in McDowell, ed., *Understanding Impoverishment: The Consequences of Development Induced Displacement* (1996).

³⁴ As far as we know, the study by CIEL and CEDARENA is the only independent, on-the-ground review of JI projects to date.

³⁵ Decree No. 25066-MINAE, March 21, 1996, published in *La Gaceta* No. 76, April 22, 1996, at Art. 2.

³⁶ Excess allowances granted to non-Annex I countries when they assume caps has been given the whimsical name "tropical air."

³⁷ CIEL proposed one such tradable permit allocation system, whereby countries would initially receive allowances based on their historic emissions levels, but allocations would gradually shift so as to provide each country with equal per capita emission rights. During this period, the global cap would be reduced to a level that was ecologically sustainable. This approach has come to be known as "contraction and convergence." [See Donald Goldberg, "Reducing Greenhouse Gases: A Combined Strategy Using Fees, Permits, and Country Commitments," *Duke Environmental Law and Policy Forum* (1993): Volume III]. Other approaches for equitably distributing emissions rights have been suggested, including allocations based on GDP, on energy consumed per unit of GDP, or even on national land area. Of course, hybrid systems that account for several of these factors could also be devised. It has even be proposed that any "equity" formula be based, not on the presumed right to emit, but on the right to receive clean energy services.

³⁸ A large portion of the project is dry tropical forest, an ecosystem type that has almost entirely disappeared from the Western Hemisphere.