
The Wirth Chair in Environmental and Community Development Policy



UNIVERSITY OF COLORADO AT DENVER & HEALTH SCIENCES CENTER

The Graduate School of Public Affairs

**Post Kyoto Strategies
The CDM, International Cooperation and
Private Sector Participation**

June 1998

The Brazil/US Aspen Global Forum Report

**The Wirth Chair in Environmental and Community Development Policy
The Graduate School of Public Affairs
University of Colorado at Denver & Health Sciences Center
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A Report based on the Proceedings of
The Brazil/US Aspen Global Forum
June 18-20, 1998

Institute for Policy Implementation
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The CDM, International Cooperation,
and Private Sector Participation**

A Report Based on the Proceedings of
The Brazil-U.S. Aspen Global Forum
June 18-20, 1998

Convened by:

Marshall Kaplan, Executive Director
Institute for Policy Implementation
Graduate School of Public Affairs, University of Colorado at Denver

and

John Mein, President
American Chamber of Commerce -- São Paulo

Institute for Policy Implementation
Graduate School of Public Affairs
University of Colorado at Denver

Acknowledgments

We are pleased to send you the summary of the proceedings of the Brazil-U.S. Aspen Global Forum concerning Post Kyoto Strategies for International Cooperation and Private Sector Participation. The Forum took place in São Roque, Brazil from June 18-20, 1998. It was a remarkable meeting.

Over 55 participants, each leaders from government, business and academia, attended the Forum. While a diverse group, they were committed to honest, direct, face to face dialogue. They came to São Roque to discuss complex concepts and ideas which evolved from the Kyoto Protocol. They left São Roque with some important agreements concerning the nature of the proposed Clean Development Mechanism and the need as well as principles to involve the private sector in CDM projects. They also left São Roque with a reaffirmation of the significance of Brazil-U.S. collaboration to respond to climate change issues and problems.

I was privileged to facilitate and, with John Mein, President of the American Chamber Commerce in São Paulo, co chair the meeting. The participants made our roles easy.

Many individuals deserve commendation for the Brazil-U.S. Aspen Global Forum's success. Dr. Robert Repetto, my colleague and Senior Wirth Fellow at the University of Colorado in Denver, provided insight and collaborative help as well as tremendous intellectual leadership in planning and convening the São Roque Meeting. USAID, through the Bureau of Global Programs and its director, Jeff Seabright, provided funds through the World Resources Institute for background papers on the CDM. These papers were thoughtful and provocative.

Appreciation is due Dr. Toddi Steelman of the Graduate School of Public Affairs (GSPA) and the Wirth Chair and Dr. Peggy Cuciti for helping record the meeting. Dr. Peggy Cuciti, Director of Research for the Institute and Centers at GSPA, deserves all our thanks for developing the first draft report. Peggy did an exemplary job in converting the proceedings accurately and in developing the draft document. While Dr. Repetto and I assume final responsibility for the document and for editing the final text, we could not have and would not have done so without the excellent base provided by Dr. Cuciti. Finally, I want to personally note the work done by my assistant Catherine Rafferty. The logistics of Forums, like most complicated meetings with diverse invitees and important agendas, are often difficult. Ms. Rafferty, working in partnership with the able Karla Brandão of the American Chamber of Commerce in São Paulo, managed the Forum in an outstanding manner.

The agreements reached in São Roque generated a request by participants that a second Brazil-U.S. Aspen Global Forum be convened in October to develop specific CDM strategies. We, along with the American Chamber of Commerce in São Paulo, whose leadership has been important to the success of the Forums, will do so on October 9th. Our hope is that the results of this Forum will serve as a building block for agreements at the Conference of Parties meeting in Argentina in November.

We welcome your comments on the report and your participation in a needed sustained international discussion on climate change issues and the Kyoto Protocol.

Marshall Kaplan
Executive Director

Participants: US and Brazil

Luiz Alberto Amoroso	CENBIO
Gil Bamford	Toyota Motor Sales, U.S.A., Inc.
Patricia Barbuscia	American Chamber of Commerce
Garo Batmaniann	WWF - Brazil
Americo Bortolozzo	Fluor Daniel Brasil
Karla Brandão	American Chamber of Commerce-SP
James Cameron	Foundation for International Law and Development
Edson Carneiro	Proven Alternatives Capital - Brazil
Fabio Chazyn	Proven Alternatives Capital-Brazil
Peggy Cuciti	University of Colorado at Denver
Flavio Lucas de Menezes Silva	Menezes e Brandao Advs. Ass.
Roberto de Moura Campos	UNIAO- COPERSUCAR
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Philip Fearnside	National Institute for Research in the Amazon -- INPA
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Wilson Fischer	Grupo Orsa
Milton Fratta	General Motors do Brasil S.A.
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Taiki Hirashima	Arthur Andersen
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Executive Summary

Over 50 Brazilian and U.S. government, NGO, business and academic leaders participated in the Brazil-U.S. Aspen Global Forum convened June 18--20, 1998 in São Roque, Brazil. The sessions were directed at furthering Brazil-U.S. collaboration to reduce greenhouse gas emissions. This brief Executive Summary of the proceedings hopefully will provide the reader with a understanding of the importance of the Forum and the significant consensus agreements that were reached by participants. They bode well for the development of important international and national initiatives to respond to complex global warming problems in a fair, efficient and effective manner. The full report of the proceedings follows the Executive Summary.

Participants in São Roque agreed on the following:

- that the Kyoto protocol was a very important step forward and worthy of strong commitments by the United States and Brazil;
- that the proposed CDM mechanism reflects a significant innovative strategy to secure the goals of the U.N. Framework Convention on Climate Change. It resulted from constructive cooperation between Brazil and the U.S. that should carry forward to future deliberations.
- that the CDM provides flexible avenues for compliance. It stimulates the transfer of technology and financial resources between Annex I and other nations. It lowers the costs of achieving the Kyoto Protocols targets and timetables. It will elicit meaningful participation by non-Annex I nations in greenhouse gas mitigation activities. It provides significant project-based

opportunities for both Brazilian and U.S. companies, particularly in areas related to energy efficiency, renewables, cogeneration and forestry investments.

- that the CDM, joint implementation and emissions trading, all represent strategies to promote flexible and cost effective implementation of the Kyoto protocol. International discussions and negotiations concerning all three initiatives should move ahead simultaneously. The degree to which nations implement one or the other will depend on their respective needs and policies. CDM will help Annex I and non Annex I nations respond to equity as well as efficiency objectives.
- that the Conference of Parties (COP) Executive Board created by the COP to initiate CDM should focus on defining broad policies and operational guidelines. It should also sustain broad oversight. The Executive Board should delegate the project-by-project review to groups (e.g. national, regional, private sector, NGO groups, etc.) with the expertise to do certification and verification. While the Executive Board should be composed of political or governmental leaders, it should have access to diverse experts and expert organizations.
- that governments should establish or designate national CDM entities to determine program objectives, obtain official status for the program, determine project consistency with national policies concerning greenhouse gas emissions and/or national development, define project eligibility requirements and regulations, facilitate involvement of relevant groups (private sector, NGOs, public sector, university, community) and provide general oversight of the CDM process.
- that transaction costs, delays and uncertainty related to the CDM should be kept relatively low to encourage private sector investment. Regulations and procedures (at both the international and national level) should be understood, clear cut, strategic and fully transparent.

- that "certification" means that a project has been determined as qualified to generate emissions reductions credits, probably by virtue of it being within an approved category of projects. Actual credits will be created ex-post through an audit process. Reduction of emissions relative to a pre-determined baseline should be verified by appropriate groups.
- that "credits" represent a tradeable asset. Parties may transact options to buy future credits or trade in related derivatives. Taxes or fees on transactions should be considered as options to fund costs related to the CDM.
- that the basis for international certification should be the potential for reducing green house gas emissions. (A vocal minority argued that social, economic and other environmental impacts should be considered prior to international certification. Most participants, however, felt these factors should be considered at the national level.)
- that it is critical for parties to define how additionality and baselines will be defined (e.g. in terms of technologies and/or categories of projects). Baselines should change over time, given likely advances in technology. But they must be known in advance to permit the development of projects. Any given project's baseline should not change over the life of the project.
- that exemplary projects should be established or fostered as pilots by Brazil and the United States. They would be models for future projects and they would help the COP and all nations respond to issues related to policies, regulations, structure, procedure, baseline and additionality. They should be 'gold-plated' -- that is, they should be able to win consensus relative to ultimate eligibility for CDM certification. Initiation of jump-start projects should be preceded by a resolution in November 1998 at the COP meeting in Argentina. The resolution would endorse the concept of an early start for the CDM.

- that initial projects would entail greater risks than those embarked on later. These projects will internalize externalities, including uncertainty. Credit reductions may not be accepted internationally when the CDM is fully structured and underway in the future. Early projects, however, will provide many public benefits and useful experience. Consideration should be given to provide government and/or MDB support to initial projects. Options discussed and favorably reviewed included: support for pre-investment studies; accelerated reviews; risk buy-downs; guarantees and insurance.
- that remaining policy, regulatory, structural, procedural, and methodological issues are critical to resolve soon. Consensus should be facilitated through an examination of the lessons learned from existing and early projects.

The participants at the Brazil-U.S. São Roque Forum agreed to meet again in Aspen, Colorado in October 1998. They would build upon the consensus reached in São Roque and work toward a strategic paper for the COP's meeting in November in Argentina.

Introduction: Making Kyoto Work¹

Over fifty Brazilian and U.S. government, non profit, business and academic leaders participated in the Brazil-U.S. Aspen Global Forum convened June 18-20, 1998 in São Roque, Brazil to discuss the Kyoto Protocol on Climate Change and Strategies for International Cooperation and Private Sector Participation. The United States and Brazil were leaders at the Kyoto meeting in defining "The Clean Development Mechanism (CDM)," a key feature of the agreement designed to engage the energies of both the Annex I (industrialized nations) and non Annex I countries (industrializing and developing nations) in reducing greenhouse gas emissions.

Though the framework for the Clean Development Mechanism has been sketched out in the Protocol, further elaboration and specification are required if it is to affect investment choices, development patterns and greenhouse gas emissions by the year 2000 and thereafter. Since the Brazil-U.S. Aspen Global Forum has an established successful record in building trust, dialogue and agreements on difficult economic, investment and environmental issues between Brazil and U.S. government and private sector leaders, its sponsors -- the Institute for Policy Implementation at the University of Colorado at Denver and AMCHAM BRASIL -- agreed to convene the

¹The Brazil-US Aspen Global Forum commissioned a number of strategic papers for the Forum in São Roque. They are: "The Clean Development Mechanism: The 'Kyoto Surprise'" by James Cameron and Jacob Werksman; "Forests and Global Warming Mitigation in Brazil: Opportunities in the Brazilian Forest Sector for Responses to Global Warming under the "Clean Development Mechanism" and "Joint Implementation"" by Dr. Philip Fearnside; "A Sectoral Reveiw of Energy in Brazil: Supply and Demand and Opportunities for Reducing Carbon Emissions" by Dr. Gilberto Jannuzzi; and "The Kyoto Agreement and Implementation Issues" by Dr. Joel Swisher. The papers can be requested from the Institute for Policy Implementation at the University of Colorado at Denver.

Forum to see if consensus could be reached on CDM objectives, principles and implementation strategies.

The Kyoto Protocol

Background

Over the last decade or so, scientific evidence has mounted regarding the accumulation of greenhouse gasses in the atmosphere and their negative effects on global climate. The most important of the greenhouse gasses is carbon dioxide but methane, nitrous oxide, certain halocarbons and other gasses are also of concern. Many scientists believe that if current trends regarding population growth, industrialization, fossil fuel use, and deforestation trends go on uninterrupted, greenhouse gasses will continue to accumulate at a rapid rate. The resulting increases in atmospheric concentrations could raise average global temperatures by 1°C-3.5°C by the year 2060. Warming would likely raise sea levels, change agricultural patterns and increase the incidence of fires and other natural disasters. These impacts would reduce the quality of life and impede economic opportunity for many of the world's population.

The international community has mobilized around the issue of climate change. The United Nations Framework Convention on Climate Change was concluded in 1992. Since then there have been several meetings of the Conference of Parties to develop objectives, policies and options to reduce greenhouse gas emissions.

Emissions Reductions and Flexibility Mechanisms

The third Conference of Parties was held in Kyoto in December of 1997. Notably, it produced agreement among Annex I countries on specific targets and timetables for the reduction of net greenhouse gas emissions. Delegates to the Brazil-U.S. Global Forum agreed that the resulting Kyoto Protocol represents a very important step forward in addressing the issue of climate change. "We have moved away from a soft approach to climate change that didn't work . . . to a hard approach. We defined the essential tasks that must be done to solve the issue of climate change.

Based on hard data -- taking into account actual emissions, economics, and impacts on climate change -- we decided on the level of emissions that should be allowed," noted Dr. Luiz Gylvan Meira Filho, a member of Brazil's delegation who helped draft the Kyoto agreement. "What was significant is that we agreed to specific targets and specific timetables."²

Forum participants, generally, agreed that the provision in the protocol setting specific quantified emissions limits on greenhouse gas emissions was of critical importance. Continuing to work from the notion of "common but differentiated burdens", all countries committed to take action to reduce greenhouse gas emissions. Only the industrialized (Annex I) countries, however, agreed to quantified emissions limits and reduction commitments (QELROs). The first accounting period specified by the protocol includes the years 2008-2012. The Annex I countries committed to reduce emissions by a combined five percent below 1990 levels. In the aggregate this means a reduction of approximately 30% from what emissions would be in 2008-2012, if no actions were taken.

"The Kyoto Protocol called for minimizing the cost of attaining emissions targets through use of several "flexibility" mechanisms," indicated Jefferson Seabright of USAID. Forum participants, generally, agreed that *all* the flexibility mechanisms were critical to the long run attainment of emission reduction goals.

Several of the flexibility mechanisms are applicable in the Annex I countries, which have adopted binding national emission limits. For example, Annex I countries can trade allowable emissions; they can create bubbles to share allowable emissions; and

²Article 3 contains 14 paragraphs on QELROs and refers to Annexes A and B. Annex A lists six greenhouse gases (CO₂, CH₄, N₂O, HFCs, PFCs and SF₆) to which reduction or limitation targets should apply and includes GHG source categories and sectors such as fuel combustion, industrial processes, solvent and other product use, agriculture and waste. Annex B lists quantified emission limitation or reduction commitments for Annex I Parties. See Earth Negotiations Bulletin, Vol. 12, No. 76, p. 8, December 13, 1997.

they can engage in "joint implementation" projects.³ The final flexibility mechanism, which was the primary focus of the Forum discussion, is the 'clean development mechanism' also referred to as the CDM. This mechanism allows projects in the developing world to amass credits which can "count" towards the achievement of Annex I QELROs. It also allows non Annex I nations to use credits to respond to their climate change objectives.

"We simply wouldn't have been able to reach agreement on legally binding targets without the flexibility provisions," noted Annie Petsonk of the Environmental Defense Fund. The flexibility mechanisms "will help mobilize the market place to meet environmental goals." They increase the likelihood of technological innovation and ensure that environmental and climate change goals can be met at least cost. They also address the diverse efficiency, equity and economic concerns of many nations.

The Importance of Flexibility And The Clean Development Mechanism

Under the CDM, Annex I country investors can participate in projects in the developing world. They may count the greenhouse gas emission reductions that are attained by these projects toward their emissions limitation commitment. The CDM, in effect, extends the project specific joint implementation concept to encompass non-Annex I countries. Furthermore, under CDM "certified emissions reductions" could be accrued as early as the year 2000. These credits could be amassed and used to meet targets in the 2008-2012 accounting period.

Sometimes labeled "the Kyoto surprise", the "CDM grew out of a convergence of interests", noted Seabright. The Annex I countries wanted as much flexibility as

³Article 6 provides for the transfer of "emission reduction units resulting from projects" that reduce net GHG emissions in Annex I countries. This project-based regime would essentially entail JI within Annex I. . . . Article 17 provides for emission trading between the countries that have assumed QELROs under Annex B, i.e., the Annex I countries. This trading appears to entail sharing of QELROs between Annex I countries. . . ." See Swisher, "The Kyoto Agreement and Implementation Issues" Paper prepared for the Aspen Global Forum, p. 5

possible in meeting targets so as to minimize economic burdens. They also wanted the developing world to assume more responsibility for reducing greenhouse gas emissions. Developing countries were interested in technology transfer and foreign investment as well as in sustainable development.⁴

The CDM is "perceived as a bridge between the OECD/Annex I countries who were and are largely responsible for the creation of the climate change problem and the large populous developing countries who, along with the Annex I countries, will be essential for its solution over the next 50-100 years," noted James Cameron from the Foundation for International Environmental Law and Development and a participant at Kyoto.

The CDM is a tool for bringing together private and public actors, continued Cameron. "It will create opportunities for a number of businesses to invest and, assumedly, make legitimate profits. It should create allies within the private sector for climate change mitigation. It can reduce the role of government. The dynamics of the debate will change when businesses see real opportunities as well as costs associated with the policies needed to rectify the GHG emissions problem."

In short, the CDM will allow us to involve a necessary range of actors -- the private sector as well as NGOs and governments -- to really achieve objectives regarding climate change," concluded Cameron.

CDM will allow us to reconcile efficiency and equity criteria, argued Joel Swisher, Director of Econergy International Corporation. Equity requires the industrialized nations who have been responsible for the great bulk of emissions to date to shoulder a large share of the burden of carbon reduction. Efficiency, on the other hand, requires that we take advantage of the least expensive emission reduction opportunities, many of which now exist within the developing world. The CDM permits "transferring resources, when necessary, from countries with unfulfilled

⁴ See James Cameron and Jacob Werksman, "The Clean Development Mechanism: The 'Kyoto Surprise'" (Paper prepared for the Aspen Global Forum) for a complete history of how Article 12 emerged.

...expensive opportunities for emissions reductions," Swisher concluded. It will allow both Annex 1 and non Annex 1 nations to grow while meeting emission reduction objectives.

It is precisely because "the potential for economic dislocation and cost differentials exist from one country to another that flexibility mechanisms like the CDM are important," noted economist Robert Repetto of the University of Colorado at Denver's Wirth Chair and the World Resources Institute. Countries that now use energy inefficiently pose easier alternatives for achieving savings through technology and energy substitution. Likewise, some countries have greater capacity to expand sinks, which sequester carbon and prevent it from going into the atmosphere. Both options likely will be available through the CDM and the other flexible mechanisms defined in the Kyoto protocol. They will make it possible for many industrialized nations to respond to emission targets and many industrializing nations to meet emission reduction objectives.

There are real benefits for the environment and sustainability as well. Many of the developing countries are on a rapid growth path. They are making key infrastructure investments. It is important that their choices reflect energy efficiency concerns. "They will have long lasting environmental effects -- for good or ill. The CDM can influence economic growth along paths that are less GHG emissions intensive," noted Petsonk.

Business representatives at the Forum in São Roque indicated that both joint implementation and CDM are useful tools for achieving international environmental goals and that both offer interesting business opportunities. "They are a way of getting business, government and NGOs in alignment," noted Stanley Szymanski of Occidental Chemical Corporation. "The CDM will help broaden demand for clean energy technologies," agreed John Palmisano, Director of Enron International. When demand increases, there will be further technological developments and costs will go down. That will help us meet our goals." Through the CDM, progress with respect to climate change initiatives will be made in a manner that brings rewards to citizens,

firms, consumers and governments.

Forum participants agreed that international discussions concerning the flexibility mechanisms should move ahead simultaneously and relatively quickly. All are critical to meeting the targets and timetables agreed to at Kyoto. The need is particularly important with respect to the CDM, because the Kyoto protocol specifies that credits for certified emissions reductions could begin accruing as early as the year 2000. Participants would have the opportunity to "bank" the credits until needed to meet targets in a future certification period. For projects to get underway, there needs to be some further elaboration of the key terms and provisions of Article 12 that generally define the CDM mechanism. Hopefully, this elaboration concerning the CDM will evolve out of the fourth meeting of the Conference of Parties scheduled in November 1998 in Buenos Aires.

Participants in São Roque agreed that the complicated issues regarding the design of the CDM could be resolved if leaders from government, business and NGOs, as illustrated by participants in the Brazil-U.S. Aspen Global Forum, worked on them intensively using both a "top down" and "bottom up" approach.

- **Top Down:** The "top down" approach would initiate and sustain a dialogue based on principles and strategies developed in the Aspen Forums and other international meetings concerning: the policies and structure of the CDM; the linkages between international and national bodies involved in managing the CDM; the definition of general rules concerning project approval and certification; policies, mechanisms and regulations regarding trading of certified emission reduction credits; alternative concepts to define baselines and additionality; possible strategies to finance the CDM; and measures to ensure performance and reliability. Agreements, as they develop, would be incorporated in international agreements and national policies.
- **Bottom Up:** Simultaneously, the "bottom-up" approach would set in motion immediately a process involving the COP, MDBs, governments, NGOs, and relevant private firms (the kinds of participants in São Roque) to begin to

between Annex 1 and non Annex 1 nations. Early projects would provide a basis for resolving theoretical, policy and operational issues associated with CDMs. The experiences with "live" early projects would help inform decision makers as to practical policy options to make the CDM workable. This "bottom up" process would, itself, draw on insights already gleaned from pilot joint implementation and AIJ programs and projects.

Making Progress from the Top-Down: Clarifying the Issues

For the CDM to provide a workable mechanism, clear guidelines and institutional mechanisms must be created as early as possible. For this to occur, a number of issues need clarification including:

- definition of additionality and baselines
- types of projects
- structure and process.

Additionality and Baselines

Article 12 of the Kyoto Protocol makes clear that projects may be certified under the Clean Development Mechanism only if they offer "real, measurable, and long term benefits related to the mitigation of climate change;" and that the "reduction in emissions . . . are additional to any that would occur in the absence of the certified project activity."

Participants in São Roque agreed that the CDM guidelines or rules must ensure that projects in fact contribute to the objective of reducing greenhouse gas emissions below what they would otherwise be without proposed projects. Defining "additionality" and establishing a baseline for calculating how many "certified emission reduction" credits to grant a project must be a top priority.

In the absence of baselines established through quantified emissions limitations, defining additionality is inherently difficult because it involves a hypothetical counterfactual. For this reason, participants felt that if a full scale international emissions trading system is to be established, all countries ultimately must have emissions limitations. However, under the CDM, baselines could be established by categorizing types of projects or technologies on a country specific basis (e.g., renewable energy or photovoltaic power) to be presumptively additional. Projects in other categories, likely, would have to be adjudged additional on a case by case basis.

Need for Certification Procedures

Participants recognized that the interests of potential buyers and sellers of emission reduction credits may converge in exaggerating the baseline. This fact necessitates some form of impartial international oversight. Meira Filho noted the dilemma involved when both parties to a transaction have incentives to establish loose criteria and low baselines. "Annex I countries want the largest number of emission credits because it will make it easier for them to comply with emissions reductions requirements. The developing countries want investment financing. They want to attract investors and companies to invest in CDM projects." Non Annex I nations might be able to "jump start or refocus energy-based industries and land use projects to meet both economic, efficiency, environmental and technological objectives without committing the same mistakes as Annex I nations. Technological dispersion and transfer is important and the CDM gives us a way to pay for it," said John Mein.

As a result of the coincidence of objectives, neither Annex I nor non Annex I parties to the transaction may have a strong incentive to support tough criteria concerning the counting of reductions. Clear criteria and independent transparent reviews will be required to ensure that reduction gains are realized from CDM projects.

Categorization and Business As Usual

Participants agreed that it will be difficult to come up quickly with a comprehensive precise set of rules governing additionality, given the array of possible projects and

methodological complications. Most participants, nonetheless, felt that policy makers could agree on some categories of projects that offered visible additionality potential and that they could subsequently develop rules for these projects. We know the state of technology in energy and other key sectors. "We can project technological trajectories, thereby establishing reference points," suggested Seabright. In this context, participants pointed to past experience which could guide the criteria development effort. "There is valuable experience in AJJ and JJ process," noted Swisher. "We can also look to experience within the United States under the Private Power Act," argued Raymond Holton of Proven Alternatives.

A number of participants indicated that additionality could be defined in terms of actual emission reduction tonnage and rate based measurements (e.g., emissions per unit of revenue or product, etc.) or both. Each has its advantages and problems.

Definitions of additionality and baseline emission are closely related. Baselines, likely, will have to be established based on the level of greenhouse gas emissions likely under a "business as usual" scenario. The emissions from any given project would then be contrasted with the "business as usual" baseline or related reference projects.⁵ Assuming the project resulted in lower emissions than that expected based on the agreed upon baseline and or reference projects, it would qualify for certified emissions reductions.

"Baselines will likely be established on a subsector or sector basis," indicated Meira Filho. It will probably have to be region specific. It will take account the likely mix of technology and products in a specific area and in specific firms.

Changing Baselines

"Baselines should change over time," noted Paul Schwengels of the U.S. Environmental Protection Administration. "What we define as 'business-as-usual'

⁵"Business as usual" scenarios are conditioned in part on the economy, specific market developments and government policies. For example, fossil energy prices could change because of government policies, the overall health of the economy and or specific markets or all three.

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⁵"Business as usual" scenarios are conditioned in part on the economy, specific market developments and government policies. For example, fossil energy prices could change because of government policies, the overall health of the economy and or specific markets or all three.

technology will have to be revisited over time. In the future, we will be looking at even better technology, and the potential for even better savings," he added. Meira Filho agreed on the importance of a dynamic baseline. "As new technologies are accepted in the market place, you may need to increase or vary the baseline. We need an incentive to keep forcing innovation." While participants generally accepted the idea of dynamic or changing baselines, they wanted assurance that the baseline used for any given project would be fixed for a known period of time. Participants agreed that project certainty is critical for the investor and/or project sponsor. Some assurance in this regard must be necessary element of CDM policy and regulations.

Baselines and Capacity Growth

Establishing baselines is easiest for projects that replace existing energy capacity with more efficient capacity. In situations where capacity is increasing (as it is in most developing countries), establishing baselines will be somewhat more difficult. For example, in the electricity production sector, would baselines for new generating facilities reflect the average fuel mix for all electricity production or the fuel mix (and hence carbon emissions) from the last or newest electricity or power plant? Should the baseline be established considering the generating capacity expansion options that are currently included in plans for the future?

This is a major consideration in Brazil. Brazil is strongly dependent on hydropower. If one considers the average carbon content of Brazilian electricity, at present, the potential for carbon offsets in the power sector appears limited. Planned expansions in generating capacity, however, rely more extensively on thermal plants. If the baseline for electricity end-use projects were calculated on a baseline considering carbon emissions at the margin, the prospects for carbon reduction projects would be much better in Brazil.⁶

Technological Innovation

"If we want to encourage new technologies, proven technologies shouldn't qualify for CDMs" suggested Garo Batmanian of WWF-Brasil. "What we really want are

⁶Swisher, "The Kyoto Agreement and Implementation Issues" p. 26

the projects which make use of newer technologies. We need to share the risk and approve projects that reflect the latest innovations and promise potential additional impacts." Others disagreed on the grounds that a technology that has been proven to be sound in engineering terms may not be established economically or in the market place.

"CDM is about buying carbon offsets. It isn't about new technologies per se," argued Augusto Júca of U.S. AID. "Many technologies exist which have proven benefits with respect to energy efficiency (and which may be cost effective) but they have not yet been widely accepted or adopted," agreed Prof. Gilberto Jannuzzi of the Lawrence Berkeley National Lab. "They are prime candidates for the CDM." Cameron elaborated, "It's fine if CDMs primarily speed up technological change -- taking known technology and getting it into the marketplace. Our real aim is to secure emission reductions."

Financial Additionality

"Is economic feasibility under current market conditions a consideration in proving additionality," asked Roberto de Moura Campos of UNIAO-COPERSUCAR. Some Forum participants assumed that if a project could move forward on its own merits in the market place, it should and would not qualify as a CDM project. It, according to them, would fall within the "business as usual" scenario. "If you are proceeding with something you would have done anyway, you probably should and will fail the additionality test. There are renewable energy projects we are already moving on in Enron. If they are good and feasible projects without CDM, then they probably shouldn't be CDM," suggested Palmisano.

Others disagree with this view of additionality. Cameron asserted that, "Additionality has to be understood in terms of the energy economy of the country. There are a lot of projects that people or firms might want to do and, indeed, would do over time that fit the additionality criteria. For example, Cameron noted, "we should encourage projects that companies might do earlier if CDM credits were allowed. We should expand not limit incentives to move forward on emission

reduction." A possible but uncertain commitment to finance or move ahead, apart from CDM, should not be a key factor in determining potentially successful or supportable CDM projects." "All that should be needed for project approvals should be the promise of reduced carbon emissions," agreed Meira Filho. Peterson added, "developing restrictive financial additionality criteria would be environmentally counterproductive -- the goal is to put in place as much cost effective emissions reduction activities as possible so as to reduce the overall cost of meeting environmental goals."⁷

Boundaries and Leakage

Some participants questioned where to draw the boundaries in analyzing the emissions effects of a project. A new plant might reduce emissions per unit of output but the greater efficiency of the plant might lower prices causing an increase in demand and higher output. As a result, there could well be higher carbon emissions. In this case, does the project yield savings? This problem is acute in carbon sequestration projects because protecting one forested area might only displace deforestation pressures in another area with little or no gain.⁸ Where do you draw the boundaries? How many ripples out do you count in terms of the widening span of economic and related emission reduction impacts?

Role of Government Policies

Participants discussed the role of government policy in establishing baselines and additionality. For example, Brazil has had a policy since 1975 to subsidize alcohol use as an automotive fuel; thereby reducing automotive CO₂ emissions. When oil prices are low, however, substantial subsidies are required to make ethanol competitive with gasoline. Opposition has mounted to the program and called it into

⁷According to a few participants, this issue highlights a major issue. CDM expansion of the emissions budget in Annex I countries, through projects that don't truly represent additional emissions reductions in host non Annex I countries or that represent projects that would likely have occurred anyway, may not result in true emission reductions.

⁸Fearnside suggested that this was a reason to formulate broad national CDM projects in forestry.

question. In establishing the baseline requirements for Brazil, should it be held to a higher standard than others because it historically had environmentally progressive policies with respect to fuel substitutes? "Is it fair to put in place a higher baseline when the political consensus underlying the policy is fragile?" asked Campos. "Brazil can claim credibly that, lacking specific international support in the form of carbon offsets, the "business as usual" baseline would not be the status quo, but rather the politics of the nation would require a phase-out of ProAlcohol," noted Swisher. In this case, actions to maintain the program, or reaffirm the program, could and probably should qualify as producing certified emissions reductions. This would, in effect, shift the burden of the alcohol subsidy program to Annex I countries.

"We, however, should be careful in structuring the CDM to avoid the problem of adverse selection," maintained Robert Repetto. The Brazil example concerning alcohol is a good one. It could fit situations in other countries. Nations should not be encouraged to get rid of environmentally good policies and programs in order to qualify for CDM status.

"The CDM shouldn't encourage countries to continue perverse policies that subsidize or encourage inefficient energy use. For example, India basically gives electricity away to farmers, making off-grid renewable energy projects in rural India unmarketable. If such projects qualified for CDM status, India's electricity boards would have less incentive to reform pricing policies," argued Repetto. Perhaps the baseline should be set assuming policies that are environmentally reasonable. "Or the COP might consider reasonable provisos that would not penalize nations that have been sensitive to the need to reduce emissions in the past and that clearly are acting in good faith in instituting new or amended emission reduction policies," indicated Júca.

Forum participants agreed that further work is required to resolve the range of issues associated with the setting of emissions baselines to determine emission reductions credits and additionality. While some projects may pose difficult policy and

methodological issues, many projects exist where there would be little difficulty establishing a viable baseline and therefore measures of additionality. Forum participants agreed to work further on baseline and additionality questions at the Brazil-U.S. Aspen Global Forum in October.

Types of Projects

Participants agreed on the need for a diverse portfolio of CDM projects. There are two broad categories of potential projects. The first entail energy efficiency, fuel substitution or renewables. The second set involve sinks, which can sequester carbon preventing its absorption in the atmosphere. Both approaches are important underpinnings of efforts to deal with global climate change and emission reductions.

Energy Use and Carbon Emission Reduction

Broadly speaking, carbon emissions can be reduced by shifting energy production away from fossil fuels or by increasing the efficiency with which energy is used in a nation. "The energy, industry and transportation sectors account for most carbon emissions in Brazil," observed Jannuzzi.

Within the industrial sector, options include improved management and use of energy; retrofitting and use of high efficiency power generators, increased use of natural gas and use of solar energy as well as other renewables. "Biomass is already an important source of energy in Brazil," Januzzi noted, "but more could be used, substituting for fossil fuels." Co-generation is another option that could reduce carbon emissions. "Projects can increase the efficiency of manufacturing processes," noted Batmanian. "Others might focus on more efficient development and end-use in products."

Potential carbon reductions with respect to electricity can come from fuel substitutions, electricity conservation programs (including energy efficient lighting), and co-generation. Use of renewables such as wind and solar also have potential, noted Palmisano. Renewables are an especially important option for small communities isolated from the electricity grid.

Brazil already produces a significant share of its electricity from hydropower -- a form of power production desirable from a carbon emissions point of view. Thermal power production is significant, however, in some Amazonian and southern states. "It is also likely to account for a greater proportion of generating capacity that will come on line in the future. Many of the better options for hydropower have already been developed in Brazil," noted Swisher.

A number of additional hydropower projects are included in current plans. They have not been initiated due to financial problems and broader social and environmental concerns. Whether these projects could or should qualify under CDM was discussed in depth, given the proven nature of the technology and their presence in current plans. Again, the issue was related to whether existing technologies and or plans should be supported through the CDM. The dialogue, juxtaposed CDM policies that would encourage projects that produce significant emission reductions in a early and timely manner with policies that would not support projects that use known technology and/or projects that likely would be developed over time without CDM. It illustrated to participants the problems discussed earlier concerning defining baselines and additionality.

Another difficult but more specific example was discussed by participants. "Toyota has developed a hybrid car. It can run on either an internal combustion engine or it can be operated by an electric/battery. Toyota also is developing a plant in Brazil. The CDM incentives could cause us to adapt this plant to produce a hybrid car. It is not in our plans now," commented Gil Bamford of Toyoto. Would it qualify for CDM? Maybe. Perhaps, likely, indicated most participants. "But they also noted that there is need to do more work on this subject in the coming months and at the next Forum in October. Perhaps, the issue is not new technologies, but whether the project, likely, would really be built in a reasonable time frame and whether the CDM could help convert possibilities inherent in the investment into strategic probabilities.

"Many technologies exist for using energy more efficiently and for reducing carbon emissions," concluded Jannuzzi. "Some will become economically more attractive

as a result of the CDM. But it is important to remember that while there are technologies that may already be cost-effective, others exist that have not been proven to be financially attractive. Transfer and dissemination of even economically supportable technologies is still limited. We need to identify and address barriers including: an immature and limited energy efficiency delivery infrastructure; a lack of knowledge among users of better practices and technology; a lack of capital for projects; high interest rates; and a lack of financial incentives to energy companies to implement energy conservation programs. The CDM could be a factor in responding and reducing these barriers."

Sinks and Carbon Sequestration

Article 2 of the protocol commits each Annex I party to the "protection and enhancement of sinks and reservoirs . . . promotion of sustainable forest management practices, afforestation and reforestation."⁹ Forum participants, generally, agreed that it was important to sequester carbon through sinks. There was less agreement on how to write the rules governing projects involving sinks and how to do the accounting.

Various kinds of land use projects have been considered as having potential for carbon emissions reductions including silvicultural plantations for pulp, charcoal and sawlogs, sustainable timber management and reduction of deforestation. Philip Fearnside of the National Institute for Research in the Amazon argued strongly that the biggest issue that must be resolved is "whether reduction of deforestation will be counted as a carbon benefit and qualify as a CDM activity." He indicated, "There is much more to be gained from addressing the problem of deforestation than from other options such as silvicultural plantations. Reduction of deforestation offers per-hectare carbon benefits approximately four times that of silvicultural plantation establishment for pulp and sawlogs over a 100 year accounting period," he noted. "Deforestation has serious negative impacts both because you lose the sink and because carbon is emitted when stumps and branches decay (after logging) or when

⁹United Nations, Framework convention on Climate Change, Kyoto Protocol, FCC/CP/1997/Add.1, December 10, 1997

trees are burned and when carbon is released from exposed soils."

"There are many benefits to be gained from reducing the rate at which tropical forests in Brazil are being lost," maintained Fearnside. Carbon benefits are just one. "Countries with tropical forests have a responsibility and interest in controlling deforestation which is independent of global warming. Yet deforestation continues at rapid rates. If a way can be found to give credits under CDM for carbon stocks in standing forests, it would be a way of gaining resources for doing something about deforestation."

"The Brazilian government feels it has an obligation to better manage Amazonian forest. It welcomes international cooperation," maintained Meira Filho. "But we don't believe we should claim carbon credits."

The potential carbon credits available from reduction in the rate of deforestation would be very large. They could make credits so cheap that they would "kill" the Kyoto protocol and forestall other necessary actions and projects in both the industrialized and developing world.

Repetto noted that from a climate point of view, "tropical forests offer no greater benefits than other types of forest." Many countries have lots of trees, all of which sequester carbon. Deforestation rates vary widely, even among temperate countries, so the problem of defining "business as usual" scenarios would be acute if CDM credits could be secured for maintaining existing stocks.

There are serious questions concerning how to deal with sinks from both an accounting and policy perspective. These include: definition of the units of carbon (e.g., permanent sequestration versus carbon ton-years, the means of crediting forest reserve establishment, adoption of discounting or other time-preference weighting for carbon); the definition of the accounting method (avoided emissions versus stock maintenance) and mechanisms to allow overall program contributions to be counted rather than only free-standing projects.

"Carbon accounting is definitely more complex in land use projects than in energy

efficiency projects," Swisher observed.¹⁰ While sinks are important, Rafe Pomerance of the U.S. Dept. of State Department agreed, "there is a question of how you deal with them on a project by project basis. This is an important topic that requires further discussion."

Structure and Process

Actual implementation of the CDM will require the creation of both international and national entities. In addition, private entities, regional groups and NGOs might play a role in monitoring, certification and auditing/verification.

International Structures

"The need for policy development, coordination and monitoring at the international level is clear," argued Meira Filho. "As indicated earlier in our discussion, the public and private parties who are directly involved in doing a project have too many incentives to overstate the carbon reduction benefits associated with proposed programs and projects." The Protocol made clear in paragraph 3 of article 12 that "the clean development mechanism shall be subject to the authority and guidance of the Conference of Parties serving as the meeting of the Parties to this Protocol and be supervised by an executive board of the clean development mechanism." Furthermore, Paragraph 7 indicates, "The Conference of Parties serving as the meeting of the Parties of 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."

There was discussion regarding the composition of the executive board. According to Meira Filho, "the Executive Board will be a political body appointed by the Conference of the Parties." Professor Michael Molitor of the University of California saw a need for professional expertise including scientists, energy production experts, economists, financial analysts, etc. While some participants maintained these experts

¹⁰See table comparing parameters for calculation of net carbon storage by different classifications of projects on page 13 of Swisher, "The Kyoto Agreement and Implementation Issues."

should be on the Board, others saw them in an advisory capacity rather than in a decision making role. Professional expertise could be made available to the Board from other international agencies, national agencies, NGOs or on a consulting basis from the private sector. "However, the Board is constituted, anyone in a decision making capacity must disclose any financial conflicts of interest that could affect their judgements," noted Petsonk. More generally, transparency in Board operations was thought to be crucial in making the CDM credible.

Responsibility for Certification and Verification

"Ultimate responsibility for both certification and auditing rests with the Executive Board," said Meria Filho " It may and likely will choose to put in place guidelines and delegate day-to-day responsibility to some other entities. But it is the Board's choice." Private entities, regional organizations, non profit organizations, even governments, might be called upon to do monitoring, certification and verification under Board guidance.

"I would hope that the Board will identify categories of projects that qualify for the CDM," continued Meira Filho. "Identifying categories of projects that presumptively qualify can be important for reducing transaction costs," noted Repetto. Case by case review and justification would be inefficient, complicated and costly. "The higher the transaction costs, the fewer the projects that will be undertaken and the less the benefit," noted Pomerance.

While acknowledging the need to keep transaction costs low, Petsonk observed that, "it is desirable not to restrict eligibility for CDM to a predetermined set of categories based on known technologies." The point of the CDM, she argued, "is to encourage technological innovation." Governments are notoriously bad at picking technologies. "It is a task better left to the market," she maintained. "We must allow room for project promoters to make a case for projects that fall outside of predetermined categories."

Participants agreed on the importance of an international agency. It would define criteria and monitor performance. While it would have ultimate responsibility, it

would not be involved directly in certifying projects and verifying credits. All participants urged that a simplified process involving delegation and decentralization should be put in place to keep transaction costs down.

Role of Nations, NGOs and Private Parties in Project Identification and Selection

Multiple models were envisaged for the identification and selection of projects. James Cameron suggested that, "CDM projects should be proposed by private sector parties." But he indicated that they should "be put before the international body jointly by the governments of the Annex I and host countries after bilateral negotiations produced a "slate" of projects." He envisioned the governments assessing projects and standing behind the projected level of carbon emissions reductions projected for a project. They would have assessed both the business plan and the technology involved before recommending the project for international certification. They would make a "written case much as is currently done with development banks." In Cameron's view, there is a marketable product as soon as the certification is granted. "Governments would stand behind the delivery of the credit."¹¹

Several Forum participants expressed concerns with Cameron's proposal regarding the certification process. "This approach assumes a much heavier role for the Annex I governments than is necessary. Annex I governments don't need to be involved in negotiations and they don't have a role to play in bring projects to the international board," Schwengels argued. "The process needs to be much simpler, otherwise it will stifle activity," continued Repetto.

Another model discussed by participants was suggested by the World Bank's proposed Carbon Fund. Private and public investors would subscribe to a fund used to finance projects that would yield certified emission reductions (CERs). These

¹¹See Jacob Werksman and James Cameron, "The Clean Development Mechanism: The 'Kyoto Surprise.'" p. 20 for a complete discussion of how the CDM process might work.

projects, like others funded by the World Bank group, would be subject to government review and approval processes. A dual role for the World Bank group as both financier and certifier might be inappropriate, given potential conflicts of interest.

Several of the participants envisioned that private or public sector project sponsors would put proposals before national agencies, NGO groups or even private certifying bodies that were approved by the international entity. Indeed, some projects may be put forward by entrepreneurs within developing countries. There may be no involvement by an Annex I country or company at the outset. Their involvement may occur much later in the process after carbon emission reduction credits have been earned and certified, placed on the market and sold to an Annex I entity needing the credit to meet emissions targets in the accounting period.

"Bilateral negotiations are not a requirement in the process," observed Meira Filho. "But projects would have to secure some kind of approval from the host country." Participants after a vigorous dialogue, agreed that potential host countries need to put in place CDM entities, policies and programs with clear processes and project selection criteria. "We couldn't do JI projects in Brazil and in a number of other nations now," Swisher observed, "since there is no entity to give host country approval."

Based on the evolving JI/CDM program in Costa Rica and discussions with key leaders involved in thinking through CDMs, Swisher noted that the following steps have been identified as important in creating a national program. "Countries need to define their objectives, obtain official status for the program preferably through legislative action, establish a "place" or responsible entity to review and facilitate proposals, monitor and evaluate results, review the program's legal framework in terms of foreign participation in investment in energy and natural resource projects; align program strategy with national development priorities. Countries will need to establish application guidelines; criteria for evaluating projects, procedures for reviewing and approving projects, and some system of monitoring project

implementation and verifying results."¹² Participants in São Roque agreed with the checklist.

Procedures associated with national approval might vary by nation. Some countries may choose a limited number of categories of projects within the range allowed by the CDM international entity. Others may give the private sector more of a blank check. Júca noted, "Some may try to focus activity and align it with national development goals." In this regard, countries may choose to fully integrate CDMs into their development planning. For example, development banks could choose to promote development of a sector or an area by agreeing to purchase certified emission reductions (CERs) up front, noted Miera Filho.

Countries may also want to determine or influence credit distribution and the kinds of precise benefits related to credits (e.g., tradeable securities, tax incentives, relation to offsets and firm reductions, etc.).

How the review process will be structured and the kind of entity created will be matters of national choice. "Businesses will be more interested in doing projects in host countries where the review process meshes most closely with their own internal business decision making process and where the institutions, regulations and procedures are predictable, clear and transparent," observed Palmisano.

Participants agreed that national entities are required within the Annex I countries to provide a policy and regulatory framework as well as to sustain monitoring, project approval and accounting systems. National organizations may also want to encourage or facilitate projects; that is, play an activist role in stimulating CDM activity.

Rules Governing the Process

There was considerable discussion regarding the kind of rules that should govern the

¹² Joel Swisher, "The Kyoto Agreement and Implementation Issues," Paper prepared for the Aspen Global Forum, p. 24. This discussion draws on the Center for Sustainable Development in the Americas, *Implementing JI/AI: A Guide for Establishing Joint Implementation Programs* (Washington D.C.: October 1996).

CDM process. Several participants noted that in setting the rules, one can err in either of two directions. "Rules can be too easy. If they are, we run the risk of doing projects that don't meet any meaningful definition of additionality. Alternatively, we can put in place strict rules and run the risk of reducing activity to a minimum," noted Lisa McNeilly of the Pew Center on Global Climate Change. "I'd rather start simple and add to the rules as we learn where leakage and other problems come into play."

"Easy rules never get tougher over time. More often they get watered down," countered Palmisano. "It would be better to have complete rules that at the outset are limited to easy-to-agree upon projects. It's important that the first projects have full integrity." Meira Filho agreed, "It is important that the initial projects are excellent. They could help define and set standards for additionality. Excellent early projects are critical to establishing the credibility of the system."

"Rules should be hard in terms of the standards that are employed to define certain criteria -- say with respect to measurability and additionality. What we must avoid are overly complicated or multi-faceted rules. Criteria should be tough but limited to essentials," said Swisher.

Some participants objected strongly to restricting the scope of the rules to carbon reductions, carbon offsets and additionality. Obviously, these concerns are important. But they noted sustainable development is also mentioned in Article 12. "No projects should receive international support or be certified if it has adverse impacts on the environment or on social development," argued Fernside. The issues go beyond the host countries. "The projects will be made possible, to a large degree, by the money of Annex I countries. They need to take responsibility for the environmental and social impact of their projects." There are precedents in the international community for broad reviews.

Most participants, however, supported the view that the CDM is about climate change and emission reductions. "It is not wise for the Executive Board or the international entity to decide whether a project relates to the goal of sustainable development," concluded Meira Filho. "This should be a national consideration. It

is a matter of national sovereignty."

Even if an international entity doesn't take the broader range of issues into consideration at the time of certification, "it would be possible for watchdog agencies and groups as well as national governments to examine proposed projects," observed Cameron. "We need the bright lights of public scrutiny on projects. We need to count on watchdog agencies or groups to blow the whistle on irresponsible projects." Petsonk added, "The Environmental Defense Fund had wanted a provision that projects could be challenged at the international level based on a range of environmental, economic and social impacts but such a provision was not adopted in Kyoto." Given this fact, "what is important is full transparency," she maintained. Openness relative to the development of criteria and the review as well as approval processes will enhance the watchdog functions performed by NGOs.

Marketable Credits

There was some discussion as to whether marketable credits would accrue at the time of project certification or at the time of verification. Forum participants were adamant that emission reduction credits should not be earned at the time of certification. "Accruing credits a priori doesn't fly," Schwengels suggested. Credits should be granted only after the project is in place and reductions (relative to the baseline) had been verified to have taken place or after carbon is in fact "on the ground" in the case of projects involving sinks. Auditing and verification should be a delegated function performed by operational entities approved and accountable to the Executive Board.

Forum participants were also in agreement that a market, likely, would and should emerge for credits although the form that the market might take was not yet clear. There definitely will be something of value that could be subject to transaction in the marketplace after carbon emissions reductions have been verified and a credit formally granted. The actual credit would exist and be marketable until it is used by a government in proving compliance with its emissions limitations to the international community in a future accounting period.

Many thought some kind of "futures" market based on the expectation of the credit would likely develop after implementation of the CDM. "There will be a discount on credits sold in advance. The market will have to account for the risk that the credit wouldn't be earned or that compliance/verification would break down undermining the value of the CERs," observed Bill Russell of Coopers and Lybrand.

"The insurance industry would want to be involved," continued Russell. They would do their own assessment of the credits and stand behind the credits for a fee. Cameron maintained, "there is a case for government underwriting or guaranteeing a portion of the risk." Governments, he indicated, "should seriously review the projects up front. After all, it is the government that undertook the obligation to reduce carbon. It is carrying the risk that the projects won't deliver and the country might not meet its international obligation."

Whether the market would be more like a commodities market or a securities market was not fully clear to participants. "Somewhat different governmental regulatory structures exist for the two markets," noted Peterson. "Greater participation by the financial community in future Forum discussions will help us flesh out some of these issues," suggested Russell. Participants urged the Forum to place development of a tradeable carbon emissions market or markets on the next Forum's agenda.

Importance of Reporting and Compliance

"The value of emissions reductions credits will be determined in the marketplace," noted Russell. What that value will depend critically on compliance and verification mechanisms put in place both at the national and international level. "The final value of these offsets will exist in 2013 if countries sign and ratify the agreement and establish systems to force compliance and verification. "There will only be value if companies pay fines or suffer other consequences for failure to comply with national commitments," observed Meira Filho. How to meet targets and structure incentives or penalties is up to each nation to decide. "Some will put in place caps and tradeable permits," noted Pomerance. Others will rely on tax policy or regulatory changes.

Whether more attention has to be paid to consequences for national non compliance at the international level was also the subject of discussion. "Compliance is an important issue because countries with a strong compliance structure would be put at a disadvantage relative to companies in countries with weak compliance structures," noted Peterson. Fair and effective international compliance mechanisms will help put all countries and all companies on a level playing field. "It also will help assure that emission targets are met by nations," indicated Meira Filho.

Pomerance indicated, "Some ideas for compliance that were discussed at Kyoto, however, were taken off the table." For example, Brazil proposed that countries that did not meet their targets pay a penalty into an international fund that would be used for adaptation/mitigation of the effects of climate change. Other proposals, lacking consensus, called for a country's allowable emissions to be reduced in subsequent accounting periods to make up for a failure to meet targets in early periods.

Whether or not additional compliance mechanisms are required at the international level was left open by São Roque participants. But, importantly, they agreed that compliance was not a CDM-specific issue but rather one having to do with the overall viability of the Kyoto protocol. The participants agreed that compliance issues for Annex I countries that have adopted national emission limits are fundamentally different from project level compliance issues in non-Annex I countries under the CDM. The latter can be dealt with by granting reduction credits only on a post hoc basis.

Repetto indicated that "verification processes could be structured and should likely be structured to reduce the national compliance issue. If credits are not granted until verified as actually occurring, countries would get no credit until projects meet expectations." Succinctly, the compliance bureaucracy could and would likely be reduced significantly.

National compliance will be facilitated, if effective reporting systems are put in place. "There needs to be a reporting system that tracks each party's actual emissions, their trading activity, and their ultimate compliance with their agreed upon emissions

limitation," observed Petsonk. "All CDM credits should be identified by country of origin, year and the project from which it was earned."

"Reporting is an issue at the company or project level as well as at the international level," observed Russell. At the present time, many companies do not have the systems they need to account for carbon emissions.

Keeping Transaction Costs Low

At every stage of the discussion, many Forum participants reminded the group that the CDMs must be structured in a way that keeps transaction costs low. Generally, the rules and the review processes shouldn't impose substantial costs or there will be few projects and no market.

In addition to the costs absorbed internally by project sponsors seeking to move a project forward and secure certification, there likely will be a fee imposed on each CDM project. James Cameron explained, "There was no interest at Kyoto in providing public funds to support whatever entities are created to administer the CDM." All administrative costs will have to be covered by some kind of fees.

In addition, Article 12 specifies that one purpose of the CDM is to create a flow of funds that will be used to help nations especially vulnerable to climate change undertake projects that would help them adapt to global warming. Cameron asked when the contribution would be made and how much it should be. The draft plan, he presented to the group, called on project sponsors to pay 1% of the total value of the project for administration and 1% as a contribution to cover adaptation costs.

Questions were raised as to the appropriate base for levying the fee. Some thought the base ought to be the value of the credits earned by the project not the size of the overall project. The value of credits will fluctuate, however, and will be highly discounted at the front end of the project when fees covering administrative costs, likely, would need to be levied by the international CDM. Repetto advocated that the marketable commodity was the CER. The fee should be taken from the credit itself.

It was suggested that fees for administration and fees for adaptation be handled

separately. Fees for administration would be relatively modest and might have to be paid in cash up front at the time of certification. If project certification, verification and auditing were delegated to approved agencies or groups, such entities could cover their operating costs through fees for services, similar to consultants in the private sector. Adaptation funds could wait until credits are actually issued. "A portion of the credits earned by any project could be placed in a fund administered by the international entity for the benefit of countries needing help," suggested Petsonk. The funds trustees would determine when the credits are placed on the market and cash is actually received.

However the mechanics work, "the levy imposed on any given project to cover adaptation must be kept small," maintained Pomerance. "If I am a vulnerable nation, my interest is in getting this going -- getting projects in place that reduce emissions and reduce the probability of climate change. We should want the revenues to mount based on the overall volume of projects not on the amount collected from any one project." Participants generally agreed that more is better and that fees must consider opportunity costs and must not preclude investor and sponsor interest.

Making Progress from the Bottom-Up: Getting Pilot Projects Underway

The Kyoto Protocol allows projects under the CDM to gain carbon emissions reductions credits as early as the year 2000. These credits can be accumulated and used by Annex I countries to meet their obligations in subsequent accounting periods. To take advantage of these provisions in getting Annex I to compliance and in moving others on an energy efficient growth path, Forum participants agreed that it is important to begin CDM projects as soon as possible.

Rules, likely, will not be finalized for some time by the COP, acting as a Meeting of the Parties. Indeed, "the Meeting of the Parties can't take place until the Protocol is ratified by the required numbers of countries and goes into effect," noted Seabright. But the COP could state its intentions prior to that and individual countries could

begin to build the institutions and procedures necessary for the CDM process to become operational.

Consensus quickly emerged among participants concerning the desirability of getting some projects underway so that we could learn by doing. "It is essential to have a practical sense of what the CDM involves. As was the case with Joint Implementation and AIJ, time is needed to understand the involved range of issues. We should get some pilots underway in a number of areas. Then we can analyze the issues that arise in practice. Otherwise we will be discussing possibilities and possibilities are endless. It's better to focus on concrete projects," argued Júca. "CDM must start in a flexible way. We need pilots so we can learn more about how to frame projects and what policies as well as regulations are required," agreed Jose Roberto Moreira of CENBIO.

Some companies within the Annex I countries are moving forward with carbon reduction projects on the assumption that a market will emerge for reduction credits. For example, "Western Niagra has announced a project to reduce carbon backed by the commitment of SunCorp Oil to buy the resulting credits," reported Peterson. Japan is working with Russia on a number of projects. American and British companies are beginning to participate in a project in Bolivia involving carbon sequestration. The private sector is taking the lead and spurring governments to act and to put in place the rules that will govern the various flexibility measures.

Costa Rica is among the first to have put together a national JI/CDM program. They are developing projects and selling carbon offsets. "They provide an interesting precedent," suggested Swisher. "Under the FCCC Secretariat's criteria, it is now the only full national program in a developing country. This may be one reason why one-third of the projects endorsed by the USJI (U.S. Initiative on Joint Implementation) process are in tiny Costa Rica and none are in India, China or Brazil."

"We should find fifteen projects or so over the next year in Brazil that could be put forward and see if there are buyers for the anticipated carbon credits. Let's see if

there is a way we can handle the risks associated with acting before the protocol is put in effect . . . before formal establishment of the CDM," suggested Pomerance. Meira Filho agreed. He suggested, "The Conference of Parties meeting in November should pass a resolution indicating that it will consider early credits obtained as of the year 2000, particularly for projects in certain categories." It will carry considerable weight. It would probably provide sufficient assurance for some companies and nations to move forward on early start projects.

Participants agreed that early projects should be "gold-plated." These projects clearly should demonstrate carbon benefits. They should be relatively straightforward regarding baseline and additionality issues. "They should use advanced technologies that clearly go beyond business as usual," noted Schwengels.

"There would be lots of risk for these early projects," noted Palmisano. They would have to incorporate externalities. There would be a great deal of uncertainty regarding the ultimate value of the credits. There would also be uncertainty concerning the final CDM approval and verification processes. Some companies might take the risk for the public relations value. "But its hard to see many companies moving forward without some way to reduce risks. There needs to be some way to encourage pioneers on CDM projects," concluded Palmisano.

Participants identified several alternatives that governments and others, such multi-lateral development banks, should consider to reduce risk of early projects. Among them:

- the need to help increase public awareness of the underlying environmental and climate change issues as well as the relevance, efficiency and fairness of the CDM mechanism
- the need to alter aspects of the regulatory, tax or subsidy structure to encourage rather than discourage emission reduction approaches
- the need to create a national institutional focal point for CDMs and emissions record keeping and market transactions

- the need to provide bonus emissions reductions credits for early starters
- the need to obtain MDB support for early projects (e.g., partial risk and partial credit guarantees, etc.)
- the need to have Annex 1 governments consider options to purchase or guarantee a portion of the credits
- the need to develop innovative financing, including support for pre-investment planning and feasibility studies, as well as the establishment of diverse risk mitigation measures
- the need to help develop markets to trade emission credits and futures in credits
- the need to initiate accelerated reviews for early start projects.

While there was some disagreement among participants concerning the likelihood of projects proceeding without some indication of intentions by COP IV, everyone agreed there was clear utility in looking at concrete projects. Governments and sponsors have a real stake in looking at and learning from real world projects.

Collectively, case studies based on experience would help:

- "agree on what a good project looks like" (Schwengels)
- "anticipate necessary CDM policies and review procedures" (Seabright)
- "use terms in the same way, with the same meaning" (Leonard)
- "determine necessary data, monitoring and reporting systems" (Russell)
- "decide on reasonable baselines and the definition of additionality" (Júca)
- "determine the interests and concerns of various necessary and likely CDM parties such as the Annex I and host country governments, private sector project sponsors, banks and other investors, the insurance industry, potential

buyers of credits" (Pomerance)

- "establish effective institutions, policies and regulations that would be considered by the Conference of Parties and participating nations" (Miera Filho)

The analysis of "real world" case studies could focus on early start projects. They could also include development and review of prospective hypothetical CDM projects based on projects now in the pipeline or already begun in some nations. Finally, they could include projects that are now identified within Joint Implementation and Activities Implemented Jointly (AIJ) as well as the Global Environment Facility (GEF).

The initiation of early projects would also help nations move toward targets and objectives concerning emission reduction. It would lessen the possibility of economic shocks in later years. Progress could be started along a evolutionary or reasonable glide path toward emission reduction.

Next Steps

Participants agreed that the Brazil-U.S. Aspen Global Forum would serve as a useful umbrella for Brazil and the United States to continue their collaboration with respect to CDM. The Brazil-U.S. Aspen Global Forum agreed to convene a second meeting on this subject in October 1998. Invitees will include senior public and private sector leaders from Brazil and the U.S. as well as respected scholars from both nations. Active participation of legislators will be sought by the Forum. The Forum will focus on development of specific CDM policies, regulations, institutions and strategies, particularly those related to involvement of the private sector and the development of public-private sector partnerships. Discussion will be informed by papers prepared by experts prior to the meeting and by the use of case studies based on real world projects. The Forum will result in a strategic paper to be presented to the COP-4 meeting in November 1998.

Appendix I: Article 12

1. A clean development mechanism is hereby defined.
2. The purpose of the clean development mechanism shall be 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 under Article 3.
3. Under the clean development mechanism:
 - (a) Parties not included in Annex I will benefit from project activities resulting in certified emissions reductions; and
 - (b) Parties included in Annex I may use the certified emission reductions accruing from such project activities to contribute to compliance with part of their quantified emission limitation and reduction commitments under Article 3, as determined by the Conference of the Parties serving as the meeting of the parties to this Protocol.
4. The clean development mechanism shall be subject to the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to this Protocol and be supervised by an executive board of the clean development mechanism.
5. Emissions 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, on the basis of:
 - (a) Voluntary participation approved by each Party involved;
 - (b) Real, measurable and long term benefits related to the mitigation of climate change; and
 - (c) Reductions in emissions that are additional to any that would occur in the absence of the certified project activity.
6. The clean development mechanism shall assist in arranging funding of certified project activities as necessary.
7. 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.
8. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall ensure that a share of the proceeds from certified project activities is used to cover administrative expenses as well as to assist developing country Parties that are particularly vulnerable the adverse effects of climate change to meet the costs of adaptation.
9. Participation under the clean development mechanism, including in activities mentioned in paragraph 3(a) above and acquisition of certified emission reductions, may involve private and/or public entities and is to be subject to whatever guidance may be provided by the executive board of the clean development mechanism.
10. Certified emissions reductions obtained during the period from the year 2000 up to the beginning of the first commitment period can be used to assist in achieving compliance in the first commitment period.