

## The Clean Development Mechanism: Some Developing Country Perspectives

By R. K. Pachauri\*

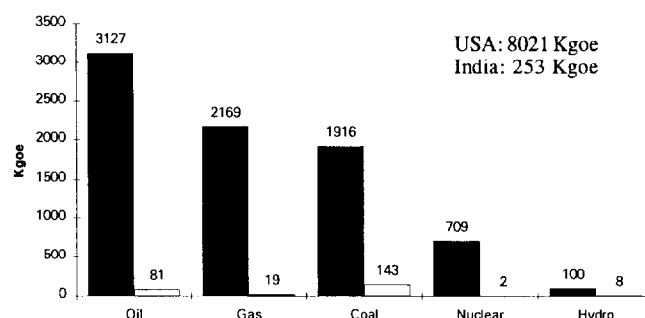
The Protocol adopted at Kyoto came after a prolonged period of negotiations including two prior Conferences of the Parties (COPs) at Berlin and Geneva, respectively, and several other meetings of subsidiary bodies, such as the Adhoc Group on the Berlin Mandate (AGBM) that attempted to develop a protocol that would be accepted by all the Parties to the Framework Convention on Climate Change (FCCC). However, progress in arriving at an agreement was slow right up to the final hours of the extended Kyoto meeting. In fact, at a stage just before the conference, several voices of doubt were raised on whether Kyoto would actually produce a protocol. The differences between the position of the European Union which had advocated a targeted reduction of 15 percent by the year 2010 versus no reductions suggested by some other countries, were the most dominant reality slowing down the process of negotiations and stalling a consensus among all the Parties. Fortunately, the spirit at Kyoto was one of determination to arrive at some agreement, however large may have been the divergence between the stated positions of the most important groups participating in the COP.

There were, of course, several areas of difference that dominated the debate and discussions at Kyoto, but three issues seemed to create a great deal of concern among the developing countries. The first related to the insistence of the United States on "meaningful participation" by key developing countries, and the others arose out of the issues of emissions trading and joint implementation, which the developing countries felt would provide the developed countries a convenient way out of meeting their commitments on limitation of emissions of greenhouse gases (GHGs). The developing countries were also very disappointed at the reluctance on the part of countries with the most energy intensive economies in the world to accept commitments commensurate with their historical and current responsibility in causing climate change. This was at great variance with the general approach favouring targets for reducing GHG emissions by 20 percent as actually specified in the Toronto Conference in 1988, which were to be achieved by the year 2000. As it happened, in several statements and debates leading up to Kyoto, the United States put forward support for its own position of not favouring any targeted reduction on the plea that even holding emissions at 1990 levels by the year 2008 to 2012 amounted to a virtual reduction of 30 percent. This was put forward on the premise that 30 percent increase in GHG emissions would normally take place by that period over 1990 levels, on a business as usual basis. This, of course, was a dangerous argument, because the same logic could be applied by the developing countries to state that given their low levels of per capita energy consumption, they would under normal circumstances increase their emissions by several hundred percentage points in the coming decades as a result of economic growth. Hence, this projected increase should form the benchmark for any future commit-

\* R. K. Pachauri is Director of the Tata Energy Research Institute, Vice Chairman of the Intergovernmental Panel on Climate Change (IPCC) and former President of the IAEE.

ments. As it is, the disparities in energy consumption between the developing and developed world are so substantial that any insistence on "meaningful participation" (a delightfully vague and undefined term) really seems devoid of logic or ethical basis. Figure 1 indicates the levels of per capita energy consumption between different countries. These disparities are hardly known in decision making circles and, of course, are seldom discussed even by well meaning and fair minded analysts in several developed countries.

Figure 1  
Per Capita Commercial Energy Consumption  
United States and India

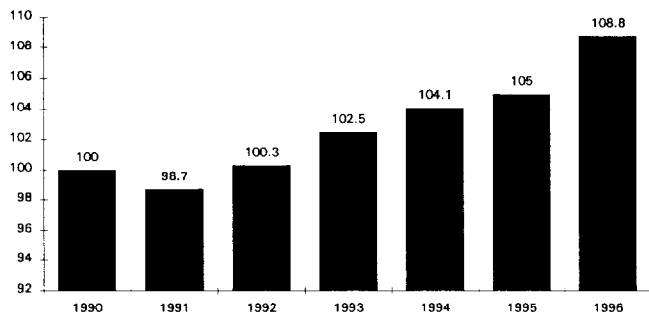


In a very useful article by Walter Reid and Jose Goldemberg published by the World Resources Institute, the authors persuasively established the fact that the developing countries are doing a substantial amount to cut down the growth of GHG emissions even in the absence of binding targets. Several examples are mentioned of programmes pursued by the developing countries which have resulted in a decline in the growth of emissions. For instance, as the authors mention, since the 1980s China has substantially reformed energy prices, with coal subsidies falling from 37 percent in 1984 to 29 percent in 1995 and petroleum subsidies falling from 59 percent in 1990 to 2 percent in 1995. It also mentioned that even though annual carbon emissions grew by 228 million tonnes of carbon (MtC) between 1980 and 1990, emissions would have been 155 MtC higher in 1990 if the energy efficiency gains achieved over this period had not taken place. It should also be recalled that China had set an ambitious goal of improving energy efficiency as far back as in the early 1980s when it launched its "Four Modernizations", one of which clearly specified that China would quadruple its GDP by the year 2000, but increase energy consumption only twice the level existing at the time.

In the case of India, Mexico, South Africa, Saudi Arabia and Brazil, fossil fuel subsidies have been cut substantially. In the case of Brazil, the ethyl alcohol programme based on sugarcane has grown to production levels of 200,000 barrels a day replacing one-half of the gasoline that would have been used otherwise. The effect of this is that 9.45 MtC per year or approximately 15 percent of Brazil's total emissions have been avoided. In the case of India, it needs to be mentioned that this is the only country in the world that has a separate Ministry for Non-Conventional Energy Sources, and among its various achievements, it needs to be noted that the biogas programme has resulted in 2.5 million biogas plants being installed in the country. The Indian wind energy programme has recorded a total installed capacity of over 1000 MW. Future plans of the Government of India and the rapid growth

of a renewable energy industrial base in the country point to much greater achievements in the years ahead. All the measures taken, as described in the Reid - Goldemberg paper, show the developing countries in a much better light than say the United States. In fact, the record of the United States in energy use during the 1990s has been very discouraging as shown in Figure 2.

**Figure 2**  
Relative United States CO<sub>2</sub> Emissions  
1990=100



The figure shows percentage change in U.S. CO<sub>2</sub> emissions relative to a 1990 base-line. For example, emissions in 1996 were almost 9 percent greater than in 1990.

Source: World Resources Institute, *Climate Notes*, July 1997.

In the case of emissions trading, the developing countries' concerns relate essentially to the opportunity that this might provide developed countries to not reduce their own emissions and meet their commitments only through the trading route. Somewhat similar is the concern with joint implementation, but, in this case, it is also felt that joint implementation may take away some of the most attractive and low cost options that developing countries may have for implementing emissions limitation measures. However, this fear is largely unfounded, because there is no reason why developing countries should accept payments only at the level of actual costs incurred by them in such projects and not treat the alternatives that the developed countries themselves would have pursued as the benchmark for seeking funding for such projects. The argument that the "lowest hanging fruits" would be plucked by the developed country Parties, thereby depriving the developing countries of such options when in the future they themselves may have commitments, is unfounded. The evolution of technology will bring several other fruits to hang lower than the levels that are seen today. Joint implementation can elicit enthusiastic participation from the developing countries, if confidence is built on a record of good intentions and commitment from the developed countries. Unfortunately, some misunderstanding has been created since the FCCC was agreed on at Rio through the excessive interest in joint implementation by several developed countries. This was clearly a case of "overkill", which only led to the feeling that the developed countries were not interested in doing something that is politically difficult and which required some hard choices in their own domains. Joint implementation should be seen as a supplement and not as a substitute for actions by the developed world in their own territories.

Mitigation of climate change would require several initiatives which have important implications for the energy

sector. Based on the principle of historical and differentiated responsibilities, the FCCC included the possibility of joint implementation as a means to implement mitigation measures in non Annex-I (developing) countries which could be funded by Annex-I (developed) countries in return for credits based on the reduction of emissions consequent on such measures. Essentially, joint implementation projects would lie mainly in the fields of energy efficiency improvements, fuel switching, including greater use of renewable energy technologies and in the creation of sinks, such as forests. Forests also could have an important implication for energy use, because in a number of developing countries biomass is still a major source of energy. Hence, sustainable harvesting from an expanded stock of forests could not only create a sink for carbon dioxide, but also enhance the availability of biomass energy for a significant part of the population in these countries.

Joint implementation did not quite take off following the coming into force of the FCCC, mainly because modalities for implementation of such projects and the monitoring of results in terms of emissions limitation could not be finalized in the first two Conferences of the Parties held in Berlin and Geneva. Also, in the absence of any emissions reduction targets, there was no incentive for the developed countries to fund projects of this nature in the developing countries. However, a pilot phase of Activities Implemented Jointly (AIJ) was approved in the Berlin COP, so that experience with all the elements of such projects could be generated adequately before launching a phase that would allow for credits against commitments and actions to reduce emissions. But, several developing countries have been less than enthusiastic even in the pilot phase, mainly because they have been turned off by the "overkill" referred to earlier and the tardiness on the part of Annex-I countries in reducing their own emissions.

One of the significant provisions agreed to in the Kyoto protocol to the Framework Convention on Climate Change relates to the establishment of a Clean Development Mechanism (CDM). This particular subject has received considerable attention and criticism since Kyoto, but has also provided several observers and analysts focussing on the climate change debate with a great deal of promise. However, what was agreed to at Kyoto is little more than a concept, on which considerable work and consensus would be required if the CDM is really to deliver as an active mechanism. The concept itself builds on a proposal that was put forward by Brazil, almost six months before the Kyoto Conference of the Parties, for a Clean Development Fund (CDF). However, the CDM differs substantially from what was intended and outlined in the Brazilian proposal.

The Brazilian proposal takes off from the emphasis provided to the polluter pays principle. It specifies that "the departure from the temperature increase ceiling allowed for an individual party, measured in terms of the induced change in climate be used as a quantitative basis for establishing a contribution to a non Annex-I Clean Development Fund to be managed by the financial mechanism of the Convention for the promotion of precautionary measures in non Annex-I Parties". The Brazilian proposal also allowed for trading among Annex-I Parties such that any single party that exceeds

(continued on page 18)

### **The Clean Development Mechanism** *(continued from page 17)*

its temperature ceiling over a specific period can compensate it by purchasing, at a market value, an equivalent temperature credit from another Annex-I Party that induced a temperature increase lower than its temperature ceiling. The proposal further specified that the financial resources of the CDF were to be directed preferentially to the non Annex-I Parties that have a larger relative contribution to climate change. Implied in this was the expectation that the larger developing countries would be able to implement projects that would essentially be financed through this fund. There was also a provision for non Annex-I countries applying for funds to implement mitigation projects on a voluntary basis. Still another provision, which in fact, has been retained in the Kyoto protocol relates to the use of financial resources for climate change adaptation programmes, but this was seen as not a very large window, because as the proposal stated, only a small portion of the resources would be assigned to such activities.

The key provisions of the Brazilian proposal for a CDF were to ensure that, in essence, penalties for non compliance with agreed targets for reduction of GHG emissions by Annex-I Parties would be the major source of financing for this fund. Other provisions essentially included the possibility of emissions trading among Annex-I countries using the resources of the fund and a minor activity with respect to adaptation measures financed by the fund, presumably in the worst affected states, such as the small island states.

The CDM agreed on at Kyoto is also designed to assist non Annex-I Parties, but has some built-in contradictions. It broadens the scope of the CDM to helping non Annex-I Parties achieve sustainable development and in contributing to the ultimate objective of the Convention. This is clearly stated in Article 12 para 2. Yet, under Para 3a the concept of sustainable development is restricted by stating that Parties not included in Annex-I will benefit from project activities resulting in certified emissions reductions. This restricts the interpretation of sustainable development to a narrower focus. Para 3b relates to Annex-I Parties and states that they may use the certified emissions agreed from such project activities to contribute to compliance with part of their quantified emission limitation and reduction commitments under Article 3. No mention has been made of any limits to the share of quantified emission limitations allowable under the CDM. Undoubtedly, this would be a subject of some debate, and a clear resolution of this issue could take considerable time of the negotiators. Para 4 under Article 12 specifies the governance of the CDM by stating that this would be under the authority and guidance of the COP serving as the Meeting of the Parties (MOP) to the Protocol. Para 5 mentions that emissions from each project actively shall be certified by operational entities to the designated by the COP serving as the MOP, 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.

It is obvious from this paragraph that not only would the identification of "operational entities" authorized to certify emission reductions take some effort, but even the method-

ology and approach by which such certification takes place would have to be developed. Clearly, it would perhaps make the Climate Change Secretariat much too large and top heavy if these entities were to be part of the Secretariat itself. What would be a far more effective and workable approach should involve institutions that the Secretariat could carefully select and empower with this responsibility, preferably on a regional basis. The other issue that arises from this provision is one relating to the diversity of projects that could be eligible for certification. A project dealing with forestry activities for instance, would require expertise and methodologies for certification different from, for instance, an energy efficiency project in a textile factory. Considerable scientific and technical work will have to be done for taking care of these requirements.

The timing of CDM and its effectiveness are also issues that need to be considered in some detail. The modalities and procedures for implementation of CDM are to be elaborated at the first Meeting of the Parties to the Protocol, which could very well not happen before the year 2003 to 2004, on the assumption that the protocol receives adequate ratification by the requisite number of Parties by then. As such, there could be a risk that some emission reductions from projects completed after the year 2000 may not be allowed if they do not conform to the requirements that are approved at the First Meeting of the Parties to the Protocol. The fear that such claims and liabilities could very well be disapproved could result in some Parties being discouraged from taking any action on joint implementation projects. However, overall, CDM does provide opportunities for carrying ahead the implementation of mitigation measures with participation of both Annex-I as well as non Annex-I Parties. The key, however, would lie in being able to devise institutional arrangements and measures that would create confidence among all groups of countries, such that they take advantage of the CDM opportunity in fullest measure.

Overall, the CDM, if it is structured globally, can provide an opportunity whereby developing countries could implement projects for mitigation of GHG emissions in a manner that creates a win-win situation for both Annex-I as well as non Annex-I countries. However, the full involvement of the developing countries can only come about if a greater degree of confidence is created by actions that the developed countries have to take with some urgency. Considerable damage has been done by completely ignoring the Berlin Mandate which clearly required no further commitments on the part of the developing countries and by raising demands for "meaningful participation" by them even before a protocol could be agreed on at Kyoto. Arguments now being put forward are harping on the fact that the worst impacts of climate change would be felt by the developing countries, and hence, they should come on board and implement rigorous measures to limit their own emissions. This line of thinking may not work, simply because while the Second Assessment Report of the IPCC does show that the developing countries would suffer much greater losses in relation to economic output than the developed countries, the science behind this is still very uncertain.

It would be wrong for any group of countries to believe that there are real winners and losers in the area of climate change impacts. Many surprises may be in store as the science unfolds in the Third Assessment Report and beyond.

Secondly, as mentioned above, the developing countries are taking several measures that help in mitigating global climate change, but these are understandably being taken for entirely national or local reasons. If the CDM is structured properly and functions in a manner that creates all-around confidence, these national initiatives in the largest developing countries would be enhanced considerably through joint implementation projects processed under the CDM. One hopes that the debate in the next COP in Buenos Aires is not made any more contentious than it already is through insistence on the "meaningful participation" bit. The developing countries are already participating far more meaningfully than some developed countries who cannot possibly earn the respect of the global community by using economic and political power and subjecting the poorest countries in the world into submission. Surely this cannot happen in a world moving into the 21st century.

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### Request for Tender

The World Exposition in the year 2000 will take place in Germany. 40 million people will visit this exposition in Hannover. Topic of the EXPO 2000 is *Humankind-Nature-Technology*.

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- maintain the infrastructure
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This service is needed from the end of 1998 (power supply of the construction site) up to the end of the EXPO time and over all 220,000 MWh of electricity and 20,000 MWh of natural gas is estimated. The contract should end early in the year 2001.

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Mr. Frank Dollmann  
Ruehmkorffstr. 1  
30163 Hannover, Germany  
Phone: 49-511-965-29-22; Fax 49-511-965-29-99  
e-mail: nds.energie-agentur@t-online.de



## The Potential for Use of Modern Asset Pricing Methods for Upstream Petroleum Project Evaluation

*Guest Editor David Laughton (University of Alberta)*

Written by a coalition of scholars and active industry consultants, this edition of the Journal describes the latest developments in modern asset pricing (MAP) for use in upstream petroleum project evaluation. MAP was initially developed for application in derivative securities markets, where it is now widely used. The importance of this was recognized by the award of the 1997 Nobel Prize in Economics. When applied to project evaluation, MAP offers an alternative that mitigates many of the problems that organizations face when they depend on traditional discounted cash-flow (DCF) methods for financial analysis.

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28790 Chagrin Blvd., Suite 350  
Cleveland, OH 44122-4630, USA  
Fax: (216) 464-2737  
Tel: (216) 464-5365  
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Website: www.iaee.org