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Options for Reforming the Clean Development Mechanism

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Development Mechanism*

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THE HARVARD PROJECT ON INTERNATIONAL CLIMATE AGREEMENTS

The goal of the Harvard Project on International Climate Agreements is to help identify and advance scientifically sound, economically rational, and politically pragmatic public policy options for addressing global climate change. Drawing upon leading thinkers in Australia, China, Europe, India, Japan, the United States, and other countries, the Project conducts research on policy architecture and key design elements of a post-2012 international climate policy regime. The Harvard Project also provides insight and advice regarding countries' domestic climate policies, especially as these policies relate to the prospects for meaningful international action. The Project is directed by Robert N. Stavins, Albert Pratt Professor of Business and Government at the Harvard Kennedy School.

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Options for Reforming the Clean Development Mechanism[†]

EXECUTIVE SUMMARY

The Clean Development Mechanism (CDM)—established by the Kyoto Protocol of the U.N. Framework Convention on Climate Change—is an emissions offset program that allows industrialized countries to receive credits for funding emissions reduction projects in developing countries. The program is intended to provide a cost-effective way for industrialized countries to reduce greenhouse gas emissions, while at the same time supporting sustainable development in developing countries. However, the CDM has been criticized for its lengthy and expensive project approval procedures, its exclusion of many categories of potentially important mitigation activities, and its methodologies for calculating whether projects actually reduce greenhouse gas emissions. In response to these problems, this *Issue Brief* presents a variety of options for reforming the CDM. These options include:

- (1) encouraging industrialized countries to use CDM offsets to cover a larger share of their emissions reduction commitments than they currently do;
- (2) changing the criteria for CDM credits to include a broader set of policies that “create real progress” towards climate goals;
- (3) creating an international fund that is authorized to sell credits up front and then use the proceeds to make investments in mitigation and adaptation projects in developing countries;
- (4) making technology transfer the emissions-reducing activity for which credits are awarded;
- (5) allowing developing countries that decide to accept an economy-wide emissions cap to keep their existing CDM credits; and
- (6) using the CDM to encourage developing countries to join an international climate agreement.

BACKGROUND

The Clean Development Mechanism (CDM) is an “emission-reduction-credit” or “offset” program established under Article 12 of the Kyoto Protocol. The CDM allows developing nations to earn “certified emission reduction” (CER) credits by implementing voluntary emissions reduction projects. Each CER represents an emissions reduction of one metric ton of carbon dioxide equivalent. Industrialized nations can then purchase these credits and count them towards their own Kyoto emissions reduction commitments, or towards commitments in other cap-and-trade systems that recognize CDM credits.¹

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¹ For example, within specified limits, EU Member States may participate in CDM on the government level or through other legal entities, such as companies; and such companies may use CDM credits for compliance with the European Union Emission Trading Scheme (EU ETS). Likewise, the Regional Greenhouse Gas Initiative (RGGI) cap-and-trade system in the northeastern United States allows use of CDM credits if RGGI allowance prices exceed \$10/ton (RGGI, 2007). The version of the Waxman-Markey energy and climate bill that passed the U.S. House of Representatives in June 2009, also provides for use of CDM credits.

The CDM is intended to benefit both industrialized and developing nations. In particular, it is designed to achieve two main policy goals. First, the CDM promotes cost-effectiveness by attempting to reduce the overall cost of achieving emissions reductions. Because greenhouse gases mix rapidly in the atmosphere, it does not matter where they are emitted. Thus, by funding low-cost emissions reduction projects in developing countries (instead of making more costly domestic emissions reductions), industrialized countries can meet the same greenhouse gas reduction targets at lower total cost. Second, the CDM encourages sustainable development in developing countries. The Kyoto Protocol states that in addition to reducing emissions of greenhouse gases, CDM projects should generate side-benefits, such as lowering emissions of conventional pollutants and promoting investment in renewable energy sources (United Nations, 1998).

To ensure that projects generate actual emissions reductions, an international Executive Board, consisting of ten members drawn from countries that ratified the Kyoto Protocol, supervises the CDM (UNFCCC, 2005). Its responsibilities include approving methodologies for calculating project credits, keeping a project registry, issuing CERs, and providing accreditation to organizations that review and validate specific project proposals. Each host developing country is also required to have a “Designated National Authority” that approves projects and ensures that they promote sustainable development. Finally, the backers of each proposed project must submit a design document that uses an approved methodology to calculate the project’s projected emissions reductions (Pew Center on Global Climate Change, 2009). The process of gaining approval can be lengthy. From project initiation, it can take two or more years to gain approval. Furthermore, the cost of the process—not including the cost of the actual emission reduction measures—can be substantial (Nigoff, 2006; Michaelowa and Jotzo, 2005).

The 1,760 projects that have completed the CDM registration process are generating 311 million CERs annually (as of August 2009), and by 2012, these currently registered projects are expected to have produced a cumulative total of 1.630 billion CERs. Of this cumulative total, 59% of expected CERs are from projects in China, 12% are from India, 7% are from Brazil, 5% are from the Republic of Korea, and the remainder are from projects in 53 other countries. Including projects that have not completed the registration process, the CDM’s “project pipeline” contains more than 4,200 projects that are expected to have generated 2.9 billion CERs by 2012 (UNFCCC, 2009a).

ISSUES AND CHALLENGES

Despite the CDM’s growing role in the world emissions trading market, critics of the CDM have raised a number of concerns. One major issue is additionality: whether projects are really producing emission reductions that are “additional” to what would have happened in any case. In principle, the CDM awards credits only for projects that would not have been implemented in the absence of CDM-related funding. However, in practice, once a project receives CDM approval, it is impossible to observe whether it would have been implemented anyway. To address this problem, the CDM’s Executive Board has approved a variety of engineering and economic methodologies for estimating projects’ hypothetical baseline emissions. However, given the challenges involved in such calculations, many critics still fear that CERs are awarded to projects that do not reduce greenhouse gas emissions.

A second major concern about the CDM is its limited scope. Critics raise this concern in two forms. First, the CDM excludes many categories of activities that could reduce net greenhouse gas emissions. For example, Kyoto’s Article 12 does not authorize the CDM to award credits for preventing deforestation. This exclusion provides no incentive for nations with large rainforests, such as Brazil, to prevent logging and conversion of forest to farmland. Other potentially useful activities, such as carbon capture and storage (CCS), are also excluded from the CDM because the Executive Board has not yet

approved relevant project accounting methodologies (Plantinga and Richards, 2008; UNFCCC, 2009b). Second, the CDM excludes activities that do not achieve “measurable and verifiable” emission reductions. Because of the way CDM credits are assigned, the CDM does not provide a mechanism for funding projects that are likely to reduce carbon emissions in the long run, but whose specific benefits are difficult to measure.

In addition to these two main concerns, critics have pointed out a variety of other problems with the CDM. As discussed above, the slow and costly CDM registration process may discourage project applications. Additionally, because the CDM allows developing countries to sell credits without committing to future emission targets, the program provides no incentive for developing countries to join an international climate agreement. Furthermore, most CDM projects have been implemented in a handful of large, relatively richer developing countries (Hall et al, 2008). Finally, the availability of CERs from the CDM program reduces the incentives for industrialized countries to make investments in reducing their own domestic greenhouse gas emissions.

POLICY OPTIONS

To address the shortcomings of the CDM, researchers working under the auspices of the non-partisan Harvard Project on International Climate Agreements have proposed a variety of options for CDM reform. Many of these proposals focus on ways to scale up the CDM program. Although the researchers focus on varying options for revising the CDM, many of them agree that an expanded CDM could provide a number of important benefits. First, as discussed above, an expanded CDM would both provide significant cost savings to industrialized countries with emissions caps and encourage sustainable development in developing countries. Second, an expanded CDM would provide a means for enhanced indirect linkage between the permit markets in industrialized countries. This linkage—already provided to some degree by the current CDM—would further encourage cost-effectiveness by moving allowance prices toward equality across industrialized countries. It could also act as a *de facto* framework for a future international climate agreement (Jaffe and Stavins, 2008).

Third, an expanded CDM could be an important venue for developing country participation in mitigation activities. Although many developing countries are vulnerable to the effects of climate change, these countries typically prioritize economic development over environmental protection, and thus are reluctant to commit to emissions caps. Nonetheless, because climate change is a global problem, domestic emissions reduction in industrialized countries is unlikely to be effective unless emissions from developing countries are also reduced. An expanded CDM would allow industrialized countries to fund large mitigation efforts in developing nations, without requiring those countries to commit to emissions caps. It would also help to create national institutions in developing countries to address climate policy issues (Michaelowa, 2007). Furthermore, the resource transfers from industrialized to developing countries would be less obvious—and thus more politically feasible—than the transfers required by some alternatives, such as allocating allowances in excess of projected business-as-usual emissions (“hot air”) to developing countries (Keeler and Thompson, 2008; Hall et al, 2008).

The remainder of this section describes a variety of policy options for CDM reform:

- **Encourage industrialized countries to use CDM offsets to cover a larger share of their emissions reduction commitments.**

Asking industrialized countries to allow companies within their borders to meet at least 10% of their national emissions targets using CDM credits would provide a substantial amount of resources for mitigation actions in developing countries (Keeler and Thompson, 2008). Although the Kyoto Protocol does not place formal quantitative limits on the quantity of CDM credits that signatories can use, the number has been limited by the CDM approval process. Another possibility would be to loosen current rules that limit banking of CDM credits to an amount no greater than 2.5 % of a country's overall emissions budget (Michaelowa, 2007). If countries expect that future emissions caps will be much more stringent than current caps, then this would provide an incentive for more extensive use of CDM credits.

- **Change the criteria for CDM credits to include a broader set of policies that “create real progress” towards climate goals.**

Under this proposal (Keeler and Thompson, 2008), less emphasis would be placed on ton-for-ton accounting, and projects would not be required to produce “measurable and verifiable” emissions reductions (UNFCCC, 2007, p. 3). Instead, the CDM would award credits for a wide set of activities and policies that promote climate goals (Keeler and Thompson, 2008; Hall et al, 2008; Michaelowa, 2007). These activities and policies could include renewable energy portfolio standards, energy efficiency standards, and reduction of energy subsidies. The primary goal of adopting broader criteria is to promote activities that provide long-run mitigation and adaptation benefits in developing countries. Although the CDM's current project-based accounting rules are designed to protect the environmental integrity of its credits, they generate high transaction costs and create obstacles for developing country participation in the CDM. The authors of this proposal argue that it would be preferable to focus on evidence that countries are using CDM resources to take productive steps to mitigate and adapt to climate change, instead of focusing on artificial targets and ton-for-ton accounting.

In order to implement this approach, international negotiations would need to develop guidelines for the revised CDM. These guidelines would (1) set eligibility criteria for activities and policies; (2) develop documentation and accountability requirements; (3) establish mechanisms for adjusting credits *ex-post*, in recognition that some activities may fail to produce results; (4) set criteria for the distribution of funds; and (5) possibly establish set-asides for selected projects and technologies. Additionally, the negotiations should delegate administration responsibilities. One possibility would be to delegate the program implementation role to the World Bank, an information-sharing role to the UNFCCC Secretariat in Bonn, an oversight role to a ten-member committee of UNFCCC parties, and an informal dispute resolution role to a group of officials from international organizations (Keeler and Thompson, 2008).

- **Create an international fund that is authorized to sell credits up front and then use the proceeds to make investments in mitigation and adaptation projects in developing countries.**

Under the current CDM structure, projects must be completed before credits can be awarded. An alternative would be to create an international fund that is authorized to sell some number of offset credits each year, and then to use the proceeds to make investments in a diverse set of mitigation projects in the developing world (Keeler and Thompson, 2008). Because the fund would have the financial flexibility to invest in large-scale, small-scale, and non-standard projects, this approach

would reduce transaction costs and support a more geographically diverse set of mitigation activities. Of course, because the credits would be sold ahead of time, some projects may fail to deliver expected results. To manage this risk, the face value of the credits (in terms of greenhouse gas reductions) could be adjusted downward to reflect the expected emissions reductions that would be achieved. Alternatively, in severe cases of non-performance, the credits could be adjusted *ex-post*.

➤ **Make technology transfer the emissions-reducing activity for which credits are awarded.**

One important problem with the existing CDM is that it does not promote the large-scale technology transfer necessary to make mitigation technologies widely available in developing countries. Thus, to prevent energy infrastructure in developing countries from being locked-in to an energy intensive mode, the authors of this proposal argue that the CDM should be revised to award credits for the transfer of technologies that mitigate greenhouse gas emissions (Teng et al, 2008). This approach would have three key features. First, technology transfer goals would be evaluated relative to a counterfactual baseline defined by the assumption that developing countries adopt new technologies only after a substantial delay. Second, credits would be awarded only for projects that use technologies approved by the CDM program. Third, governments and technology providers (such as patent holders) could receive a portion of the resulting emissions credits if they provide support such as discounted or free licensing.

This “Technology-CDM” approach has a number of advantages relative to the existing CDM program. First, it provides a direct incentive for technology transfers that prevent “lock-in” of dirty technologies. Second, it lessens concerns about additionality because the baseline (absence of the mitigation technology) is relatively easy to define. Third, because projects that use similar technologies can be bundled together, this approach could create economies of scale that would reduce transaction costs and registration risks. This would reduce the risk premium that investors demand and may allow project owners to raise capital by selling their credits ahead of time (Teng et al, 2008).

➤ **Allow developing countries that decide to accept an economy-wide emissions cap to keep their existing CDM credits.**

To support the long-term goal of encouraging developing countries to accept binding economy-wide emissions caps, the CDM should define how CER credits will be treated once a country joins Annex B. There are a variety of possibilities, including not providing any compensation for the loss of CERs. However, to provide incentives for developing countries to join an international cap-and-trade system, it would be preferable to convert CDM credits into credits redeemable through some other Kyoto mechanism, such as emissions trading or Joint Implementation or to buy out the investors (Michaelowa, 2007).

➤ **Use the CDM to encourage developing countries to join an international climate agreement.**

Under this proposal (Karp and Zhao, 2008), only signatories of an international climate agreement would be eligible to receive payments for CDM credits. By signing the agreement, developing countries would commit to meaningful policy actions to address climate change (potentially including eventual emissions caps). Thus, the wealth transfers that occur under the CDM would serve as a “carrot” to encourage developing countries to participate in the agreement.

Compared to direct participation incentives such as allocating permits to developing countries, the wealth transfers that occur under the CDM are less obvious and thus are less likely to produce public outcry in industrialized countries. However, these transfers could still be quite large. If a future

climate agreement includes stricter emissions targets and expanded membership from industrialized countries, then the right to participate in the CDM market would be a substantial incentive for developing countries. Furthermore, it may be easier to negotiate expanded CDM participation by developing countries, compared to asking developing countries to take on explicit emissions targets (even if those targets reflect business-as-usual emissions) (Karp and Zhao, 2008).

CONCLUSION

The Clean Development Mechanism has become—and will continue to be—a major source of emissions credits for Kyoto signatories. Nonetheless, its long-term success depends on resolving a number of issues related to its lengthy application process, the additionality of its projects, and the limited scope of activities for which it awards credits. Although there may be no silver bullet for CDM reform, the ideas presented in this *Issue Brief* reflect a variety of creative approaches to improving the CDM.

FURTHER READING ON OPTIONS FOR CDM REFORM FROM THE HARVARD PROJECT ON INTERNATIONAL CLIMATE AGREEMENTS

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