

Special Feature on the Kyoto Protocol

The Clean Development Mechanism: Issues and Opportunities

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It is widely agreed that the Clean Development Mechanism (CDM) is a useful international instrument that encourages and reinforces the reduction of greenhouse gas emissions (GHGs), and also that it should be further promoted as a way to fill the gap in energy and GHG efficiency between industrialized and developing countries. A number of problematic issues have become apparent, however, during the past two and a half years of experience with the CDM. This paper identifies some of these and provides possible insights into their nature and possible resolution. While some technical aspects such as baseline setting are crucial and are being resolved gradually through accumulated experience, other political aspects such as the utilization of public funding need more discussion (rather than formal negotiations).¹

Keywords: Clean Development Mechanism (CDM), Kyoto Protocol, United Nations Framework Convention on Climate Change (UNFCCC), greenhouse gas (GHG).

1. Using the Clean Development Mechanism for true collaboration between South and North

The Clean Development Mechanism (CDM) may open the door to global partnerships to mitigate climate change by providing concrete examples of win-win type solutions.

In the negotiations of the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC), we still observe a wide gap between South and North. This is based on the developing countries' concern about unfairness, historical contributions to global warming, emissions limits on developing countries, and the attitude of developed countries (such as that of the United States' Bush administration).

In addition, there is concern about negotiation tactics. In order to overcome such formal/strategic behavior, we need some "proven" experiences that show, first, that climate change mitigation represents opportunities, not costs; and that collaboration between South and North promotes sustainable development.

In the Kyoto Protocol negotiation process, the countries with economies in transition witnessed that East Germany obtained real benefits by merging with West Germany, and the Latin American countries recognized that a credit-transfer mechanism is beneficial for them based on experience with the US

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1. This paper is based on presentations made at the Asia-Pacific Seminar, at Miyazaki, 2003, and the Asia-Europe Environment Forum at Jeju Island, 2004.

Initiative on Joint Implementation (USIJI)/activities implemented jointly (AIJ).² The CDM may play this kind of role, filling the gap between South and North by showing the real benefits through collaboration on climate mitigation measures enhanced by market mechanisms.

The roots of the CDM can be traced to the concept of joint implementation (JI), first outlined in the text of the UNFCCC. A later proposal by the United States to institutionalize JI in the Kyoto Protocol—which was rejected by the developing countries during negotiations (although it would have functioned much the same as the CDM)—surfaced again in the Brazilian proposal of a Clean Development Fund (CDF) just prior to COP 3 (where the protocol was agreed). The end result, the Clean Development Mechanism, may prove to be the instrument that was needed to bridge the gap between South and North—one initiated by the developing world—as well as for satisfying the interests of developed countries (Matsuo 2004).

Selection of a less energy-intensive economic development pattern is the critical element needed by developing countries from the perspective of energy cost-saving, energy security, and protecting their local environment, as well as mitigating the effects of climate change. In most cases, climate change mitigation measures represent not costs but opportunities. The challenge that we currently face is how to maximize this desirable aspect of climate mitigation, especially in developing countries.

In addition, the CDM may open the gate for negotiation of future commitments, not only under the Kyoto Protocol but also under other amendments to the UNFCCC.

2. The history of the CDM

At COP 7 in Marrakesh in 2001, the CDM Executive Board—the supervisory body of the CDM—was established. It subsequently established three panels in the beginning of 2002: the Accreditation Panel, the Small-Scale CDM Panel, and the Methodology Panel.

As of September 2004, four operational entities (third-party bodies to validate projects and verify/certify emission reductions) have been accredited. Simplified procedures and a list of indicative methodologies have been prepared (for small-scale CDM projects). More than ten methodologies have been approved (on baseline setting and monitoring). The methodology approval process has been delayed longer than expected, but the consolidation of methodologies, which was just started by the Methodology Panel, may speed up this process.

No project has been registered yet under the CDM. The first likely ones may be two HFC 23 decomposition projects in India and Korea (photo 1),³ which are expected to be registered in October and November, and the first certified emissions reduction (CER) credits should be issued as well within 2004 or early 2005.

Around 60 countries have established their designated national authorities (DNAs), as required under the protocol, for preparing/promoting CDM projects as hosts or investors.

2. In the negotiations at COP 1, the Parties could not agree on the criteria of joint implementation, but they did agree on starting on AIJ as the pilot phase of joint implementation. The USIJI is an AIJ project initiative and many projects have been implemented under it, especially in Latin American countries.

3. HFC 23 is a type of hydrofluorocarbon with a very high global warming potential (GWP) of more than 10,000.

The CER market has been growing rapidly (almost doubling each year) prior to their actual issuance (under forward transactions).

Presently, the typical emissions reduction size of proposed CDM projects is on the order of 10,000 tonnes of carbon dioxide (tCO₂) equivalent per annum, far from the anticipated needs of some of the Annex I (industrialized) countries such as Japan, which may need to purchase more than 10 percent of its annual emissions (120 million tCO₂ equivalent per year) from abroad. On the other hand, projects with several million tonnes of reductions or more remain waiting in the wings. Some of them may appear in a couple of years.

Out of all countries of the world, China has the most potential for utilizing the CDM. As it just released its provisional CDM policy on June 24, 2004, it may take several months for it to become clear how this policy and related procedures will be implemented.

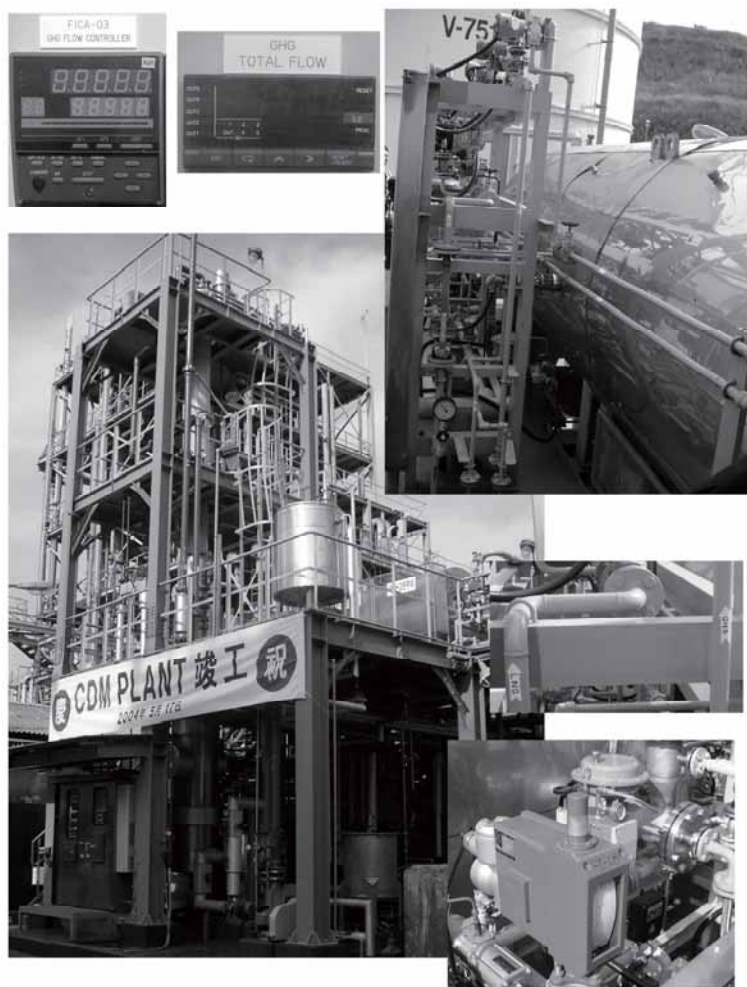


Photo 1. The HFC 23 decomposition project in Ulsan, Korea, likely to be one of the first CDM projects in the world

3. Issue mapping

The CDM framework has been developing steadily and is going into operation, albeit more slowly than initially expected.

Through experience in the processes to date, obstacles have become apparent in some of the following areas. They need to be overcome in order to further develop the CDM framework so it operates more smoothly and effectively (some of these obstacles will be explored in the following sections):

- Project design document development (especially drafting baseline methodology)
- Secondary transfer of CER credits to non-participants
- The market value of CER credits
- Establishing a designated national authority (DNA) in host countries
- Domestic incentives in investing countries
- Project selection
- Project financing (carbon financing)
- Sustainability (especially in utilization of public funding)
- Matching needs and seeds

3.1. PDD methodology, additionality, and baseline setting

The design of a project design document (PDD) is a critical part of the process to have a project recognized as a CDM project, but considerable technical expertise is needed to draft the documentation, especially in setting the emissions baseline (see figure1). The baseline scenario is the one that would have occurred if the project were not registered under the CDM.⁴ The emissions reduction (i.e., the CERs claimed) is defined as the difference between the baseline emissions and a project's emissions, but identifying a baseline scenario is difficult because it is counterfactual and will never occur.

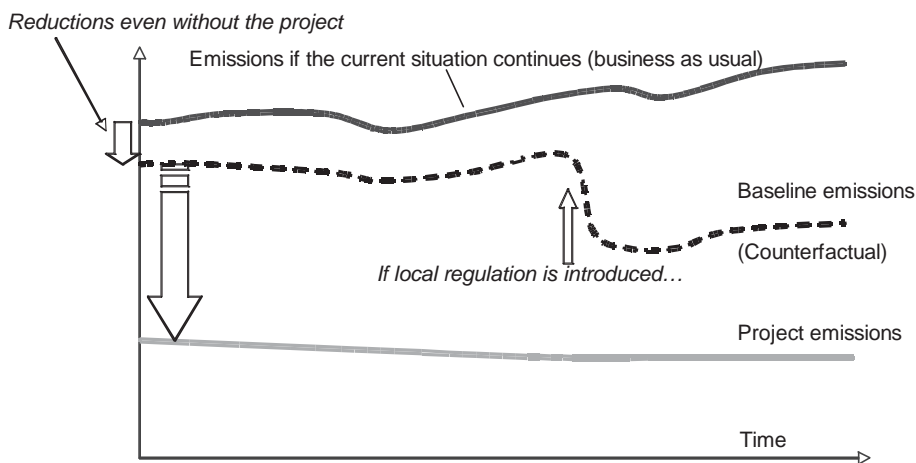


Figure 1. Illustration of the baseline concept

4. In other words, the baseline scenario is what would have occurred if the revenue of CERs is zero for private sector projects.

The process of identifying the baseline scenario involves two steps in the CDM framework: (1) development of a methodology, to be approved by the Methodology Panel/CDM Executive Board (EB), and (2) application of the methodology to the specific project, validated by an operational entity (OE) (figure 2).

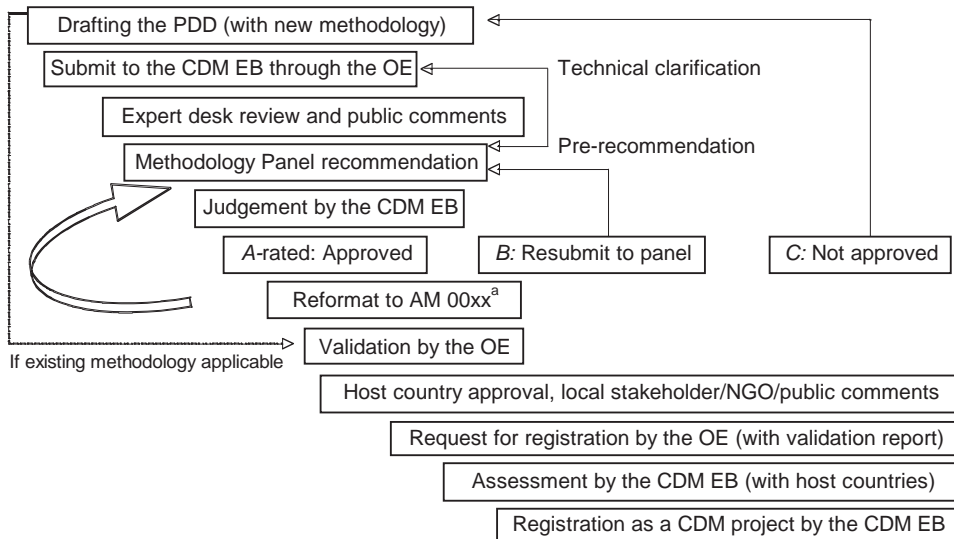


Figure 2. Procedures involved prior to registration of a CDM project

^aAM 00xx is the serial number attached to the approved methodology.

In many cases, it takes expertise and time to prepare a new methodology for approval.⁵ The methodology is the “logic” with “procedures,” while its application needs “evidence” specific to the project. The methodology consists of the following:

1. identification of the baseline scenario,
2. representation of the baseline scenario by mathematical formula using measurable parameters, and
3. monitoring the methodology of such measurable parameters (in the project scenario).

The first item (identification of the baseline scenario) is especially difficult. In some cases, the meaning of “additionality” is confused with baseline scenario identification. With the concept of additionality it is assumed that that the project would NOT be implemented if were not registered as a CDM project. But when discussing additionality, there is no mention what kind of scenario would be realized if the project were not a CDM project. The identification of a baseline scenario is a broader concept than additionality.

The amount of credits generated by a project (which equals GHG emission reductions) depends very much not only on whether or how much time it takes to be registered as a CDM project but also how the

5. If an existing approved methodology can be applied to the project, this step can be skipped. For example, in the case where an investor is planning to implement similar projects in several non-Annex I countries, a new methodology may be developed for the first project (and get approved) and then be applied to the rest.

baseline is set. For example, if the baseline is set conservatively (i.e., lower), it may lose a few dozen percentage points worth of CER credits. In other words, if the project developer can develop a more reasonable (more certain) baseline, the project can generate more CERs than less reasonable (conservative) ones.

The approved methodologies for baseline setting are to be consolidated for cases of grid-connected renewables and landfill gas capture. While it is uncertain how this approach will operate, it may speed up the process. On the other hand, some of the approved methodologies are not of good quality, so we hope that consolidation is not the default method but a minimum requirement for the development of better methodologies.

3.2. Can non-Annex I countries sell CERs?

In the Marrakesh Accords, it is not explicitly mentioned whether a non-Annex I (developing) country or a company in that country can sell CERs to non-participants of the project.

Simply speaking, such secondary transfers might be regarded as transfers under emissions trading, but emissions trading under Article 17 of the Kyoto Protocol is only allowed between emissions-capped developed countries.

On the other hand, a non-Annex I country can hold CER credits in its account in the CDM Registry, as specified in the Marrakesh Accords. Therefore, some people have the view that such transfers should be possible. This issue is linked to whether or not so-called unilateral and/or South-South CDM projects should be possible.

At this moment, it is risky for a non-Annex I partner to acquire CER credits directly. It would be safer to obtain the associated funds instead from the perspective of hedging against risks.

This issue will probably have to go to the highest decision-making body, the COP/MOP, as it is beyond the responsibility of the CDM Executive Board.⁶ It may take several years, however, to reach consensus in international negotiations.

3.3. Market value of CER credits

Once issued, any CER credit may have the same/common market value (dependent on time only),⁷ but this depends (under forward transactions) on many aspects of the project, including, for example, the status of methodology used in the project, its possibility of success (proven), the experience of the participants with technology and CDM processes, etc., and the possibility of unexpected/unforced failure.

Good collaboration between the host country and investors is a must not only at the company level but also at the country level for credible delivery of CER credits to the market (with higher revenue).

6. COP = the Conference of the Parties. MOP = the Meeting of the Parties. The existing COP will serve as the MOP once the Kyoto Protocol enters into force.

7. Under the Kyoto Protocol, CERs as well as other GHG units may have similar market values after 2008, except for those involving reforestation/afforestation CDM projects—called temporary CERs (tCERs) or long-term CERs (lCERs)—which may have much lower value due to their limited lifetime.

From 2005, the European Union is going to launch its Emissions Trading Scheme (EU ETS) among 25 Member States. The so-called Linking Directive ensures the fungibility of CER credits in the EU allowance market. As the EU allowance price will be determined by the demand/supply relations under the EU ETS, CER prices are expected to be linked to the stringency of the GHG emissions reduction targets for European companies until 2008.

From 2008 (if the Kyoto Protocol enters into force), the market will be enlarged to include all Annex I Parties (which will have ratified the protocol and therefore be eligible for participating in the Kyoto mechanisms), including the EU market.

3.4. Project selection and financing

In designing a CDM project, the inclusion of components that reduce non-CO₂ gases is a technique that can be used to make the project more profitable and make it easier to demonstrate its additionality. Recently, for example, projects using biomass-related residue, resulting in the reduction of methane (CH₄) emissions, are recognized as a promising type of CDM project.⁸

Renewable energies are another promising type of project, while the energy-saving type is more difficult; however, the number of projects involving energy-saving and fuel-switching is increasing as experience (to demonstrate additionality) accumulates.

Another approach is to attach the CDM component of a project to an existing, ongoing, or planned ordinary (non-CDM) project. For example, an independent power producer may increase its energy efficiency or switch fuel from coal to natural gas if CER revenues are expected. In this case, the underlying project can be of any type, e.g., a project funded by official development assistance (ODA) and/or a profitable project. In this case, the baseline scenario is straightforward and risks specific to the CDM are relatively limited.

A barrier is found in the fact that carbon-related financing is not well known among those in the financial sector, not only in developing countries but also in developed countries. In order to promote CDM projects, banks or other players in the financial sector are needed that are familiar ways to design the structure of project financing, including approaches to take the new carbon value into account, in addition to the usual monetary value.

3.5. Utilizing public funding

It was decided in the Marrakesh Accords that public funding of CDM projects should not result in the diversion of ODA funding.⁹ This decision does not prohibit the use of ODA, but rather, was meant to emphasize the importance of discussion on how to utilize public funds within the CDM framework between countries concerned.

8. Under anaerobic conditions, biomass (e.g., municipal waste, cattle manure, wastewater from a biomass-related factory) is degraded to methane, which has GWP of 21. For biomass and other types of CDM projects, utilization of "waste" (and demonstration of why it is regarded as waste) is crucial.

9. The Marrakesh Accords do not explicitly specify who is to decide the eligibility criteria for using ODA for a project. The investor side is responsible for demonstrating this in the PDD (Annex 2), while only the host country of the project may make this judgement at the approval level.

As the Parties to be regulated under the Kyoto Protocol are the Annex I countries themselves, it is not out of place to utilize public funds to acquire CERs in order to comply with the quantified commitments.

Moreover, the use of public funds is a good way to support sustainable development aspects in the developing countries so as to correct regional imbalances, because the privately funded projects will be located based on economic efficiency.

Utilizing public funding, including ODA and other official flows, (OOF) is a challenging task. Hopefully, considering its political nature, the developing countries will initiate the discussion on how to utilize such public funding. Some new business models may be needed to help disseminate methods of utilizing public funds in the CDM arena.

4. Conclusion: Collaboration is the key

As discussed here, the CDM is still in its developing stages and some issues remain to be addressed, but one can see that almost all countries recognize the CDM as a useful tool. This means that even if the Russian Federation does not ratify the Kyoto Protocol,¹⁰ the CDM will not be discarded and will continue to be used, and it is sure to be used in the next framework agreement following Kyoto.

At least in Europe, CER credits may retain their economic value as a fungible commodity in the EU allowance market, as the European Union decided to stay with the EU Emissions Trading Scheme regardless of whether or not the protocol enters into force.

As for technical aspects such as baseline setting, considerable experience has been accumulated so far, while some political aspects still need to be resolved, through collaboration between South and North (e.g., in the host country approval process of projects and/or discussions, rather than negotiations, on utilizing public funds).

The CDM is a market-based mechanism, and it offers participants the potential for win-win activities. Having said this, negotiations on profit sharing (both financial and in terms of credits) are still needed between project participants. Views may differ on how, or whether, government should have a say on this profit sharing. If the host government sets a high barrier for investors in its approval process (e.g., on the profit sharing issue), it may lose many opportunities because of the competitive nature of the CDM. Over time, experience will reveal the best approaches.

As South and North share two common goals—mitigating climate change and promoting sustainable development—there is a strong incentive on both sides to find solutions, and accumulate more experience through collaborative efforts.

References

Matsuo, N. 2004. CDM in the Kyoto negotiations: How CDM has worked as a bridge between developed and developing worlds. *MITI* 8 (3).

10. On September 30, 2004, the Russian Government (Cabinet) agreed to submit the Kyoto Protocol to the lower house of parliament (the Duma) for ratification.