

Combating Global Warming – A Contribution from Developing Countries

Introduction

Man-made emissions of so-called greenhouse gases may severely affect the climate on earth. As a measure to combat the problem of the continuous increase in global emission of greenhouse gases, the Kyoto Protocol was negotiated in 1997. The Protocol specifies quantified emission targets for all industrialized countries for the period 2008–2012. All industrialized countries except the USA and Australia, which did not ratify the protocol, will receive an endowment of emission permits corresponding to their

emission target for the period 2008–2012. The emission permits can be traded. By making the permits tradable, the distribution of cost can be separated from the distribution of emission reductions (abatement). Any overall target for emission reductions is achieved in the least costly manner if the emission reduction is carried

out where it is less costly (cost-effectiveness). Tradable permits ensure a cost-effective distribution of emission reductions across the industrialized countries participating in the agreement. Countries with low-cost abatement options reduce their emissions below their endowments of permits and sell excess permits on the market. Countries with high abatement cost abate less and become net buyers of permits. The distribution of the cost of the agreement is a factor of the countries' abatement costs and the distribution of the endowment of permits among the participating countries.

Developing countries do not have binding emission reduction requirements, so they have no permits to trade. Many developing countries have low-cost abatement options (compared with industrialized countries). The total cost of achieving a certain reduction in global emissions could therefore be reduced if some of the abatement measures were carried out in developing countries. To take advantage of cheap abatement possibilities in developing countries, the Kyoto Protocol states that industrialized countries with quantified emission targets are allowed to meet part of their reduction commitments through investments in emission abatement projects in developing countries. This is referred to as the clean development mechanism (CDM).

In this paper, I discuss some features of the CDM mechanism and compare the mechanism with another option for generating an abatement contribution from developing countries, i.e. that they accept a cap on their emissions and be given the opportunity to trade permits. I refer to the latter as the cap & trade option.



Post Doctorate Fellow

Cathrine Hagem

Department of Economics,

University of Oslo, Norway

E-mail: chagem@econ.uio.no

CAS Fellow 2005/2006

Abatement contributions from developing countries – CDM vs. cap & trade

A CDM project implies that an investor from an industrialized country invests in a specific abatement project in a developing country (the host). A CDM executive board has been established. Its task is to approve CDM projects and issue certified emission reduction units (CERs), corresponding to the emission reduction achieved by a given CDM project. The CERs can be used by the investor to offset own emissions, or they can be sold to other industrialized countries. Hence, CERs have the same value for investors as ordinary emission permits.

There are two specific prerequisites for the approval of CDM projects: (i) the CDM mechanism should help developing countries achieve sustainable development, and (ii) the reduction achieved by the projects should be *additional* to any that would occur in the absence of the project activity (see UNFCCC (1998), Article 12).

The first prerequisite ensures that the CDM mechanism will also be of benefit to the host (developing country). The CDM mechanism could ease the transfer of new technology from industrialized to developing countries. The second prerequisite is to ensure that the CERs are based on real emission reductions so that the CDM mechanism does not lead to higher global emissions. However, this can be difficult to guarantee, since it may give both the investor and the host of a project an incentive to overstate the emission reduction ensuing from the project. Since investors can use the CERs to increase their domestic emissions, overestimating the emission reductions ensuing from CDM projects could lead to an increase in global emissions compared with a situation without the CDM mechanism.

From developing countries' point of view, the advantage of being a host depends on the financial transfers received from the investor and/or the transfer of new technology. Investors are not willing to pay a higher price for emission reduction through CDM projects than the price they have to pay for ordinary permits. Potential investors' efforts to draw up CDM proposals, along with the resources used to verify and certify emission reductions, can lead to rather high transaction costs for acquiring CERs. (See *inter alia* Michaelowa et al. (2003) for an overview of the estimated transaction costs of different kinds of CDM projects). Due to the transaction costs associated with acquiring CERs, financial transfers to the host, measured per unit CER produced by the CDM project, may be much less than the price of ordinary emission permits.

The high transaction costs of CDM are an argument for including developing countries in an environmental agreement based on the cap & trade option instead. A cap & trade option implies that a developing country accepts a binding cap for its emissions. A country receives an emission allowance (permit) corresponding to its cap for emissions and is allowed to participate in permit trading. If the cap for emissions is generous, developing countries will reap a net gain by implementing low-cost abatement options and selling excess permits on the permit market.

Developing countries may be better off under the cap & trade option than with the CDM mechanism. Consider, for instance, the case where developing countries were given emission permits corresponding to their business-as-usual emissions (BaU emissions). Compared with the CDM mechanism, developing countries may become better off for the following reasons: (1) all low-cost abatement options can be utilized, i.e. not only

large investment projects as is the case under the CDM mechanism, and (2) emission reductions do not have to be verified by a CDM executive board, meaning lower transaction costs.

However, developing countries have been reluctant to accept binding commitments. One reason for this is that uncertainty about whether the BaU emissions may result in less advantages than expected. If BaU emissions turn out to be higher than expected, and/or the international price on permits turns out to be lower than expected, the advantage of the cap & trade option may be less than a CDM option, in which emissions reductions are calculated based on a project-specific baseline. Kallbekken and Westskog (2005) explore the cost and benefit of taking binding commitments for developing countries. They find that the efficiency gain from joining the emission trading option compared with the CDM option might not be very large compared with the risk they incur. This implies that as long as the CDM-mechanism is an option for developing countries, they may demand very large endowments of permits to voluntarily choose the cap & trade option.

Conclusion

One conclusion from this discussion is that since the CDM mechanism involves high transaction costs and limited abatement efforts on the part of developing countries, the total cost of global emission reductions can be reduced if the developing countries instead accept a (generous) cap on their emissions and participate in emission trading. However, as long as the CDM mechanism is an option, developing countries may demand a very large cap on emissions to voluntarily choose the cap & trade option. If their cap on emissions is set higher than their BaU emissions, fewer permits will be given to industrialized countries in order not to increase global emissions. This may become too costly for industrialized countries. One solution to this problem is to put an end to the CDM option for developing countries and let cap & trade be the only option for developing countries to earn a profit on their abatement efforts.

References

- Kallbekken, S. and H. Westskog: "Should developing countries take on binding commitments in a climate agreement? An assessment of gains and uncertainty". *Energy Journal*, 26 (3), 2005: pp. 41–60.
- Michaelowa, A., M. Stronzik, F. Eckerman and A. Hunt: "Transaction costs of the Kyoto Mechanism", *Climate Policy*, vol 3, issue 3, September 2003, 261–278.
- UNFCCC: "The Kyoto Protocol to the Convention on Climate Change", 1998, http://unfccc.int/essential_background/kyoto_protocol/background/items/1351.php