



# On the contribution of labelled Certified Emission Reductions to sustainable development: A multi-criteria evaluation of CDM projects

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## ABSTRACT

The Clean Development Mechanism (CDM) has a twofold objective, to offset greenhouse gas emissions and to contribute to sustainable development in the host country. The contribution to the latter objective seems marginal in most CDM activities. Also, CDM activities are unevenly spread among developing countries. In response to these concerns, initiatives with the objective of promoting CDM projects with broad local sustainable development dividends have been launched, such as the Gold Standard and the Community Development Carbon Fund. The Gold Standard label rewards best-practice CDM projects while the Community Development Carbon Fund focuses on promoting CDM activities in underprivileged communities. Using a multi-criteria method, the potential contribution to local sustainable development of those CDM projects with particular attributes is compared with ordinary ones. This evaluation suggests that labelled CDM activities tend to slightly outperform comparable projects, although not unequivocally.

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## 1. Introduction

The Kyoto Protocol creates a legally binding set of obligations for industrialised countries and obliges those countries to reduce their emissions of greenhouse gases (GHG) to an average of 5% below their 1990 levels over the commitment period 2008–2012 (UNFCCC, 1997, p. 3). Three flexible mechanisms, Emission Trading, the Clean Development Mechanism (CDM), and Joint Implementation, aim at reducing the costs of meeting emission targets by allowing for geographical and temporal flexibility (Dutschke and Michaelowa, 1998).

The CDM is the outcome of lengthy and delicate international negotiations. It represents a compromise between the aspirations of developing countries for development on the one hand and the desire for industrialised countries to meet their emission target in an economically efficient manner on the other. The CDM has two objectives, to offset GHG emissions produced in developed countries, and to promote sustainable development in developing countries, as stated in the article 12 of the Kyoto Protocol (UNFCCC, 1997, p. 11).

The CDM was originally seen as of particular interest for developing countries. Indeed, the fear of environmental measures hampering development would vanish if climate and development policies could converge. However, the question of whether

climate and development objectives are compatible or in contradiction is open to debate (see e.g. Michaelowa and Michaelowa, 2007).

The effective contribution of CDM projects to sustainable development is being questioned, giving rise to a series of measures, which aim at promoting CDM activities with broader sustainable development dividends. Attempts to evaluate the contribution of CDM projects to sustainable development exist (see e.g. Olhoff et al., undated; Olsen and Fenhann, 2008; Sutter and Parreño, 2007; Policy and Operations Evaluation Department, 2008). This paper contributes to this debate by comparing CDM activities with particular attributes to ordinary ones. It does so by applying a multi-criteria methodology in order to evaluate how labelled projects perform with respect to sustainability criteria in comparison to similar non-labelled projects.

In Section 2, the current status of the CDM portfolio is portrayed and its challenges briefly discussed. Section 3 introduces initiatives promoting CDM activities delivering broad sustainable development dividends. The methodology applied in the framework of this research is depicted in Section 4. The projects evaluated are presented in Section 5. The evaluation, analysis and discussion feature Section 6, and the conclusions are presented in Section 7.

## 2. The current CDM portfolio and its challenges

According to the literature (e.g. Boyd et al., 2007; Cosby et al., 2005; Olsen, 2007; Pearson, 2007; Schneider, 2007; Sterk, 2008;

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Sutter and Parreño, 2007), a number of CDM projects, including some already approved, are under-performing in terms of contribution to local sustainable development criteria.

They represent, for instance, end-of-pipe adjustments of industrial processes to capture gases with a very high greenhouse effect. These kinds of projects are not an issue as such, in the sense that they effectively contribute to a reduction of GHG released to the atmosphere. However, they are accompanied by very meagre benefits in terms of local sustainable development (Schneider, 2007; Policy and Operations Evaluation Department, 2008). It is argued that such projects represent almost no technological transfer, induce only low capital investment, promote almost no additional employment and their contribution to social sustainable development is meagre or nil. The relatively high potential of delivering Certified Emission Reductions (CER) from those end-of-pipe fix types of projects, together with their low costs, could trigger negative effects on the emerging market of emission credits, driving down prices by saturating the market (Olsen, 2007). This claim is, however, yet to be empirically demonstrated (Cosbey et al., 2006). Other projects recognised with higher local sustainable development profits, like renewable energy projects for instance, could nevertheless be strongly undermined (Sterk and Wittneben, 2005). Other authors (Estrada et al., 2008; Sterk, 2008) argue, however, that the contribution of offset mechanisms to sustainable development is more related to their design than to the typology.

The CDM procedure does not formally define sustainability criteria, in contrast to the other objective of the CDM, GHG offset, whose operationalisation and implementation are clearly defined and monitored. The assessment of the contribution to sustainable development of the projects is a sovereign matter of the host country. [...] *it is to the host Party's prerogative to confirm whether a clean development mechanism project activity assists it in achieving sustainable development, [...]* (UNFCCC, 2002, Decision 17/CP.7). By not clearly defining the sustainable development criteria required for the CDM, the United Nations Framework Convention on Climate Change (UNFCCC) allows, rightly so, for the host country of a CDM project to adjust those criteria according to national development priorities. On a less optimistic view, much uncertainty arises from the lack of consistency between the requirements of host countries.

Although sustainable development attributes are politically desired, they are not explicitly incorporated in the core structure of the CDM (Boyd et al., 2007). That is, beside the approval stage by the host country authorities, there are no formal requirements to fulfil in terms of contribution to sustainable development, and therefore also not *ex-post* verification.

The factors that would lead to the acceptance or the refusal of the projects are thus strongly dependent on national values, and could eventually suffer from the influence of strong stakeholders (Olsen, 2007). The decision for acceptance could be influenced by other factors, such as incentive for foreign investments, hence undermining social and environmental aspects and therefore weakening the potential positive influence on local sustainable development sought by the CDM.

The risk of having different host countries competing in order to attract CDM by easing the minimum criteria is real and could lead to what is the sometimes called the 'Race to the Bottom' (Sutter, 2003; Pearson, 2007). The potential host country has to define a policy balancing the short-term benefits of foreign investments and the long-term dividends of sustainable development.

There is a threat for the market in itself not to be able to yield sufficient projects with high sustainable development values (Olsen, 2007; Sutter and Parreño, 2007), and thus for the portfolio to be mainly driven by the economic attractiveness of the

potential projects (Schneider, 2007). Indeed, a few projects with low local positive effects but high CERs, could weaken the opportunity for a greater overall sustainable development outcome (Burian, 2006).

Let us consider the following illustrative example. One project capturing a gas (hydrofluorocarbon, HFC) with a very high global warming potential alone will deliver about as many CERs as nearly 200 biomass energy projects together.<sup>1</sup> Therefore, in the market-based mechanism in which the CDMs evolve, one single project with low local sustainable development benefits can rival a multitude of other projects and their combined recognised broad sustainable development dividends.

The unequal distribution of CDM projects throughout developing countries is another source of concern (for data on project distribution, see Boyd et al., 2007; Fenhann, 2008; UNDP, 2006). Indeed, the great majority of CDM projects seem to target developing countries with strong economies, such as China, India, and Brazil in particular, those countries being the ones where a large amount of the Foreign Direct Investment already flows to (Ellis et al., 2004).

According to Ellis et al. (2004), the impoverished countries that are unable to attract foreign investments also do not seem to be in a position of generating interest in CDM project investments. Some of the poorest countries lack the institutional capacity required to become potential host countries (Kim, 2003). From a development policy point of view, some countries located in sub-Saharan and Southern Asian regions seem to have the greatest need for foreign investment. The CDM, in its current form, has generated little activity in those regions thus far.

Another concern from critics in developing countries is that the market is likely to promote the most economic options, the sometimes so-called low-hanging fruits (Cosbey et al., 2005). Assuming that, at a later stage, developing countries will also have to comply with some form of defined emission caps, those countries would only have more costly options available in order to do so (Rose et al., 1999; Muller, 2007). This may represent a paradoxical and contra-productive effect from a development assistance viewpoint. This claim is, however, refuted by Germain et al. (2007).

### 3. Initiatives addressing the CDM shortcomings

In response to the perception that mainstream CDM projects might underperform in terms of sustainable development, some institutions proposed to overcome those shortcomings by encouraging activities which are accompanied by broad and substantial contribution to sustainable development in host countries. In this regard, labelling appears to be a promising complement to enhance projects with specific features (Muller, 2008). Also, special funds target projects with specific characteristics, such as broad sustainability benefits or activities located in underprivileged countries.

In the current framework, a monetary value is only attributed to one of the two objectives of the CDM, namely the reduction of GHG. Premium markets seem to be an attractive option for giving a value to the second objective, which is to promote sustainable development (Schneider, 2007). Indeed, the quality of the projects is likely to have an influence on the price of the Certified Emission Reductions delivered.

Sutter (2003) and Muller (2008) review sustainability labels and indicators. Relevant to this research are the Gold Standard

<sup>1</sup> Project for HFC23 Decomposition at Changshu 3F Zhonghao New Chemical Materials Co. Ltd. (10,437 ktCO<sub>2</sub>/yr), 199 biomass energy projects registered (10,976 ktCO<sub>2</sub>/yr in total), own compilation of data from Fenhann (2008), status as of 1 April 2008.

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