

CDM Criticisms: Don't Throw the Baby out with the Bathwater

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- CDM has delivered greater offset volumes than anticipated, mainly with money from the private sector in host countries (underlying project investment) and investor countries (carbon offset purchasing) and has built considerable institutional capacity.
- Criticisms have focused on high transaction costs and lack of scalability; additionality challenges and lack of net mitigation impact; preventing more ambitious targets and changes in emissions paths in developed and developing countries alike; excessive rents and perverse incentives; unbalanced regional distribution; low local sustainable development benefits; corruption and lack of transparency; and lack of technology transfer.
- While some of these criticisms are justified, others are outdated. Transaction costs have been drastically reduced. Excessive rents and perverse incentives in the CDM will be substantially reduced post-2012. Unbalanced regional distribution will be reduced by new rules; moreover, this is probably less of a problem than commonly thought.
- Some criticisms are erroneously founded. There is no evidence of CDM preventing more ambitious targets in developing countries while it could prevent changes in emissions paths in developed countries. Few CDM projects have serious known problems as regards sustainable development. Corruption and fraud seem limited; and technology transfer has never been a core CDM concern.
- Ironically, critics often neglect the elements that need to be improved. To ensure additionality, CDM rules must be tightened to exclude common practice projects and prevent host countries from changing their policies to cater for CDM projects.
- CDM's scalability and additionality challenges could be substantially reduced by discounting emission reductions. There could still be some non-additional projects, but the volume of the overall portfolio of projects would be additional.

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Introduction

The Clean Development Mechanism (CDM) was agreed as part of the Kyoto Protocol in 1997 to enable entities in industrialized countries to reduce their costs of complying with emission cuts by funding emission-reducing projects in developing countries and obtaining carbon offsets in return. The 5000th CDM project was recently registered, and the CDM Executive Board, a UN body, has issued more than 1 billion such carbon offsets ('certified emission reductions', or CERs), each equalling the reduction of 1 ton of CO₂-equivalent (CO₂e) emissions, to governments, financial institutions and emitters in developed countries.

Single projects are assessed against a counterfactual or monitored baseline, and need to be 'additional' (leading to lower emissions than would otherwise have been the case). They are scrutinized in detail, as non-additional projects would be highly problematic for the climate regime: CERs are used by entities in industrialized countries to offset their own emissions, so any non-additional CDM projects would actually bring a net *increase* in emissions.

At the Durban climate conference in late 2011, negotiators clarified that CDM will continue post-2012, as further confirmed at the Doha conference in late 2012. Although among the least controversial elements of the post-2012 climate negotiations so far, the CDM has faced increasing criticism in recent years.¹ Focusing on the 2013–2020 period, this viewpoint paper rebuffs some of the myths created by critics, and directs attention towards CDM's real challenges.

¹ See also see Michaelowa, Axel, and Jørund Buen: 'The Clean Development Mechanism gold rush', Ch. 1 in Michaelowa, Axel (ed.) (2012), *Carbon Markets or Climate Finance? Low Carbon and Adaptation Investment Choices for the Developing World*, Routledge, pp. 1–38.

Main criticism of CDM

The report of the independently operating High-Level Panel on the CDM Policy Dialogue,² launched by the CDM Executive Board at the Durban climate conference, summarized common criticisms towards CDM, and – separately – stated that CDM was on the verge of collapse, despite delivering substantial volumes of low-cost emission reductions.

High transaction costs and lack of scalability: The CDM Executive Board (EB), unhappy with the quality of the job done in the initial years of CDM by the third parties (Designated Operational Entities, DOEs) assessing projects on its behalf, involved itself as well as a team of external technical experts directly in project assessment. This project-by-project approach, and scrutiny by different entities, has led to inconsistencies and delays, with ensuing cash-flow problems and bankruptcies among CDM developers. Critics say the sheer number of project-level assessments necessary makes CDM impossible to upscale sufficiently to help stabilize GHG emissions at acceptable levels.

Registration of non-additional projects and leakage problems: Similarly, the CDM EB is frequently criticized for registering non-additional projects, especially power-generation projects in India and China; also, for not properly taking into account emissions increases resulting from its effects on energy and product markets;³ and for failing to weed out project types that have become common practice in a given area.

Prevents tougher targets and changes in emissions paths: CDM sceptics warn that transferring money and technology to developing countries in exchange for emission reductions undertaken voluntarily could prevent such

² High-Level Panel on the CDM Policy Dialogue (2012), *Climate Change, Carbon Markets and the CDM: A Call to Action*, report, Luxembourg: CDM Policy Dialogue, URL: www.cdmpolicydialogue.org/report/rpt110912.pdf [accessed 5 October 2012].

³ See e.g. Rosendahl, Knut Einar, and Jon Strand (2011), 'Carbon Leakage from the Clean Development Mechanism', *The Energy Journal*, Vol. 32, No. 4, pp. 27–50.

countries from taking on binding reductions targets later on. The argument is that, since CDM revenues do not impose any requirements on host countries, they could provide incentives for avoiding commitments. Similarly, the CDM host countries themselves, with many environmental NGOs, fear the developed countries will not reduce emissions domestically because they can use cheap CDM offsets. This argument has also featured in EU internal debates on future climate policy.

Excessive rent and perverse incentives: Owners of projects with low abatement costs and high global warming potentials have been criticized for taking excessive rents from CER sales, and for using these CER revenues to offer lower product prices than competitors outside CDM host countries. This criticism has particularly been directed at projects reducing the halogenated hydrocarbon byproduct HFC-23 (trifluoromethane) from production of the refrigerant HCFC-22, and nitrous oxide (N_2O) from adipic acid production plants. Such projects commonly have abatement costs around or even below 1€ per tonne of CO_2e reduced.

Unbalanced regional distribution: A few advanced developing countries with industries from which emissions can be reduced (China, India, S. Korea, Brazil) have reaped large benefits from the CDM. Critics say it has yet to bring much benefit to least-developed countries, small island developing states, and certain other regions (including the Middle East).

Limited local sustainable-development benefits: Driven partly by discussions on HFC-23 and adipic acid N_2O -reduction projects, but also hydropower and forestry projects, there has been debate on whether CDM projects focus on reducing emissions at the expense of local sustainable development. This has recently been intensified because of accusations of serious breaches of human rights at specific registered CDM projects.

Corruption and lack of transparency: There has been considerable concern about corruption and fraud in CDM projects' additivity determination, third-party assessment and/or host-country approval.⁴

Lack of technology transfer: The transfer of technology from developed to developing countries has long been a bone of contention in international climate negotiations. Developing countries have demanded such technology, to avoid following in developed countries' emission-intensive development path, whereas the developed countries have responded that intellectual property rights to such technologies are owned by private companies and cannot be controlled by governments. Since the CDM typically involves project-based cooperation between entities in developed and developing countries, many have hoped CDM would stimulate technology transfer from the former to the latter.

Have the critics been correct?

Transaction costs and lack of scale is much less of a problem now

Until a few years ago, market participants and regulators worried about slow CDM processes and resultant lack of CER supply. Ironically, just when the financial downturn and lack of post-2012 demand signalled a significant CER overhang, CDM processes started working quite efficiently, rapidly churning out large volumes of carbon credits.

The EB's response to criticisms regarding excessive red tape, high transaction costs and lack of scalability, plus competition from other offset mechanisms, has been a thrust for efficiency and standardization. It plans and monitors operations in far greater detail, and has committed to timelines for most processes; however, some timelines are still missed, and planning glitches occur. The CDM now has solid fee revenues from project registration and CER issuance, and a much larger staff to support it.

Host countries can now submit standardized baselines for selected project types, which often implicitly grant automatic additivity to all projects surpassing a defined benchmark. Many types of CDM projects in underdeveloped areas can now use the concept of suppressed demand, whereby CERs will be issued based on defined minimum service levels rather than actual (far lower) activity levels. This has been motivated partly by the desire to stimulate underrepresented project types and regions. For similar reasons, micro-scale projects and selected small-scale project types have been made automatically additional. Projects that are first of their kind are automatically deemed additional.

⁴ For details on corruption in CDM and carbon markets, see Buen, Jørund, and Axel Michaelowa, 'View from the inside - markets for carbon credits to fight climate change: addressing corruption risks proactively', in: Transparency International (2009), *Global corruption report 2009. Corruption and the private sector*, Cambridge University Press: www.transparency.org/content/download/46251/740800 pp. 41–45.

Programmes of Activities (PoAs) – enabling the continuous addition of smaller sub-projects over a 28-year period under one umbrella project seeking CDM registration – have been boosted by clearer rules. However, significant uncertainties and risks remain for developers of such initiatives, and transaction costs related to third-party checking of PoAs are rising.

Criticisms of CDM have often blamed the alleged lack of scale on its high transaction costs. In fact, it is unfair to say the CDM has disappointed in terms of scalability: Researchers and negotiators initially estimated the emission reductions under CDM at between 90 million tonnes and 2 gigatonnes, tilting towards the lower half of this continuum, whereas the likely result is well above.⁵

Severe additionality problems remain

According to the High-Level Panel on the CDM Policy Dialogue, ‘by and large the projects approved by the CDM Executive Board meet the requirements of the additionality test’,⁶ and its report concludes ‘there is no conclusive evidence, as is sometimes claimed, that a large number of CDM projects are non-additional.’ However, neither the panel nor the Board really addresses the defects of the additionality test itself or their interaction with other key CDM rules.

The CDM additionality test allows a project to be very financially attractive as long as its proponents can argue that another credible baseline scenario is even more attractive. Furthermore, rules have been put in place to ensure CDM does not remove the incentive for host countries to implement emission reduction policies (‘E+/E- rules’). These rules allow new emission reduction policies to be

exempted in CDM project baseline and additionality calculations. Projects primarily funded by, for example, feed-in tariffs on renewable power can be registered as CDM projects although CDM has probably not been decisive for their implementation, with the argument that other (fossil-fuel) projects are even more financially attractive.

Furthermore, the ‘common practice test’, part of the tool for proving a CDM project is additional, does not always weed out projects that are actually common practice. When a new project must prove it is not common practice in its geographical area, other CDM projects do not have to be taken into account. For many project types, the CDM hence has too weak built-in mechanisms to incentivize continuous improvements and avoid business-as-usual projects.

CDM does not prevent tougher targets in developing countries, but obstructs changes in developed-country emissions paths

There is absolutely no empirical evidence that CDM makes developing countries shy away from commitments.⁷ Rather, CDM seems to create new domestic private-sector awareness and understanding of, and support for, carbon markets within big developing-country emitters, thus preparing such countries for cap-and-trade. The examples are many: Mexico has approved the world’s second climate law, and Korea has agreed a cap-and-trade scheme where its own CDM projects are eligible as domestic offset projects. Although a main recipient of CDM revenues, China has taken on intensity targets. CDM methodologies will reportedly form the basis for China’s province-based emission trading schemes, and it is likely to use CERs as domestic offsets.

Excessive rents and perverse incentives have been addressed, and will be further reduced post-2012

Criticisms regarding excessive rents and perverse incentives are somewhat dated. The baseline and monitoring methodology for HFC-23 reduction projects has been revised so that CER revenues are reduced to about a

⁵ These studies rarely differentiate between the CERs generated vs. issued by end 2012; the latter currently looks set to be about 1.1Gt, some 0.5Gt lower than the former. See e.g. Vrolijk, Christiaan (1999), *The Potential Size of the Clean Development Mechanism*, Working Paper, Royal Institute of International Affairs: www.chathamhouse.org/sites/default/files/public/Research/Energy,%20Environment%20and%20Development/potential_size_of_the_cdm_vrolijk_1999.pdf, p. 3; Zhang, Zhongxiang (2001), *An economic assessment of the Kyoto Protocol using a global model based on the marginal abatement costs of 12 regions*, MPRA Paper, University of Munich: <http://mpra.ub.uni-muenchen.de/13148/>, p. 16 [accessed 5 October 2012].

⁶ Moosa, Valli (2012), ‘Final report of the high-level panel on the CDM policy dialogue’, presentation for the CDM Executive Board, 10 September: http://unfccc4.meta-fusion.com/kongresse/cdm69/templ/play.php?id_kongressession=5255, p. 38 [accessed 5 October 2012].

⁷ India has reportedly refrained from implementing policies for reducing HFC emissions because it wants CDM to continue; some countries may have deferred landfill legislation due to CDM; and South Africa has reportedly adapted renewable energy feed-in tariffs to CDM. However, these are perverse incentives related to the E+/E- issue above, not target-setting.

third of the previous levels. A similar approach is possible, although not decided, to limit excessive rent in adipic acid N₂O-reduction projects, and is also being debated in order to prevent perverse incentives in nitric acid N₂O-reduction projects.

Furthermore, such criticisms ignore how market forces work. It should not be seen as problematic that some market players make money from reducing emissions at very low cost – that is actually the core of what the CDM was to achieve. Restricting such profits by introducing a fund paying for reductions at cost, or establishing a market where all the rent goes to the buyers only (i.e. the price the buyers pay equals the marginal abatement costs) completely disregards that in a well-working market, rents should be shared.⁸

It is easy to call for amendments with the benefit of hindsight; nothing in principle prevented policy-makers from agreeing to launch a fund at the outset – the problem was that few of them knew anything about such low-cost abatement. The CDM market helped them map such opportunities. And if anyone had proposed the idea, it would probably have been dead on arrival, because of added costs for industrialized country governments and reduced benefits for developing countries.

Furthermore, supporters of non-market approaches have paid surprisingly limited attention to the inefficiencies of the Global Environment Facility (GEF), or bilateral aid budgets, in producing emission reductions, and the corruption challenges involved.

Finally, making certain project types ineligible for carbon credits because of large rents sends an unfortunate signal to investors: if you make good money on reducing emissions of a certain project type, that project type may become ineligible any time.

Unbalanced regional distribution will be reduced by new rules, and is only partly a CDM problem

Uneven regional distribution of CDM benefits is due partly to certain initial restrictions on CDM, which are now likely to be removed, and partly to factors the CDM has not caused and cannot realistically rectify. Various specific measures have been implemented to address regional imbalances. Furthermore, if relative parameters such as number of projects vs.

⁸ I owe this point to Axel Michaelowa, Perspectives GmbH (personal communication, 5 May 2008).

total country emissions, total CERs vs. GDP, number of projects vs. GDP and % of country emissions covered by CERs are used, LDCs and Africa – usually thought of as CDM losers – actually do fairly well, while the Middle East is lagging.⁹ This CDM criticism, although not completely unfounded, is poorly nuanced.

Apart from Middle Eastern governments not prioritizing petroleum revenues over mitigation actions, restrictions on the use of carbon credits from forestry projects imposed by Kyoto Parties are an additional reason for uneven regional distribution of CDM benefits. Together with the EU ETS import ban on such credits, UN restrictions have meant there has been no market for sinks carbon credits under CDM.

Since many African countries lack industry from which incremental emission reductions can be made, but have rich forestry potential, afforestation and reforestation could prove a growth area. Thus far, the CDM has helped cement existing differences in foreign direct investment between advanced and backward developing countries. Furthermore, as a market-based mechanism, CDM focuses investors' attention on the economically most attractive projects – which will rarely be in LDCs, given their generally high country risk.

Worries over uneven distribution of CDM benefits, and insufficient CDM stimulus for small-scale, dispersed project types within e.g. energy efficiency, prompted the 2005 UN Montreal climate conference to open for PoAs (see above). This, plus the EU decision to allow CDM projects registered post-2012 only from LDCs, has boosted project development in Africa. It is still lagging, especially due to today's low carbon prices, but could be further helped by the recently established loan facility for CDM projects in under-represented areas, as well as recent rule-changes granting automatic additionality to micro-scale and selected small-scale projects.

Furthermore, although this is not yet decided, the exclusion of many forestry-related project types from CDM could end relatively soon, opening new possibilities for many under-represented countries. Technical bodies under the UNFCCC now debate including other types of forestry projects (cropland management, forest management, grazing land manage-

⁹ See Lütken, Søren (2011), 'Indexing CDM distribution: leveling the playing field', C4CDM Working Paper Series No 10, Roskilde, Denmark: UNEP Risø, URL: www.cd4cdm.org/Publications/IndexingCDMdistribution.pdf [accessed 24 January 2013]

ment, re-vegetation, soil sequestration and wetland restoration) in CDM, and adding buffers to deal with non-permanence. This could remove the difficulties related to liability in such projects, which was a key reason why the EU did not allow them in its ETS. However, most forestry project types depend heavily on long-term investment certainty, as forests take some five to ten years to grow.

Few CDM projects have serious sustainable development problems, and strengthened regulations are emerging

Although host countries decide whether CDM projects meet their sustainable development objectives, in practice, most of them have given such aspects limited attention. This could change now that the EB is introducing (so far voluntary) guidelines for sustainability reporting of CDM projects.

Project types frequently criticized on sustainable-development grounds have been HFC-23 and adipic acid N₂O reduction projects as well as hydropower projects. The former two have been criticized for lack of sustainable development benefits (beyond GHG emission reductions) but no more such projects are likely to enter the pipeline, and their relative role in the CDM will diminish. Hydro-projects are still heavily criticized, e.g. due to forced relocation of local inhabitants, but many such projects now follow World Commission on Dams guidelines.

That said, the sustainability guidelines being phased in should (and probably will, if the CDM Policy Dialogue gets its way) be made mandatory and subject to verification, although many CDM host countries will guard their sovereignty. Will the sustainable-development impact of CDM projects be better or worse than that of non-CDM projects in developing countries? My personal guess is *better*, due to CDM transparency and stakeholder consultation processes.

Corruption and fraud do occur, but CDM is transparent

With more than 5,000 CDM projects registered and more than 10,000 projects in the pipeline, what is surprising is not the prevalence of reports on corrupt or fraudulent behaviour in relation to CDM projects, but the *absence* of examples of fraud and corruption.

Some project documentation may have been fiddled with to meet CDM requirements, and some projects may have been claimed ad-

ditional despite documentation to the contrary. There are reports of dishonest third-party assessors, and are examples of corrupt individuals obstructing host-country approval. But the overall picture is of a mechanism where documentation is too transparent and too publicly available for the liking of those involved in corruption and fraud.

Technology transfer has never been the core of CDM, and is a blind alley

There exists no formal requirement that a CDM project *must* transfer technology. Considerable technology transfer has indeed taken place, with most studies indicating that up to half of projects and slightly more of CER volumes are linked to actual technology transfer. Ironically, the most criticized project types (like HFC-23 reduction projects) have the highest reported technology transfer, while the most favoured ones (like wind power) have the lowest reported rates – but this is partly because third-party auditors do not accept wind technology licensed from industrialized countries as ‘technology transfer’.

One reason why more technology transfer is not happening is that the whole idea is outdated. When the Kyoto Protocol was signed in 1997, European and US companies could transfer superior emission reduction technology to China, as well as the knowledge and organizational settings for implementing it. Now the same companies could be acquired by Chinese competitors offering much cheaper technologies of sufficient quality to meet market demands. The extra emission reductions from, for example, a better-performing wind turbine or PV plant from Europe or the USA would not make up for the cost difference.

What the CDM *has* managed, and is more important than initial technology transfer, is to increase the diffusion of emissions-reduction technologies. The CDM has not limited the use of domestic technology, nor should it in the future. But introducing minimum technical performance standards could be a way of ensuring CDM projects keep delivering reductions throughout (indeed beyond) their crediting periods.

Conclusions

This paper has refuted several myths and dated criticisms about CDM. Transaction costs have been substantially reduced. There is no empirical basis for claiming that CDM prevents tougher targets in developing countries, although it probably obstructs changes in *developed* countries' emissions paths. Excessive rents and perverse incentives are mainly associated with HFC-23 and N₂O adipic acid project types with no remaining new potential under current rules. Rule changes could encourage CDM uptake in areas where there have been fewer projects, and increase local sustainable-development benefits.

While today's issued and projected CERs are more than enough to meet the current almost non-existent demand, the lack of support for CDM could backfire in a few years, if nations agree to tougher reduction targets. As discussed in a forthcoming *FNI Climate Perspectives* paper,¹⁰ in the period towards 2020, carbon market mechanisms other than CDM are unlikely to produce carbon emissions reductions at scale, with the possible exception of REDD. Probably mainly due to lax common practice and E+/E- rules, CER supply does not diminish despite lack of demand. In today's situation where targets are not agreed, and CER prices hence depressed, this means that business-as-usual projects survive at the expense of genuinely additional ones. In the short term, politicians downscaling CER demand because they want to move to other mechanisms to increase the environmental integrity of carbon markets could ironically end up further weakening the quality of CERs, without stimulating enough of the CDM projects they actually want, in order to meet a future scaled-up demand.

To deal with problems of non-additionality and ensure that developing countries contribute to scaled-up emission reductions, many stakeholders (including the CDM Dialogue Panel) have proposed reforming the CDM to ensure it actually reduces global emissions. Discounting CERs at a sufficiently stringent rate towards allowances meeting UN criteria could substantially reduce the challenges re-

lating to scalability and additionality. There would still be non-additional projects, but the volume of the overall portfolio of projects would be additional. Those who say CDM cannot contribute to scale should study how CDM has been used in China: a very high percentage of wind, hydro and natural gas power-generation projects there are now registered under CDM,¹¹ and upscaling such power generation is incorporated in China's 5-year plans. Hence CDM is already playing a NAMA or NMM role in China, at reasonable transaction cost. Clearly, not all these projects would have happened in the absence of CDM, due to the extra funding available; but quite a few would have, due to the government planning impetus. Identifying which projects belong in which category borders on the impossible.

Perhaps the quickest way to combine scale and integrity in the short term is for CDM to play the role of NAMAs and NMMs in the sphere of renewable energy and energy efficiency, by making all renewable energy and energy efficiency projects automatically additional but with a significant discount against UN-accepted allowances.

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¹⁰ Buen, Jørund (2013), 'Why new carbon market mechanisms could face the same old CDM problems', *FNI Climate Perspectives*, Lysaker: The Fridtjof Nansen Institute (forthcoming).

¹¹ For example, according to a 2011 study by Perspectives, Point Carbon and the University of Zürich for the International Energy Agency (<http://iea-retd.org/wp-content/uploads/2011/09/LINK-RE-policy-and-carbon-trade-2011-06.pdf>), as of end 2010, total wind capacity in China was 42.3 GW, and the capacity of its wind projects within CDM was a sizable 34.9 GW, although Chinese wind projects were not regularly submitted under CDM until 2004–2005.