
The role of CDM post-2012

Background paper for workshop: Carbon Pricing and Investment Response
Version 1.4.2010

Karsten Neuhoff and Alex Vasa

The Clean Development Mechanism was an important element of EU and international climate policy instruments. In this paper, we argue that the CDM has been successful in channelling attention and funds towards emissions reduction projects in developing countries. However, the CDM is a complementary mechanism that should facilitate the transition for developing countries to engage in emissions reductions supported and partly financed by industrialised countries. In addition, in some instances described below, the CDM has been inhibiting these goals. Here, we review options to mitigate this adverse impact and structure a transition to other mechanisms of international climate cooperation.

The paper proceeds as follows: we review the different functions which CDM plays for domestic and international stakeholders (Section 1) and discuss in more detail the provisions for the use of CDM credits in Europe post-2012 (Section 2). Section 3 explores different strategies to limit the use of the CDM – from regional, sectoral, procedural and demand side perspectives. Section 4 concludes.

Motivation

Currently, international discussions point to various difficulties the CDM is starting to create for long-term policy objectives. Despite, or possibly because of, its impressive track record of over 2,000 registered projects, the CDM as it is currently governed creates disincentives for policymakers in developing countries to enact national legislation on low-carbon development. First, national and sectoral legislation, which would lower the emissions baseline, deters CDM investment. As a result, additional and high sustainability projects such as renewables are hit most by a deterioration of investment as non-additional CDM projects continue to benefit from any monetary support.¹ Second, the inflow of CDM credits into Annex I countries' emissions trading schemes decreases Annex I parties' domestic efforts. The decreased CO₂ price reduces incentives to shift to low-carbon technologies for Annex I emitters.

Thus, this article argues in favour of a substantial limitation of the CDM to a subset of currently allowed project types. Such a policy move would use the existing structure of the CDM for projects where the

¹ In addition, proving additionality for the most sustainable project type, renewables, is complex relative to other CDM project types due to the analysis of the policy mix involved.

CDM is the optimal mechanism. The CDM is not a one-size-fits-all solution - project types with negative costs, high abatement costs or low sustainability benefits should be targeted by different policy packages. Limiting the CDM to certain project types frees resources to implement such policies, increase stringent domestic action by Annex I countries and enhance mitigation efforts in developing countries. For successful change, it is desirable to facilitate a rapid transition to (i) more stringent domestically delivered emissions reduction targets by Annex I countries, and (ii) effective use of domestic/international public finance to support developing countries in designing low-emission development plans and the implementation of Nationally Appropriate Mitigation Actions (NAMAs). The CDM currently impedes the attainment of both of these targets. A clearly structured transition allows human expertise, institutional capacity, resources attained through the CDM and additional finance to be shifted to a new investment framework, to contribute to its design and implementation, and to take forward low-carbon investments under the new framework. In contrast, a debated and prolonged transition would risk undermining ongoing investment activities and dry out capacity along the technology, project, and policy value chain.

1. Objectives of the CDM

The CDM has several objectives and has to satisfy various expectations. The CDM is expected to:

- (1) Provide resources and technology co-operation to support low-carbon development in Non-Annex I countries;
- (2) Reduce the cost burden of Annex I countries in achieving their targets, by targeting low-cost emissions reduction opportunities, while the CDM can be seen as a market-based penalty for non-achievement of emissions reductions;²
- (3) Create flexibility should emissions targets not be achieved, by serving as a “safety valve” for carbon prices;
- (4) Create incentives for a global carbon market.

We will now discuss these aspects one by one.

² Article 12 (2) of Kyoto Protocol.

1.1 Supporting low carbon development in Non-Annex I countries

Low carbon development in Non-Annex I countries requires large financial resources. The CDM is currently the largest climate-related transfer mechanism. Additional transfer funds could come from auctioning revenue of emissions trading schemes.

The CDM creates a direct transfer of about €1.5 billion per year towards developing countries (150 million CERs at an average €10/CER), while some rent is captured by third parties. The experience with an existing mechanism, and the stakeholders which are benefiting from its application, create a strong political dynamic towards a continuation of the mechanism.

This raises the question of whether scaling up the CDM (or similar off-set mechanisms) in Europe and other Annex I countries would ensure that non-Annex I countries shift towards low-carbon development trajectories and thus achieve the necessary mitigation volumes. However, due to the zero-sum nature of offsetting, the low-carbon development trajectories in developing countries decrease the burden on Annex I countries, of improving carbon efficiency and engaging in deeper GHG emissions cuts.

A set of difficulties have been identified with the structure of the CDM:

- The dependence on robust institutional framework has resulted in high regional concentration of projects, particularly Asia, and expected volumes in a few developing countries;
- When evaluating CDM projects, banks discount expected CDM revenues, due to the uncertainties on registration and issuance, future carbon prices and potential import constraints;³
- The nature of markets, paying the same price to all projects, implies that most projects receive higher support than required to break even. Thus, significant rents accrue to the projects or intermediaries – which result in less effective use of the available funding.

These difficulties are exacerbated by the fundamental question: what is the role an offsetting mechanism can play in a low-carbon transition strategy?

In many ways the CDM can undermine long-term change:

- Under the current framework, the mechanism subsidises energy- and carbon-intensive activities, e.g. upgrade or efficient new-building of steel plants, cement plants, fossil fuel power stations, and other industrial activities, and thus contributes to increased activity and growth in these sectors rather than to a shift towards lower-carbon activities and economic activities.

³ This uncertainty is exacerbated by the fact that compliance buyers can buy CDM credits early in the project cycle thus getting a lower price relative to issued credits and the premium is due to the risk that the underlying project does not achieve registered.

- Low-carbon development strategies require regulatory frameworks that facilitate the introduction of new infrastructure, technologies, business practices, and consumption choices and thus require strong involvement from government actors. This is in strong contrast to the fundamental philosophy of the CDM, which limits interactions with national and local authorities by providing financial support directly to individual projects.⁴
- The CDM faces the inherent challenge of dealing with evolving domestic policies. If the qualification of projects is measured using historic policies in place (due to the E+, E- rule)⁵, then much of international transfer is wasted by supporting non-additional projects already viable without support. However, if current policies are considered when evaluating whether a project qualifies for CDM credits, this creates strong disincentives for countries to improve policy frameworks.

New approaches to support low-carbon development strategies are now in discussion, emphasising the need for domestic policy frameworks and building on initiatives from domestic stakeholders. Such approaches therefore also increasingly involve direct co-operation with governments to enhance their ability to implement regulatory frameworks for low-carbon transitions. This requires public finance support, and thus raises the question of how developed countries can contribute.

The auction revenue from emissions trading schemes is one key source of revenue that could be available. The CDM can reduce this revenue:

- From the compliance perspective of a firm, it does not matter whether it buys a CDM credit or an allowance from an auction, with auction revenue used to support developing countries.⁶ As the mechanisms become more established, the public is likely to perceive both mechanisms as equivalent in terms of efforts – and an increased use of the CDM will reduce public willingness to dedicate additional auction revenue.
- The use of CDM reduces the stringency of the domestic emissions cap (see next section), and thus the carbon price. This in turn reduces allowance auction revenue available for support of developing countries.

⁴ Each CDM project must be approved through the Designated National Authority (DNA) of the host country, but host countries have incentives to approve most projects, in order not to deter investment.

⁵ The E+/E- rule, clarified by the CDM EB, stipulates that regulatory changes to the baseline at the national level should not be incorporated into baseline calculations, if the regulation favours a less or a more emissions-intensive technology over the other (EB 22, Annex 3, paragraph 5). Recently, the EB has inconsistently applied the E+/E- rule, by rejecting a set of Chinese wind farms, thereby creating confusion for both governments and project developers.

⁶ This, however, is not the case if there is a limit to the use of CERs.

1.2 Reducing the cost burden to Annex I countries in achieving their emissions reduction targets

The static economic analysis suggests that it is most efficient to realise cheaper emissions reductions in developing countries using an off-setting mechanism like the CDM. This argument might not apply if one or more of the following applies:

- Higher cost mitigation efforts in developed countries are pursued as part of a transition strategy and create technological learning by doing, helping to overcome initial transaction costs and inertia and contributing to a streamlining of the institutional framework. Under these dynamic circumstances, the fundamental welfare theorem of economics no longer holds, and the market-based solution is not necessarily the efficient solution.
- The CDM constitutes a subsidy for energy production or carbon-intensive activities, the resulting distortion for investment decisions might exceed the welfare gain from trading.
- Due to the E+/E- rule, ignoring energy policies that favor either low or high emitting industries, developing countries pursue similar or further reaching decarbonisation efforts if the CDM is replaced by more effective mechanisms.
- Uncertainty about the global CDM supply-demand balance creates uncertainty about the mitigation effort which must be pursued in the EU, and therefore reduces the clarity of decarbonisation trajectories necessary to co-ordinate EU low-carbon transition.
- The CDM can capture many cheap mitigation options in a developing country. Thus it might be more difficult to implement domestic policies as they must directly start with more challenging and expensive mitigation options.

1.3 Creating flexibility should emissions targets not be achieved, by serving as a “safety valve” for carbon prices

If governments commit to firm emissions targets, it is uncertain what carbon price will emerge in the future. Carbon-intensive industries argue that if they fail to implement existing and innovative low-carbon and energy-efficient technologies and products, high carbon prices might emerge and could create business risks for their operation. To the extent that these interest groups have strong influence on governments, this could result in ad-hoc changes to targets which would undermine the credibility of the investment framework.

“Safety valves” are proposed to allow governments to be more confident in committing to ambitious emissions reduction targets and to enhance the stability of emissions trading schemes, as high prices and thus political challenges will be avoided. In the EU context, safety valves were not implemented because of the challenge of setting appropriate levels in highly politicised processes and also because a safety valve reduces the incentives for the public and private sector to monitor and support the attainment of a long-term domestic emissions reduction target. They can also create uncertainties about the volume of emissions reductions that are necessary, which translates into uncertainty about the market opportunities for low-carbon technologies – potentially delaying investment and innovation.

It is sometimes argued that the CDM can serve as a safety valve. As the scarcity of EUA credits decreases due to the possibility of using CDM credits for compliance, the CDM in effect acts as a safety valve. This was actually one of the main reasons that some industrial countries strove to include the mechanisms in Kyoto, and tried to ensure unlimited access to credits. It was argued that the ability to use CERs reduced the cost to reduce emissions in the case of too-stringent emissions targets. Thus the CDM could act as a safety valve. Is this a viable assertion? We attempt to answer this using two scenarios.

Scenario 1: Assume we set ambitious emissions reduction targets for the EU ETS, which results in expected prices above €20/tonne CO₂. At this price level, with the current CDM project-by-project baseline methodology application and registration process, and given the volume of already available CDM credits, CDM supply is likely to exceed EU demand. Hence the current CDM limit imposed by the EU will be binding, and the CDM will not serve as a safety valve.

Scenario 2: Assume we set lax emissions reduction targets for the EU ETS, with uncertain carbon prices in the range of €10-15/tonne CO₂. In this case, there is little need for a safety valve, but CDM inflows can create serious difficulties for investment planning within the EU. At such price levels, and particularly given potential demand from other regions of the world, it is difficult to impossible to predict what volume of CDM credits will be available for the EU ETS. Therefore, the corresponding impact on emissions reductions within the EU is uncertain.

This suggests that the CDM is not a suitable instrument to serve as a safety valve for the EU ETS. Some proposals in the US ETS design therefore envisage an approach in which offsets can only be used above a certain domestic price level or once the domestic emissions reduction efforts fail to deliver. This creates large uncertainties for revenues which can be achieved by project developers in developing countries from such offsetting mechanisms, and is likely to imply that they can only finance low-cost activities that might be far better pursued through domestic regulation.

1.4 Compliance mechanism for international climate commitments

The CDM transfers funds to developing countries. It has been argued that domestic investments have additional positive effects on economies which favor domestic action relative to supporting competitors abroad. Thus, politically it can be argued that the CDM creates incentives for countries to deliver domestic emissions reductions so as to avoid the costs and competitive impacts for purchasing offsets. However:

- For many individual policy decisions, the potential costs of additional need for CDM credits are likely to be small, several years into the future, and borne by private actors. Hence it is unclear how strong the incentive effect is.
- The CDM at the same time creates a moral excuse for failure to deliver on ambitions for domestic emissions reductions. Increasing emissions can be compensated through higher offset use.

- If the CDM becomes part of a bigger financial package for support of decarbonisation strategies in developing countries, any transfer under the CDM might be deducted from other financial transfers. This might decrease any financial incentive to achieve domestic emissions reductions in developed countries. Failure to reduce emissions results in increased costs for CDM credits, which in turn reduce the use of other financing mechanisms. Hence, there is no cost for failure to meet the domestic target for developed countries. Accordingly, the Copenhagen Accord has already formulated that the aggregate figure of public and private finance should reach \$100 billion by 2020.

1.5 *Creating a dynamic towards a global carbon market.*

It is frequently argued that the CDM is the first step towards the development of a global carbon market, by easing the transition from CDM trading to international emissions trading. However, the CDM might in reality create a barrier for the development of such a market. After all, countries and actors in countries that currently qualify for CDM credits are subsidised through the mechanism. Why would they wish to move to a cap-and-trade system that imposes the cost of carbon on these actors and increases product prices for their consumers?

An example here is China, which has decided to tax the proceeds from CDM projects, with industrial gas projects subject to the highest tax, currently 65%. The tax revenues in addition and the implicit CER subsidy for decarbonising the energy grid are powerful disincentives for developing countries to enact domestic cap-and-trade legislation. Hence the CDM is likely to be a barrier to the development of cap-and-trade schemes in the region and therefore also for their global linkage. Another example of the CDM's impact on domestic abatement in developing countries is the Executive Board (EB) Decision in its 51st session. The EB decided to reject ten Chinese wind farms, as they would have been implemented anyway due to the feed-in tariff. This is in violation of the E+/E- rule. Even if the decision of the EB was correct in this case, as it would have otherwise approved a non-additional project, it is not consistent with previous decisions which deliberately ignored regulatory changes. This emphasises the dilemma of the EB in deciding on project registration.

Even if the above incentives are not in place, the actual and publicly perceived harvesting of the low-cost abatement options, make transition towards a binding target increasingly difficult (Narain and van 't Veld, 2008). Developing countries, having used up their low-cost abatement options, are likely to adjust their targets downward.

2. The current framework for CDM under the EU ETS

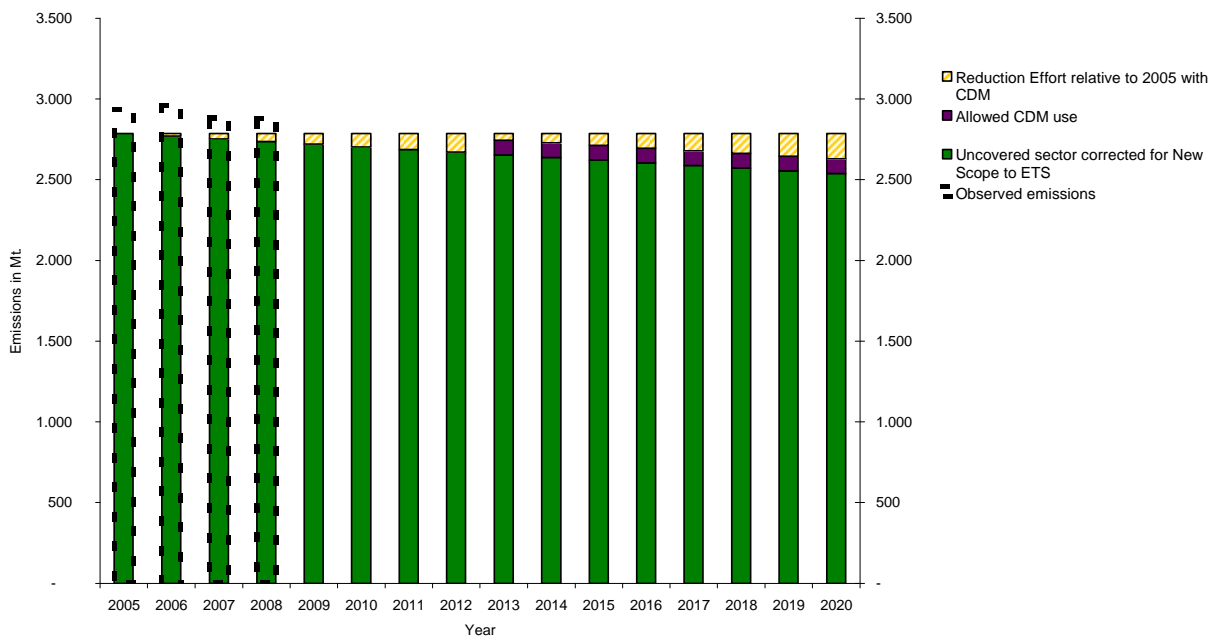
The EU has committed to a target of reducing emissions, relative to 1990, by 20% by 2020, following a linear trajectory. The EU can achieve up to half of this reduction via the use of CDM or Joint Implementation offsets (Article 11a of EU Directive 2009/29/EC).⁷ Table 1 summarises the implications for the amount of emissions reductions necessary within the EU to achieve this overall target.⁸

⁷ In the following, we refer to credits from the CDM as offsets and do not include JI credits.

EU-27 Reductions in 2020 relative to 2005	...with 20% target	...with 30% target
...with CDM	-7,5%	-12,6%
...without CDM	-13,8%	-23,9%

Table 1 Emissions reductions with and without the CDM

The use of the CDM mechanism may significantly limit the emissions reduction effort to be pursued within the EU, thus undermining the opportunity for a shift on a large scale and across different sectors to low-carbon alternatives. Without this shift, it will be more difficult to demonstrate the viability of decarbonisation strategies and to follow a trajectory in line with the 80-95% decarbonisation target by 2050.



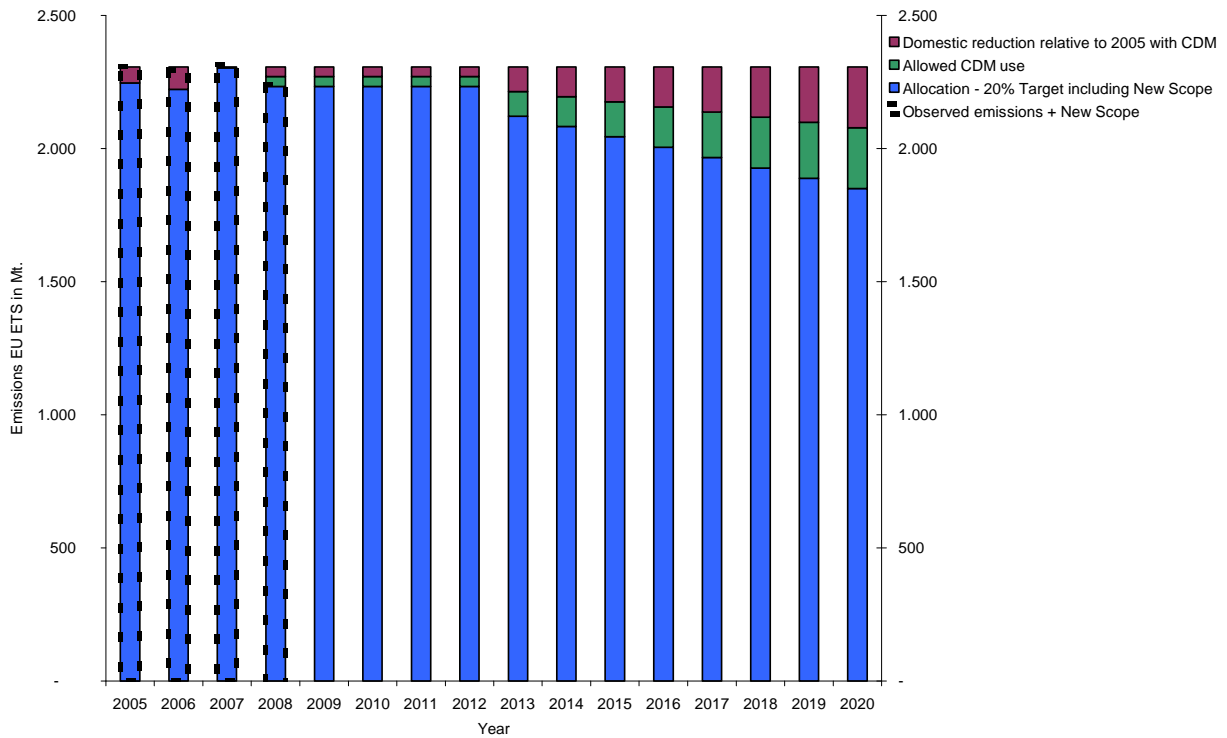
Graph 1 Emissions trajectory non-covered sector under a 20% target

The CDM reduces the emissions reduction ambition relative to 2005 GHG emissions substantially. In the 20% reduction case, the actual reduction with full use of the CDM is only a 6% reduction in GHG emissions relative to 2005 levels. Under the 30% target, full CDM use only leads to a 12% GHG emissions

⁸ The use of CDM is governed in the EU ETS according to consolidated EU ETS Directive 2003/87/EC as amended, through the Linking Directive (2004/101/EC) and Directive 2009/29/EC. The use of offsets in the non-ETS sector is governed through Decision 406/2009/EC. The detailed regulations can be found in Annexe I of this paper.

reduction, relative to 2005 levels. This is only six percentage points more than under the 20% target, and far below ambitions.

Graph 1 and 2 show the trajectory under a 20% target in the covered and non-covered sector, respectively.



Graph 2 Emissions trajectory covered sector under a 20% target

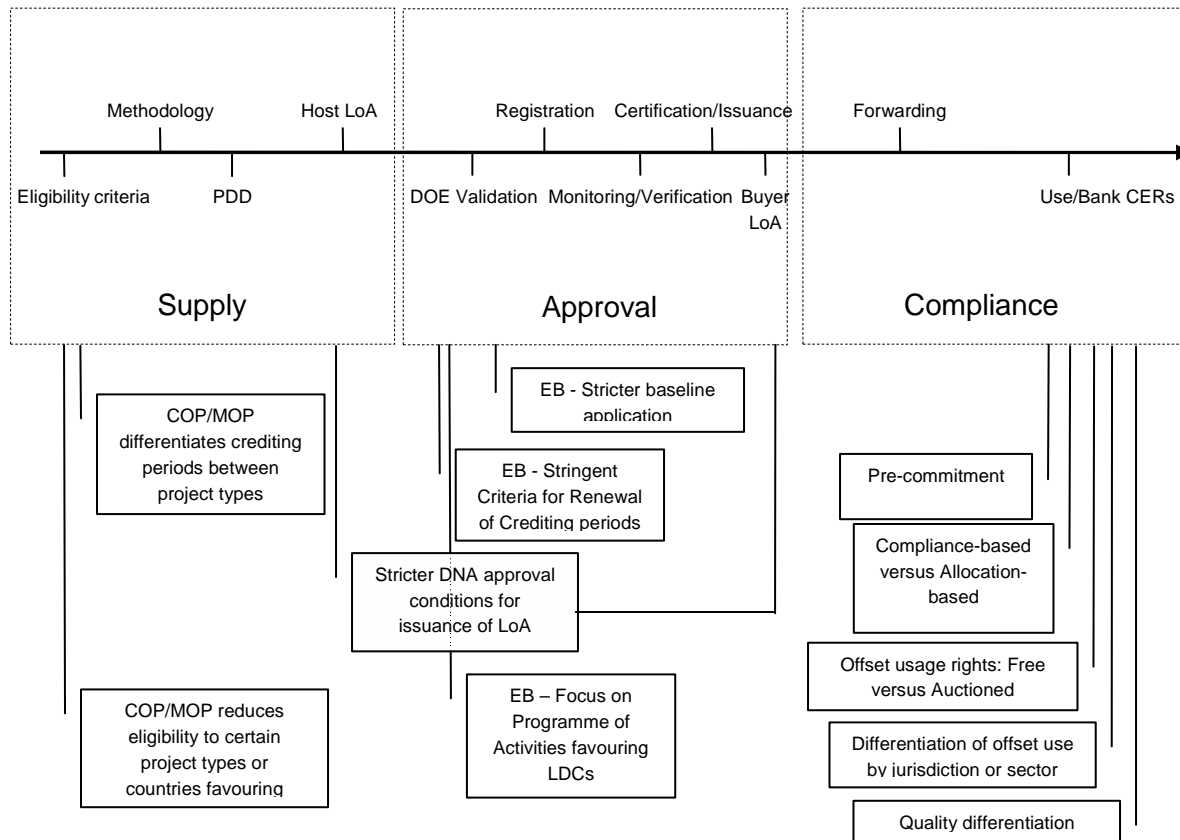
The EU Commission recognises in Directive 2009/29/EC that the increased use of CDM credits, in the absence of an international agreement, can undermine the EU renewables target and the incentives for energy efficiency, innovation, and technological development (den Elzen and Höhne, 2008). Therefore, the EU leaves open the possibility for reviewing the use of offsets.

Annex 2 of this paper discusses the role of CDM if the EU target were tightened to 30% emissions reductions, relative to 1990 levels. Table 2 compares the allowed CDM limit under the 20% and the 30% target. These CDM limits, although respecting complementarity, result in weak aggregate emissions reductions until 2020.

3. Options for a transition from CDM to other support schemes

The following sections focus on options for transitioning from the CDM to other mechanisms of international climate co-operation. To structure the discussion, we outline the CDM project cycle (Graph 3). It shows the various steps from supply, approval and use of offset credits. The new options are

chosen to create a credible regulatory framework with transparent guidance, avoiding unnecessary uncertainty and retroactive or inconsistent decisions.



Graph 3 CDM Project Cycle

3.1 Options to limit CDM at the supply side

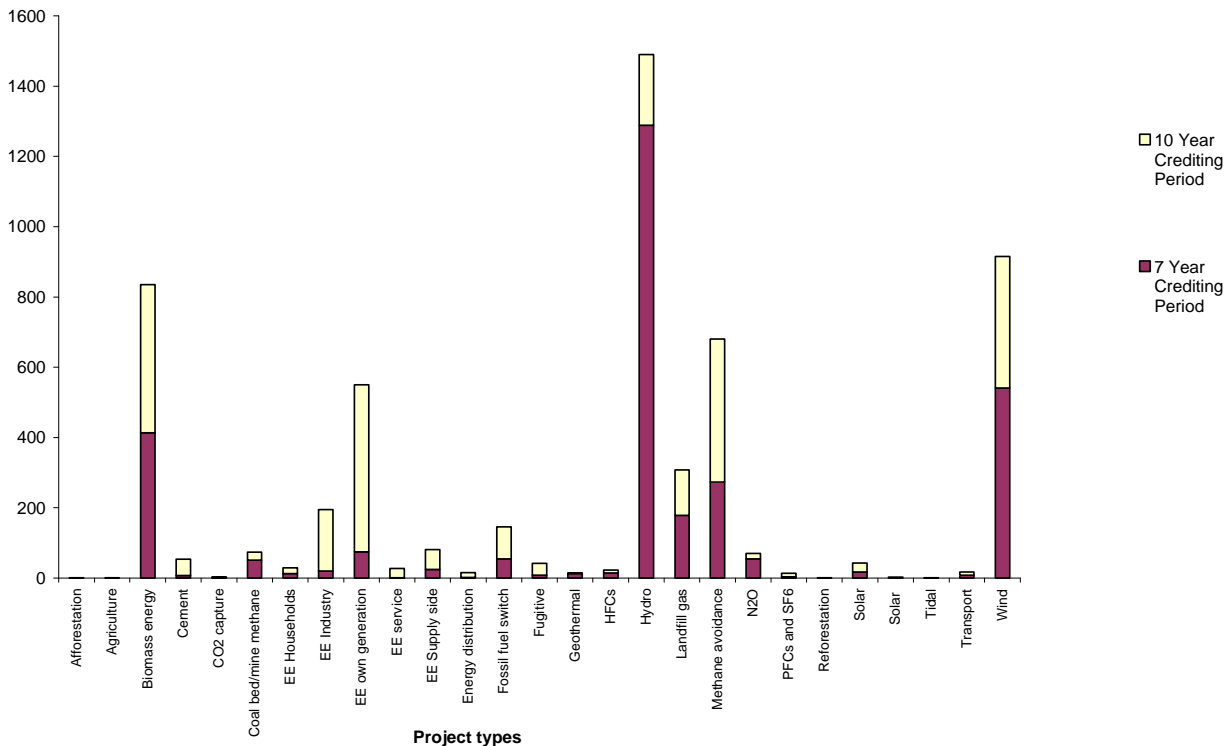
In Graph 3 for the early stages of a CDM project, two options have been identified that limit supply and meet the criteria of transparency. The eligibility criteria for CDM project types and host countries could be changed so as to favour sustainable project types and countries where these projects could have the largest impact. The second option is to review and differentiate the length of the crediting periods between project types.

The eligibility criteria are set by the COP/MOP and are supervised by the EB in their decisions on the registration of projects and approval of methodologies. Fifteen different sectoral scopes are currently eligible under the CDM, from energy industries to agriculture. Until now, the COP/MOP has only disallowed the use of credits from nuclear and from avoided deforestation activities. However, for the period post-2012, it could limit the scope of the CDM to exclude certain project types. Since decisions at

the COP/MOP level are taken by consensus, the challenge is to find criteria that are supported by project host countries and buyers, and which constrain the creation of project credits.

All countries not listed in Annex I and which are parties to the Protocol can participate as host countries. Implementing regional restrictions, e.g. to Least Developed Countries (LDC), could result in a limitation of the volume of project credits created. However, as of now, the EB can only influence regional distribution through the design of the CDM methodology so as to favour project types of interest to LDC.

CDM project developers can decide whether they want to receive credits for seven years, with the option for two renewals of seven years each (i.e. 21 years), or whether they want to receive project credits for ten years without renewal (3/CMP.1, Annex, paragraph 49).⁹ This does not differentiate between projects, despite the difference of economic pay-back periods between project types (see Graph 4). If the COP/MOP could differentiate pay-back periods across project types, then this could limit incentives for investment in some projects (and rents accrued to some projects).



Graph 4 Choice of crediting periods for registered projects

⁹ The crediting period for Afforestation and Reforestation projects is either twenty years renewable twice, or a single thirty year period (5/CMP.1, Annex, paragraph 23). The same applies to CDM Programme Activities in Afforestation and Reforestation projects (EB 32, Annex 38, paragraph 10).

3.2 Options to limit CDM on the approval side

In the approval phase, the Designated Operational Entity (DOE) validates the Project Design Document and submits the host country Letter of Approval and a validation report for registration to the EB. If the EB does not respond within eight weeks of the submission, the project is registered. Subsequently, after monitoring actual emissions, the emissions reduction is certified and issued by the EB. After a Letter of Approval is issued by the buyer country DNA, the credits can be forwarded to the buyer's registry and subsequently be traded, used for compliance or banked in the covered and non-covered sector. Graph 6 indicates three options to restrict supply: stringent renewal criteria of crediting periods, stringent baseline application and conditional approval of projects through DNAs. It is unlikely that one of these changes would – by itself - result in a significant change of the volume of project credits created. However, if these changes were to increase transaction costs significantly, they might reduce the profitability of projects and prevent some of the marginal projects, which are likely to be more additional.

For projects which decided to operate on a two-times-seven-year crediting period, the decision for the second approval is pursued based on the current methodology and new baseline. Until the beginning of February 2010, 52 registered projects (~2.5% of registered projects) renewed their crediting period. It might also be possible to request a demonstration that the sustainability criteria that justified the project's acceptance have been delivered in the first crediting period. If this is not the case, the project should not be renewed. The main criteria for the approval of any project is the demonstration of additionality – the revenue through project credits is necessary to finance additional emissions-reducing activity or non-financial barriers can be overcome with the CDM. This raises questions as to (i) whether a project that already exists requires additional support to continue, (ii) whether a project which was implemented with very limited certainty about post-2012 frameworks (and hence typically no revenue assumptions post 2012), does justify such revenues, and (iii) whether any such change would be interpreted as ex-post adjustment, reducing the regulatory credibility for future low carbon investment.

As in the baseline case, host and buyer countries have an incentive to maximise profit and CER volume. The criteria for issuing Letters of Approval, by both host and buyer countries could thus be reviewed. The host country approval criteria are based on the country's definition of sustainable development. The host country is likely to be subjective and subject to competition from other host countries. This could result in a race to the bottom. A buyer country could restrict issuing a Letter of Approval to projects which do not meet certain quality and sustainability criteria; however, due to fungibility of credits and allowances, CERs would find their way into the compliance system if buyer countries could not harmonise their criteria. This is likely to necessitate a significant co-ordination effort. The interpretation on the rules for the use of offsets from large hydroelectric power plants in the EU ETS Linking Directive is an example how difficult harmonisation is in this field. The different interpretations of the World Commission on Dams criteria led to the most Letters of Approval being issued by the Netherlands. The ex-post harmonisation effort required negotiation consensus and giving up certain sovereign decision options (Article 11b (6) of Directive 2004/101/EC).

3.3 Options to limit CDM on the compliance side

After the approval phase, credits can be used either by countries in the non-covered sector or in the ETS sectors, for compliance. Their use can be restricted by entity-specific limits, offset usage certificates and quality conditions for offset use.

Entity-based limits

Under entity-based limitations, each emitting entity is entitled to use offsets for a pre-defined share of either compliance needs (“compliance option”) or of allocated allowances (“allocation option”). Under the former option, the higher an entity's verified emissions, the more CERs it can use. Under the latter rule, the higher the free allocation, the more CERs an entity can use. The rules differ in their effects on distribution, incentives for domestic emissions reductions and incentives to engage in international activities. The compliance option could give rise to perverse incentives to increase emissions, while the allocation option might give rise to competitive distortions, by enhancing the distortions from free allocation.

If the CDM limit is binding, the right to use CDM credits to cover domestic emissions becomes valuable. If governments allocate allowances for free, this is likely to reflect either industrial policy perspectives, target emissions leakage or reflect domestic political economics. This might justify linking the benefit arising from using CDM credits to allocation of allowances, rather than granting the benefit to all installations.

Both the allocation of the right to use CDM credits in proportion to current (compliance option) or recent (historical) CO₂ emissions, creates a benefit from increasing CO₂ emissions. Another approach, in which the right to use offsets must be bought, leads to reduced distortions and perverse incentives for domestic ETS installations.

The CDM was put in place to enable industrial actors from developed countries to pursue projects in developing countries, to reduce the cost of their emissions reduction obligations. It was expected that this could also contribute to technology transfer. This would argue for a design that grants many installations the right to use CDM credits and thus engage in such projects. Experience from recent years suggests, however, that this vision has not materialised to any significant volume, and that projects have been mainly unilateral, with limited technology transfer.

Offset usage certificates

Assuming that demand to use offsets exceeds the limit on offset use set by the regulator (e.g. the complementarity condition), one could envisage a scheme that requires the presentation of an offset certificate for every CER which is to be imported into the EU ETS. If the certificates are allocated for free to existing installations, this approach is largely equivalent to the current scheme of installation-based limits for the use of CER credits. As the right to use offsets effectively transfers a monetary value to an

installation which can use cheaper CER credits for compliance, this right can also be sold, e.g. in an auction.

Auctioning corrects for potential arbitrage profits made by EU ETS operators which receive both allowances and offset certificates for free, and is the preferred option from an efficiency and competition point of view.

The initial allocation of offset certificates must counter potential market power effects, i.e. it would have to ensure that the rights are spread widely. Concerns of potential monopoly power could reduce actors' interest in investing in CDM projects, since the exercise of market power would result in an increased spread between the CDM and the EU ETS allowance price. Transparent monitoring would be essential to limit the effect.

Pre-Commitment

The third option for achieving an equalisation of prices between allowance prices and CDM credits is the pre-commitment option. Under this approach, the regulator issues additional allowances in the volume equal to that of the allowed offset limit. The allowances can be sold through an auction or distributed freely among existing installations. When the regulator issues the additional allowances, it signs an agreement to buy the same volume of offsets in the international market. Thus, no rents accrue to private actors from the difference of CER and EU ETS prices.

By acting as a large buyer in the CDM market, the regulator can minimise transaction costs and impose certain quality purchasing standards on the CDM market. It could also offer the opportunity for the purchasing institution to sign long-term contracts to support early stage CDM projects. This could serve as a credible signal to project developers in the CDM market, and enhances certainty in the CDM market as to which projects are accepted not only by the EB but also by the compliance market.

Differentiation of options

As the right to use CDM credits to cover emissions is increasingly seen as a valuable asset, it also enters the politics of negotiating political compromises. Hence differentiated allocation of this right can compensate interest groups (countries or sectors).

For the non-covered sector, all EU countries can use CDM credits corresponding to 3% of their 2005 emissions in the non-covered sector. Twelve EU member states have negotiated the right to use one additional percent of CDM credits. This additional percent is non-tradable, non-bankable and can only come from LDC countries.

The quality option

As not all registered projects are sustainable and additional, the regulator can restrict use to high quality projects if they are clearly identifiable and if the buyer parties agree on stringent quality criteria. Criteria of a positive list could be renewable energy and energy-efficiency projects. This is likely to decrease the volume of credits eligible and increase the price of the eligible offsets. The main difficulty is in

harmonising the criteria of which projects should be entered in the positive list. This way, both the abatement and the sustainability value of a project are priced. As the Directive has confirmed the allowed use of CERs allowed in Phase II, the quality option can only be included under a review of the criteria in the directive.

4. Concluding remarks

In this paper, we have presented arguments that the CDM can be interpreted as a transitional tool of international climate co-operation. It creates incentives to delay domestic climate policy in developing countries and limits the ambitions for low-carbon transformation in industrialised countries. This suggests a need for structured transition from the CDM to other schemes of international climate co-operation, including international financial mechanisms based on auction revenues and other revenue streams. This paper has focused on the different options available to structure such a phase-out, and has presented an individual evaluation of their economic and political merits.

References

- Akita, J. (2003). A Simple Model of CDM Low-Hanging Fruit. In *International frameworks and technological strategies to prevent climate change*. Springer, Tokyo Japan.
- Capoor, K., & Ambrosi, P. (2009). *State and trends of the carbon market 2009*. Washington D.C.: World Bank. From http://wbcarbonfinance.org/docs/State___Trends_of_the_Carbon_Market_2009-FINAL_26_May09.pdf
- CEC. (2009). Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emissions reduction commitments up to 2020. Retrieved from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0136:0148:EN:PDF>
- COM. (2003). Consolidated Version of Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emissions allowance trading within the Community and amending Council Directive 96/61/EC Amended by: Directive 2004/101/EC of 27 October 2004 L 338 18 13.11.2004, Directive 2008/101/EC of 19 November 2008 L 8 3 13.1.2009, Regulation (EC) No 219/2009 of 11 March 2009 L 87 109 31.3.2009, Directive 2009/29/EC of 23 April 2009 L 140 63 5.6.2009. Retrieved from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:02003L0087-20090625:EN:NOT>
- EEA. (2009). GHG trends and projections in the EU-27. Retrieved from <http://www.eea.europa.eu/themes/climate/ghg-country-profiles/tp-report-country-profiles/eu-27-greenhouse-gas-profile-summary-1990-2020.pdf>
- den Elzen, M. G., & Höhne, N. (2008). Reductions of greenhouse gas emissions in Annex I and non-Annex I countries for meeting concentration stabilisation targets. *Climatic Change*, 91(3-4), 249-274. doi:10.1007/s10584-008-9484-z
- den Elzen, M. G., Mendoza Beltran, N., van Vliet, J., Bakker, S., & Bole, T. (2009). Pledges and Actions - A scenario analysis of mitigation costs and carbon market impacts for developed and developing countries. Retrieved from <http://pbl.nl/en/publications/2009/Pledges-and-actions.html>

- Germain, M., Magnus, A., & van Steenberghe, V. (2007). How to design and use the clean development mechanism under the Kyoto Protocol? A developing country perspective. *Environmental and Resource Economics*, 38(1), 13-30. doi:10.1007/s10640-006-9066-3
- Krey, M., & Santen, H. (2009). Trying to Catch up with the Executive Board: Regulatory Decision-making and its Impact on CDM Performance. In *Legal aspects of carbon trading : Kyoto, Copenhagen, and beyond*. Oxford University Press.
- Lütken, S., & Michaelowa, A. (2008). *Corporate strategies and the clean development mechanism : developing country financing for developed country commitments?* Cheltenham UK, Edward Elgar.
- Narain, U., & van 't Veld, K. (2008). The Clean Development Mechanism's Low-hanging Fruit Problem: When Might it Arise, and How Might it be Solved? *Environmental and Resource Economics*, 40(3), 445-465. doi:10.1007/s10640-007-9164-x
- Neuhoff, K. (2009). Understanding the roles and interactions of international cooperation on domestic climate policies. *Climate Policy*, 9(5), 435-449. doi:10.3763/cpol.2009.0630
- Nussbaumer, P. (2009). On the contribution of labelled Certified Emission Reductions to sustainable development: A multi-criteria evaluation of CDM projects. *Energy Policy*, 37(1), 91-101. doi:doi: DOI: 10.1016/j.enpol.2008.07.033
- Reid, W. V., & Goldemberg, J. (1998). Developing countries are combating climate change: Actions in developing countries that slow growth in carbon emissions. *Energy Policy*, 26(3), 233-237. doi:doi: DOI: 10.1016/S0301-4215(97)00137-7
- Rose, A., Bulte, E., & Folmer, H. (1999). Long-Run Implications for Developing Countries of Joint Implementation of Greenhouse Gas Mitigation. *Environmental and Resource Economics*, 14(1), 19-31. doi:10.1023/A:1008396829502
- Schneider, L. (2009). A Clean Development Mechanism with global atmospheric benefits for a post-2012 climate regime. *International Environmental Agreements: Politics, Law and Economics*, 9(2), 95-111. doi:10.1007/s10784-009-9095-9
- Stiglitz, J. E. (2010). *Risk and Global Economic Architecture: Why Full Financial Integration May Be Undesirable* (NBER Working Papers No. 15718). National Bureau of Economic Research, Inc. Retrieved from <http://ideas.repec.org/p/nbr/nberwo/15718.html>
- UNEP Risoe. (2010). UNEP Risoe CDM/JI Pipeline Analysis and Database. Retrieved from <http://cdmpipeline.org/>
- von Unger, M., & Streck, C. (2009). An Appellate Body for the Clean Development Mechanism: A Due Process Requirement. *CCLR The Carbon & Climate Law Review*, 3, 31-44.
- Wara, M. (2008). Measuring the Clean Development Mechanism's Performance and potential. *UCLA Law Review*, 55(6). Retrieved from http://iis-db.stanford.edu/pubs/22226/wara_law_review_ucla.pdf

Annex 1: The regulations for the CDM limit CDM in the 20% target

The volume of CDM credits that can be used for the period 2008-2020 can be calculated along three approaches:

- The amended EU Emissions Trading Directive (2003/87/EC) defines limit for the use of CDM credits post-2012. Within the EU ETS the unused CDM quotas from phase II can be used equal to 1,426 million tonnes.
- The CDM limit as a percentage of allocation varies across NAPs and in Article 11a, the EU ETS directive increases this percentage limit to “not lower than” 11%. With this rule, the total CDM limit is equal to 1,530 million tonnes.
- Using the complementarity criteria, that *up to* half of the reduction effort can be covered with offsets, we arrive at 1,549 million tonnes without the new scope and 1,596 million with the new scope.

Ex-ante it is not clear whether this potential demand will be realised and whether it can be satisfied with CDM credits. The types of credits that can be used post-2012 are contingent on a satisfactory climate change agreement and are divided into three categories of eligible credits:

- Credits from projects that started before the end of 2012, and the resulting credits up to the end of 2012,
- Credits from projects that started before the end of 2012, and are issuing credits after 2013, and
- Credits from projects that started in 2013, and are pursued in least developed countries .

For the first category (registered and issued credits before 2013), the competent authority can convert unused credits issued until March 31st, 2015, into allowances valid from 2013 onwards (Article 11a (2)). All other credits (under categories two and three) used post-2012 can only be generated from project types that were allowed in phase II. However, additional qualitative criteria might restrict the variety of project types eligible, subject to a comitology procedure.¹⁰ New entrants, and new entrants from phase II and aviation (Article 11a (8)), which have not received an entitlement to use offsets or free allocation pre-2012, can use offsets “not below” 4.5% of their verified emissions in the period 2013-2020.

In addition, EU member states can use CDM credits, to cover emissions in the sectors that are not covered by EU ETS, towards their national target. In the absence of an international agreement on climate change, EU member states are allowed to use CDM credits up to 3% of their 2005 non-ETS sector emissions annually for the period 2013-2020. In addition, 12 member states can use an additional 1% of their 2005 non-ETS sector emissions from project-based credits in the same period.¹¹ The credits allowed through the additional 1% are non-tradable, non-bankable and can come only from projects in LDCo or Small Island States. In total, this amounts to an annual allowance of 97.8 million tonnes of CDM offsets, a

¹⁰ Preamble 29-31 of Revised EU ETS Directive 2009/29/EC.

¹¹ Council Decision, paragraph 16

total of 782 million tonnes in the period 2013-2020.¹² Of these, 78.2 million tonnes can exclusively be provided from LDCs. Potential CDM supply currently in the pipeline from LDCs is 62 million tonnes until 2020, of which 6 million tonnes is already registered, and less than 1 million tonnes has been issued before 2010.

Thus, under a 20% target, total EU CDM demand is potentially 2,331 million tonnes with the new scope (1,549 million tonnes + 735 million + 47 million tonnes) and 2,284 million tonnes without, in the period 2008-2020.

Annex 2: What would the CDM limit be in the case of the 30% target?¹³

The move to 30%, described in the following, is based on key assumptions, which have not been confirmed by official European Commission decisions. The total reduction necessary in the year 2020 is 1,637 million tonnes below the 1990 emissions of 5,456 million tonnes.

Assuming the effort sharing between the EU ETS and Non-ETS sectors stays equal to their shares in the 20% target, then 546 million tonnes additional CO₂ emission reductions require an additional effort from the EU ETS sector of 333 million tonnes. This would shift the linear reduction factor from 1.74% to 3.34%. EU ETS emissions under the 30% target would be equal to 1,387 million tonnes in 2020 not including the new scope.

If we assume that the CDM limit remains half of the emissions reductions (i.e. complementarity equal to 50% relative to 2005 emissions levels), then the CDM limit will be 2,416 million tonnes for the EU ETS sector for the period 2008-2020, not including the new scope.¹⁴ Adding the CER allowance from the new scope would increase this number by 90 million tonnes, to 2,507 million tonnes.

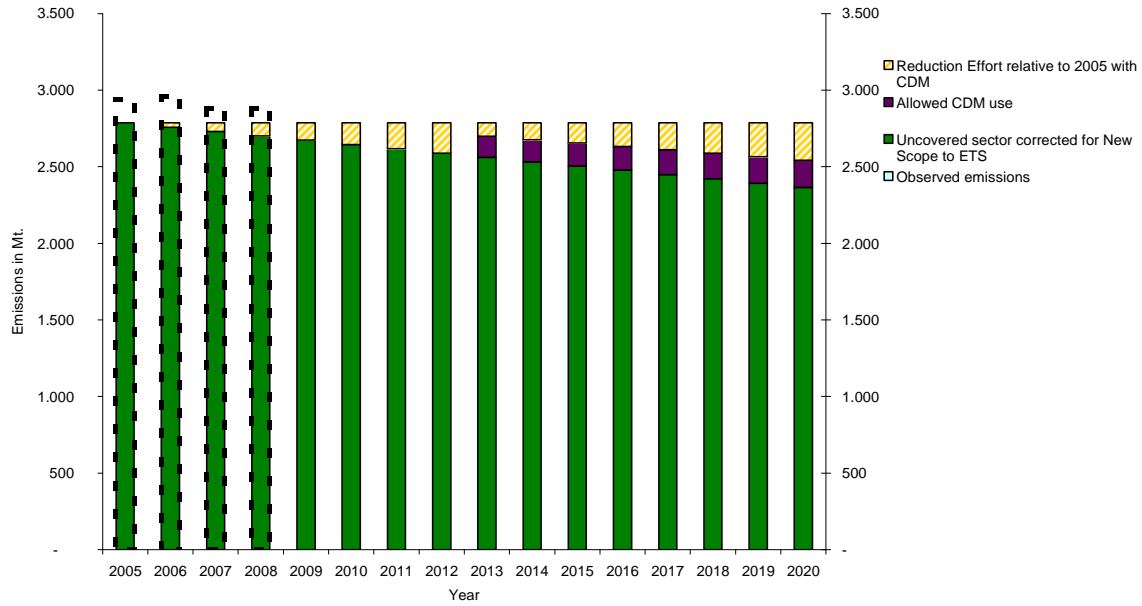
For the non-ETS sector, the move to the 30% target would require additional emissions reductions of 212 million tonnes in 2020, assuming the ratio above. This would translate into a 17.1% reduction target, relative to 2005.¹⁵

¹² However, should a member state have more stringent national targets, “the limitation imposed by this Decision on the use of greenhouse gas emissions reduction credits should not apply to the additional emissions reductions to attain the national objective.” Council Decision, paragraph 17

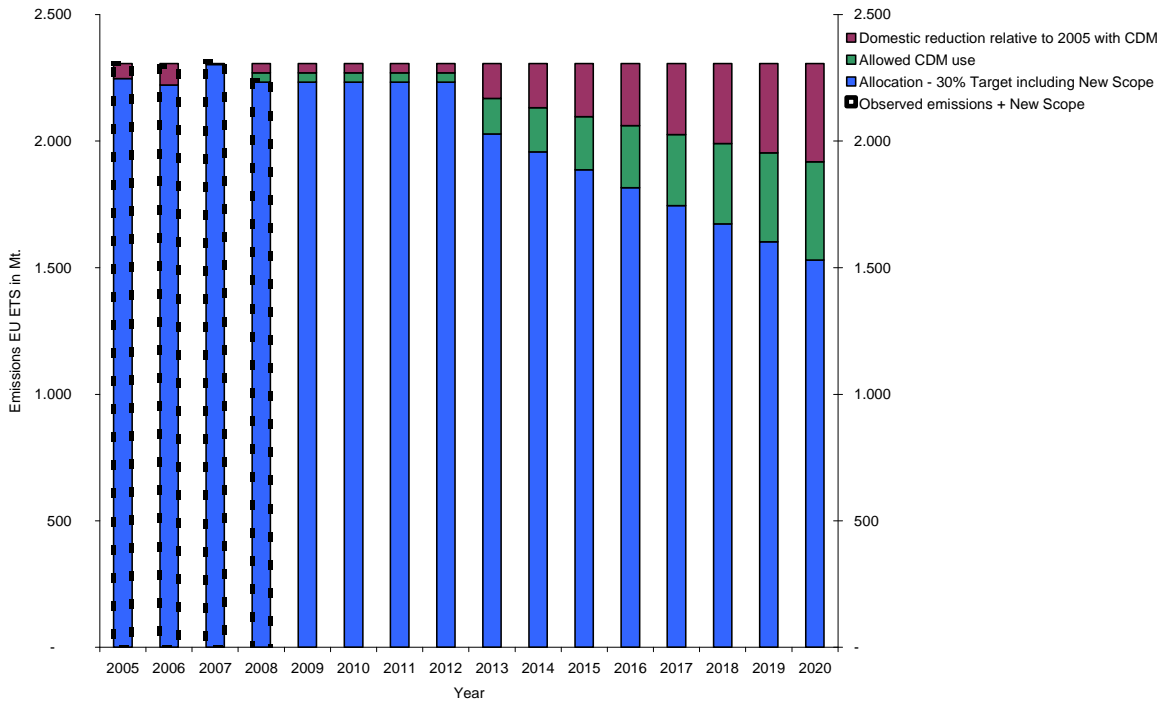
¹³ In this paper, we do not account for the possibility that, under a higher target, member states might get access to credits from LULUCF.

¹⁴ Not including the CDM limit for aviation and the extended scope, which would add 47 and 90 million tonnes, respectively.

¹⁵ The European Commission proposal suggested that the additional emissions reductions due to a 30% target should be distributed among member states according to their non-ETS emissions share in 2020 under a 20% reduction target. This rule was *not* included in Decision 406/2009/EC. Instead, the Decision reads in the preamble: “Upon the approval by the Community of an international agreement on climate change, the emissions limits for Member States should be adjusted to achieve the Community’s greenhouse gas emissions reduction commitment set out in that agreement, taking into account the principle of solidarity between Member States and the need for



Graph 5 Emissions trajectory non-covered sector under a 30% target



Graph 6 Emissions trajectory (covered sector) under a 30% target

sustainable economic growth across the Community. The amount of credits from greenhouse gas emissions reduction projects in third countries that each Member State can use should be increased by up to half of the additional reduction effort under this Decision”.