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Addressing Opportunities and Challenges of a Sectoral Approach to the Clean Development Mechanism

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Grave concerns with the Clean Development Mechanism (CDM) have increasingly surfaced in the international climate policy arena. The sectoral approach described in this paper may be a way to address some of the shortcomings of this Kyoto mechanism. The paper examines the conflicting interpretations of such an approach and outlines issues that need to be resolved: deciding on the role of the actors involved, defining the sector and its baseline, ensuring additionality and tackling procedural issues. The sectoral approach can enable countries to guide their structural development but it also opens up a gap between public and private investment that needs to be addressed before conflicts arise. Sectoral CDM activities may be able to lower transaction costs for projects that otherwise cannot compete in the CDM market and might even pave the way to sectoral greenhouse gas limitation targets in developing countries by establishing the necessary infrastructure for data collection.

The Clean Development Mechanism (CDM) is a project-based mechanism established under the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC). It has a twofold objective:

- it shall assist countries not included in Annex I to the UNFCCC (“developing countries”) in achieving sustainable development, and
- it allows countries that are included in Annex I to the UNFCCC and have inscribed specified greenhouse gas (GHG) emission targets in Annex B to the Kyoto Protocol (the traditional “industrialised countries”) to acquire Certified Emission Reductions (CERs) from CDM project activities undertaken in Non-Annex I Parties and count them towards their Kyoto targets.¹

Although the procedures underlying the CDM have evolved slowly but steadily, there is an increasing number of voices in the international climate policy arena that are calling for improvements to the way the mechanism functions. Critics claim that the process leading to the registration of a project and the issuance of CERs has become too complex and costly. Furthermore, there have been complaints that projects that are most likely to enable host countries’ sustainable development, such as renewable energy, energy efficiency and transport projects, are not competitive in the CDM market and are becoming marginalised. In addition, due to its design as a project-based mechanism, some even see the CDM as incapable of achieving fundamental structural changes desired by host countries. In the context of this discussion, the concept of a sectoral CDM has been rapidly gaining prominence.

¹ Throughout this paper, Annex I Party means a Party to the UNFCCC included in Annex I, UNFCCC, which has ratified the Kyoto Protocol and which has a commitment inscribed in Annex B, Kyoto Protocol. The term Non-Annex I Party refers to a Party that has ratified the UNFCCC as well as the Kyoto Protocol but is not included in these Annexes. The usage of these terms is largely consistent with the Marrakesh Accords.

The central idea behind the sectoral approach to the CDM is to define a baseline with a greater scope than that of a single project. This paper aims to outline the different approaches that are being discussed for a sectoral CDM and highlight those issues which require further discussion and clarification. For this purpose, the paper starts with a brief overview of the commonly held concerns with the CDM. The sectoral approach is intended to address some of these shortcomings, however, consensus is lacking on the shape a sectoral CDM would take. We outline how the actors, sectors, baselines and additionality could be defined and what procedural issues need to be taken into account. In conclusion, we discuss what is at stake and what needs to be further examined by international decision-makers.

1 Perceived Weaknesses in the Current CDM

1.1 Procedural Barriers to Implementation

One crucial feature of the CDM is that it generates new certificates which are added to the overall GHG “budget” established by the Kyoto Protocol for all Annex I Parties. This necessitates the requirement to ensure that each CER is in fact backed up by an actual tonne of CO₂ equivalent (CO₂e) abated or sequestered. In the parlance of the climate regime, the emission abatement or carbon sequestration needs to be “additional” to what would have happened in the absence of the project activity. If CERs were awarded in error, emissions in the Annex I Parties would be “offset” by non-existent emission abatement or carbon sequestration, which means that global emissions would rise because of the CDM project activity.

The Marrakesh Accords, named after the seventh Conference of the Parties (COP) to the UNFCCC that took place in Marrakesh, have therefore established an elaborate system for safeguarding the actual climate benefit of CDM projects (see Box 1).² This system is often criticised for being too complex and very costly.

For instance, the definition of additionality laid down in the Marrakesh Accords is rather vague and the actual implementation of this concept has therefore continued to stir controversy. The CDM Executive Board has adopted a relatively strict approach and developed a multi-step tool for the demonstration of additionality (CDM Executive Board 2004a). Business representatives claim that this approach is out of line with business realities and stifles their engagement (IETA 2004: 12-14). Conversely, environmental organisations have been anxious to ensure that a strict definition of additionality is used, which was also one of the reasons behind the development of the CDM Gold Standard, a set of criteria that goes beyond those laid down in the Marrakesh Accords (Langrock and Sterk 2003: 2).

² Annex of Decision 17/CP.7, Modalities and procedures for a clean development mechanism as defined in Article 12 of the Kyoto Protocol, FCCC/CP/2001/13/Add.2, 21.1.2002.

Box 1: The CDM Project Cycle

A CDM project needs to undergo a project cycle consisting of the following steps:

1. Preparation of the Project Design Document (PDD) by the project proponents. For the purpose of calculating the emission abatement or carbon sequestration achieved by the project, the PDD has to establish a so-called baseline, i.e. a projection of the emissions or carbon sequestration that would have been generated in the absence of the project. Moreover, the PDD needs to demonstrate that the project is “additional”. The PDD also has to contain a plan for monitoring the project’s emissions / carbon sequestration.
2. Approval of new methodologies: Baseline and Monitoring Plan either need to be designed according to methodologies that have already been approved by the CDM Executive Board, or the project proponents need to develop their own methodology and submit it to the CDM Executive Board for approval.
3. Approval by the countries involved, including confirmation by the host country that the project supports it in achieving sustainable development.
4. Validation of the PDD, i.e. an examination if the PDD meets all requirements, by an independent consultant accredited with the CDM Executive Board, called Designated Operational Entity (DOE).
5. Registration of the project with the CDM Executive Board.
5. Implementation of the project and monitoring of all relevant emissions / carbon sequestration by the project developer.
6. Verification and certification of the emission abatement / carbon sequestration by another DOE.
7. Issuance of the CERs by the CDM Executive Board.

Moreover, project approval is often a very lengthy process. The bottom-up approach to developing baseline and monitoring methodologies takes a long time and rejection rates are very high.³ Many countries have yet to establish their Designated National Authorities (DNAs), i.e. the national bodies responsible for approving projects, and even if they have, the DNAs are not necessarily well-staffed, nor is the approval process necessarily well-defined.⁴

There are also substantial payouts to be made, such as the fees for the DOEs and for project registration with the CDM Executive Board. As result, the CDM-specific transaction costs, most of which occur at the front end of the project, before any CERs have been received, are very high. Cost estimates for typical projects vary from the upper five-digit well into the six-digit US dollar (USD) range. Michaelowa et al. (2003: 273) have come to the conclusion that typical projects need to achieve at least 20,000 t CO₂e emission reduction per year in order to be able to bear these transaction costs. Projects that generate less GHG reduction generally face serious financial difficulties or need to be subsidised. Recognising this, the COP adopted

³ The approval history of all methodologies submitted so far can be viewed at <http://cdm.unfccc.int/methodologies>.

⁴ A list of all DNAs is available at <http://cdm.unfccc.int/DNA>.

simplified modalities for small-sale projects to lower transaction costs, which are nevertheless still estimated at 8,000-80,000 USD per project (de Gouvello / Coto 2003: 10f). Given the estimate that CDM-specific transaction costs need to stay below 1 USD per tonne CO₂e per year in order for the project to be economically viable (Michaelowa et al. 2003: 273), a project would have to achieve at least 8,000 t CO₂e per year of emission reductions.

The complex and lengthy approval process is blamed for the allegedly low number of projects and CERs which are currently in the pipeline. Critics point to two consequences: Non-Annex I Parties do not get the number of projects they would need for significantly supporting them in achieving sustainable development and Annex I Parties do not get the CERs they require to achieve Kyoto compliance (Cosbey et al. 2005: 24f).

1.2 Sustainable Development Aspects

Since the CDM is not intended to globally lower GHG emissions, but rather offset emissions not reduced by Annex I Parties, its goal to advance sustainable development in the host countries is critical. During the international negotiations it has been established that although the economic and technical data of the CDM projects will be examined in much detail internationally, the assessment of a project's impact on environment and social conditions is entirely at the discretion of the host country government. The process does not include a formal way to support host countries in the formulation, monitoring and enforcement of sustainable development criteria. Since the value of the CERs is not influenced by multiple positive benefits of a project but instead only depends on its integrity in reducing GHG emissions and being additional in the country context, projects that foster sustainable development are not necessarily rewarded. Some critics even claim that the CDM in its current design as a market-based mechanism, which primarily focuses on generating CERs within isolated individual projects, is fundamentally incapable of making a substantial contribution to sustainable development (Pearson 2004).

Indeed, there has lately been a marked shift towards projects which generate a large amount of CERs by reducing gases with extremely high global warming potential. These have low abatement costs but produce few, if any, sustainable development benefits. Carbon finance thus seems to be funnelled into projects that generate CERs cheaply whereas projects that introduce technologies fit for sustainable development, such as projects in the areas of renewable energy, energy efficiency or transport, are being neglected. Projects of these types may certainly also have negative side effects or even diminish the well-being of the local community, but, if applied wisely, they can contribute substantially to the sustainable development of the country.

When examining the 202 projects that were either already registered or undergoing validation at the time of writing, renewable energy projects clearly dominate in terms of numbers: 170 were in the renewable energy category (including large hydro projects). The picture changes, however, when looking at the number of CERs per project type as measure of how much "carbon financing" flows into the respective project type. From this perspective, the market is clearly dominated by hydrofluorocarbons (HFC), N₂O and landfill gas projects, which account for three quarters of the expected annual CERs. As a matter of fact, the four HFC projects accounted for 27 per cent of expected annual CERs, whereas the 170 renewable energy projects accounted for only 34 per cent combined. It is also noteworthy that there was not one single transport project

and only 9 energy efficiency projects, expecting less than 1 per cent of expected annual CERs (Fenhann 2005).

Moreover, the potential for projects dealing with the highly potent GHGs seems far from exhausted. For example, the total potential for HFC projects is estimated to be more than 100 Mt CO₂e per year, with abatement costs of about 0.50 USD per tonne CO₂e (Cosbey et al. 2005: 20f). There is thus a danger that projects with large sustainable development benefits but higher abatement costs may be crowded out of the market if the price for CERs was driven down by high-yielding projects that attract much of the investment.

There have also been complaints that projects are concentrated in a limited number of countries only. For example, one third of the 202 projects are situated in Brazil. As for regions, Latin America hosts to this date 117 and thus by far the highest number of these actual and potential projects, followed by Asia with 77, whereas Africa only hosts 3 projects (Fenhann 2005).

These imbalances have been noted with concern in the literature (e.g. Ellis et al. 2004, Cosbey et al. 2005) and were discussed at COP 10 in Buenos Aires last year, where many Non-Annex I Parties demanded that immediate action be taken to diversify the geographical distribution of projects and promote projects with strong sustainable development benefits (Ott et al. 2005: 87f).

In addition to the concerns over types and geographic distribution of projects, the CDM has been said to provide “perverse incentives” for countries to neglect environmentally progressive policies. This line of argument states that the quest for additionality may actually discourage long-term sustainable development policy reform nationally, since an exemplary host country will necessarily attract fewer CDM projects. A country aiming for 100% renewable energy production may not be able to claim renewable energy projects as additional, for example, or a country mandating the flaring of HFC-23 during HFC-22 production cannot attract CDM-motivated investment to conduct this particular measure.

The CDM Executive Board has attended to this issue. It decided that policies or regulations that give advantages to less emissions-intensive technologies and have been implemented since the adoption of the CDM modalities and procedures at COP 7 in November 2001 may not be taken into account in developing the baseline (CDM Executive Board 2004b). The impact of this decision hinges on how it will be implemented in practice.

2 Key Aspects of a Sectoral CDM

2.1 Policy-based versus Clustered: The Role of the Actors

The sectoral approach has sometimes been used somewhat carelessly in the policy arena to mean anything that will miraculously reform the CDM to suit all its critics. Nevertheless, two major types of projects can be seen to have crystallised out of the discussion surrounding the improvement of the CDM: the policy-based approach and the clustered approach. The former is a government-driven mechanism that enables Non-Annex I Parties to develop national or local policy initiatives that discernibly lower GHG emissions in a particular sector (Samaniago and Figueres 2002). The CERs flow directly to the host government that will

thus be compensated for its efforts and may choose to pass some of the benefits on to industry and households affected by the measures. The latter approach refers to a mechanism driven by private actors. This type of CDM may combine all potential projects within a country or local region along the lines of a sector (Cosbey et al. 2005: 56f). The project has to be approved but may also be facilitated directly by the host government.

One example of the clustered CDM could be to define baselines for activities in a given sector. Investments that contribute to staying below the baseline could then receive the difference in the form of CERs. This approach would imply a complex procedure for establishing the baseline, the result of which would be different for every activity, depending on the equipment used etc. (Cosbey et al. 2005: 56). Another model that might obviate this need might be to establish a baseline for the total emissions of certain industries in a country. However, this leaves the question of how the CERs will then be distributed to the individual actors.

Especially in the case of a policy-based mechanism, the sectoral CDM has the potential to turn an instrument that was originally targeted at private investment into a tool for governments to finance climate-friendly policy measures. Governments can choose to pass on the benefits accrued from the value of the CERs to investors or those affected, which may be industry or other private actors, in form of tax incentives, subsidy or the direct pay-out of CERs. Paying out the CERs directly would transfer the risk inherent to the publicly traded CERs to industry or the end consumer. Here as well it will be difficult to ascertain exactly how the CER rewards will be distributed between public and private actors. How much can a government charge for the preparation of a sectoral CDM project? On the one hand, if the part of the total CERs that it claims for itself was too high, market participants would be reluctant to follow the new policy or investors would hesitate to take advantage of the CDM opportunity. On the other hand, if the CERs were passed on directly to private investors in the sectoral CDM scheme, taxpayers would be left with the burden of the much-debated transaction costs of setting up such a project but without the financial benefit of the CDM. The balance in this distribution has to be struck early in the process of setting up a sectoral CDM project to avoid conflict or disappointment later.

In a clustered CDM the host country government would not play as dominant a role, but, as in the current CDM, it would have to provide an enabling political framework that allows projects to be conceived and implemented. This includes clear political support for the mechanism as such, a competent and well-staffed approval body and a clear and speedy approval procedure.

Since participation in the CDM is voluntary, there does not seem to be a need to choose between either policy-based or clustered CDM at the UNFCCC level. Rather, both types could probably be allowed and the decision of which type to use be left to the interested countries or private actors. However, since sectoral projects by definition involve many actors, there will always be the issue of who bears the burden and who reaps the benefits. The question is whether there is a need to elaborate guidance for benefit-sharing at the UNFCCC level or whether it should be left up to those involved in a project to decide how costs and benefits are distributed.

2.2 Defining the Sector

Defining the sector establishes the CDM project boundary. A whole range of definitions has been suggested and is conceivable (e.g. Samaniego and Figueres 2002: 92f), but there does not seem to be a need to prescribe any one formula. Rather, the bottom-up approach of the current CDM could be adopted, with each project elaborating its own particular definition. There could thus be various definitions for different projects within one country. It is important to note that the project boundaries have to be broad enough to combine similar projects (bundling) but narrow enough to be manageable.

Among the possible approaches are:

- using a traditional sectoral definition such as the energy sector,
- looking above or below the traditional sectors, for example, by defining the upgrading of all gas-fired power plants in a country to combined cycles as a project,
- defining a city or a local area as a sector,
- comprising all the emissions of one particular non-CO₂ gas in a country in one project,
- targeting the application of one particular technology,
- cooperating with other countries in the region to set up a type of project across national boundaries,
- taking a combination of approaches, e.g. transport in a particular city.

2.3 Defining the Baseline

The setting of baselines varies in complexity with the definition of sector that was chosen. In the case of a project that only applies to one clearly defined technology or economic segment, a baseline may be easier to establish than under the current CDM. Sector-wide projects would also be less prone to leakage, i.e. emission abatement at one source leading to increased emissions at another. A sectoral approach could thus contribute to lowering the procedural barriers inhibiting the current CDM. However, this cannot be taken for granted. In the case of a geographically-based project comprising several economic sectors, for example, one would probably have to establish one baseline for each sectoral component, which would make baseline setting more difficult than it currently is (Samaniego and Figueres 2002: 96). This issue requires more research and will ultimately also depend on how a sectoral CDM is set up.

In addition, policy-makers will need to address two general overarching issues regarding the setting of baselines in sectoral CDM projects: choosing between an absolute and a relative emission volume and deciding whether a baseline should be binding with sanctions attached to non-compliance.

Relative emission values can be expressed in baselines that concern, for example, emissions per unit of GDP or per unit of output. The advantage of this way of calculating baselines is that the emissions volume is linked to economic growth which eliminates the uncertainty of how this growth is going to impact future emissions. It could therefore be more acceptable for potential host countries or private project proponents. It is not without risk, though, since in case of an economic downturn the volume of emissions to be achieved would actually become more restricted in absolute terms than initially expected. Moreover, from the environmental perspective this approach is disadvantageous in so far as the amount of emissions is not limited in a foreseeable manner. Absolute emissions may even be allowed to rise if the underlying indicator

increases greatly. It would therefore be especially important to ensure that the baseline is stringent enough to ensure that an actual climate benefit is achieved.

Sectoral projects may well be rather large in scope and thus accrue a significant amount of CER revenue. The international community might therefore consider to tie such a potentially generous benefit to the condition that the baseline be a binding emissions target with sanctions for non-compliance. Alternatively, the baseline could be a non-binding mark as in the current CDM (a “no-lose target”). Again, the first alternative would be preferable from the perspective of ensuring the certainty of the environmental outcome whereas the second alternative is more attractive to host countries. One compromise might be to define a corridor of two values:

- a low value, staying below of which would be rewarded but an overshooting of which would not be sanctioned,
- and a higher value, an overshooting of which would trigger sanctions.

The question of sanctions or no sanctions would in any case have to be decided by the UNFCCC negotiations. One intermediate option might be to agree that non-binding baselines are the general rule and to offer additional support to countries that are willing to adopt binding baselines. Given the huge scope sectoral projects might have and the fact that relative baselines may lead to a rise in absolute emissions, the question of absolute vs. relative baselines should also be taken up at the UNFCCC level.

2.4 Additionality

As outlined above, much of the discussion about the current CDM has been about whether projects that are undertaken in response to policy measures are still additional. Especially a policy-based sectoral CDM would turn this debate on its head because the government policy would in fact be the project. What should additionality mean in this case? Would a government have to prove that it is adopting this policy solely because of climate change considerations? Would such an approach be attractive to Non-Annex I Parties considering that their development needs are their top priority? In principle, this problem also holds for many potential private sector initiatives in the clustered CDM because the scope may be too large to determine whether any particular activity would not have taken place in the absence of the project.

Should a sectoral CDM therefore rather be modelled along the lines of the “sustainable development policies and measures” approach? This approach seeks to make Non-Annex I Parties adopt commitments in the area of policies and measures that are geared towards development but also entail climate benefits (Winkler et al. 2002). Transposing this concept onto the CDM would mean to focus on policies and measures with development benefits that also have climate benefits and using the CERs as an added incentive (Samaniego and Figueres 2002: 95f).

A related question is whether any climate benefit achieved in the respective sector should be attributed to the measures undertaken or whether the measures should be evaluated as to their actual effectiveness and the CERs then be issued accordingly. The second option would be more accurate in ensuring that only the additional climate benefit is credited. However, this would require a complex procedure. When looking at sectoral developments, typically a myriad of factors come into play. If a government, for example, introduces fuel efficiency standards and consequently a drop in transport emissions is measured, how can it

be determined to what extent this drop has been a result of the government policy or due to other factors such as rising fuel prices? The simpler solution to credit everything that is below the baseline would therefore be more practical. It might be acceptable if the sectoral baseline is set low enough to ensure that no business-as-usual emission abatement is credited (Bosi and Ellis 2005: 19-21).

Clearly, the question of what could be counted as “additional” in a sectoral approach requires detailed further discussion and may eventually have to be resolved in the UNFCCC negotiations.

2.5 Interplay with the Current CDM and Project Boundaries

A sectoral CDM should in principle be able to complement rather than supplant the current CDM. However, this raises difficult questions: what happens if an already existing local CDM project is encompassed in or connected to a new sectoral CDM project or, alternatively, if a project developer intends to develop a local project that is directly or indirectly connected to an already existing sectoral project? The most important issue here is the so-called double counting: if the local project receives CERs for the climate benefit it has achieved and the sectoral project also receives CERs for the contribution made by the local project, one and the same climate benefit is in effect counted twice. This dilemma is similar to the problem that arose with regard to the implementation of CDM and Joint Implementation (JI) projects in the EU Member States when the EU emissions trading system (EU ETS) was introduced. The solutions adopted there are outlined in Box 1.

Box 2: Types of Linkages between CDM/JI and the EU ETS and their Regulation According to the EU Linking Directive

Type	Description	Regulation
1	<i>CDM / JI projects with direct links to the EU ETS.</i> These are project activities undertaken at installations covered by the EU ETS. For example: refurbishing or fuel switching in a power plant (above 20 megawatts).	CERs and Emission Reduction Units (ERUs) may be issued if the operator of the respective installation cancels an equal number of EU allowances.
2	<i>CDM / JI projects with indirect links to the EU ETS.</i> These are project activities that have no direct link to installations covered by the EU ETS but indirectly lead to emission reductions at such installations. For example, the development of a wind park leading to the displacement of electricity from a power plant within the EU ETS.	CERs and ERUs may be issued if an equal number of EU allowances are cancelled from the national registry of the respective member state.
3	<i>CDM / JI projects without links to the EU ETS.</i> These are project activities that reduce emissions at sources not connected to the EU ETS. For example, renewable energy projects that are not connected to the national grid.	These do not pose a problem and are therefore not regulated by the Linking Directive. ERUs may be issued without restriction.

Source: Adapted from Sterk et al. 2005: 1444.

The sectoral CDM could operate in a similar fashion: if a local project achieves climate benefits which are also covered by a sectoral project, the number of CERs issued to the local project needs to be deducted from the amount of CERs issued to the sectoral project. Another option would be to prohibit the implementation of such local projects, which seems unduly restrictive. In any case, a solution would then still need to be found for the local projects that are already in place when a sectoral project is launched. Regarding individual cases it might also be possible to merge an already existing local CDM project into the new sectoral project and the CER distribution system that has been established there.

In addition, since most economic segments are interlinked the double counting problem may also arise if there is more than one sectoral project in a country. One hypothetical example would be to conduct one sectoral project that introduces energy efficient appliances in households and another project addressing the energy sector. These two sectoral projects are clearly linked and it might be difficult to ascertain which one should be awarded the CERs earned. In many cases even the basic theoretical connection between two projects may not be as straightforward as in this example. This could mean that a country that stages an ambitious sectoral CDM project may thus close itself off to other CDM project approvals.

The linkages between projects would therefore need to be examined for each particular case. It would probably also be necessary to have guidance established by the UNFCCC negotiations.

2.6 Project Approval Process

In principle, there are two options for managing a sectoral CDM:

- Samaniego and Figueres (2002: 93) suggest that a sectoral CDM follows the current CDM model: approval by a DNA, validation by a DOE, submission to the CDM Executive Board, monitoring by the project participants and verification and certification by another DOE.
- Bosi and Ellis (2005: 22f) suggest that the system could also be based on international negotiations. In such a mechanism, the countries which are interested in participating would make project proposals to the international community and the details would then be defined by multilateral agreement. Nevertheless, when using this option it may still also be useful to have an executive body to oversee the actual operation of the projects.

The former concept is less complex and to a large extent leaves the direction of the process to the project proponents. Considering the impact and volume of CERs large-scale sectoral projects may create, however, it might well be advisable to have an in-depth political examination.

The issue of how to organise the approval process is especially pertinent with regard to the sustainable development aspect. Under the current CDM rules, it is the prerogative of the host country to check if a project supports its sustainable development, but in the case of a policy-based project the government would then be checking itself. Should it then just be assumed that the project will contribute to sustainable development, or is there a need to establish criteria or even to prescribe an examination procedure? This dilemma has to be addressed by the international community.

2.7 Summary of Key Issues

What is a sector? A whole range of sectoral definitions has been suggested and is conceivable, but there does not seem to be a need to prescribe any one formula. Rather, the bottom-up approach of the current CDM could be adopted with each project elaborating its own particular definition.

Policy-based or clustered projects? Currently, there are two definitions of a sectoral CDM. A policy-based CDM can be seen as an engine for promoting national or local policy initiatives rewarding the government with CERs that may be passed on to all or some of the project participants. The second definition refers to a mechanism driven by private actors where local projects are clustered along the lines of a sector. It is worth noting that the former definition would turn an instrument that was originally targeted at private investments into a tool for governments to finance climate protection measures. Nevertheless, there does not seem to be a need to choose between the two. Instead, they could probably co-exist and complement each other.

Who receives the benefits? Since sectoral projects by definition involve many actors, there will always be the issue of who bears the burden and who reaps the benefits. The question is whether this issue could be left to those involved in a project or whether there is a need to elaborate guidance for this issue at the UNFCCC level.

Absolute or relative baseline? Project proponents might either set the baseline at an absolute emissions level or set a relative baseline expressed, for example, in emissions per unit of GDP or per unit of output. Given the considerable scope sectoral projects might have and the fact that relative baselines may lead to a rise in absolute emissions, the question of absolute vs. relative baselines should be taken up at the UNFCCC level.

Binding or non-binding baseline? A related question is whether the baseline should mark a binding emissions target with concrete sanctions or a non-binding mark as in the current CDM. Introducing the former model would have to be decided by the UNFCCC negotiations.

What is additional? Especially a policy-based sectoral CDM would turn some of the traditional debate about additionality on its head because the government policy would in fact be the project. Also in the case of clustered projects driven by private actors the question of what would have happened in the absence of the project activity cannot necessarily be answered with regard to specific activities since the scope may be too large. The question is also whether simply any climate benefit achieved in the respective sector should be attributed to the measures undertaken or whether these should be evaluated as to their actual effectiveness and the CERs then be issued accordingly. The question of what could be counted as “additional” in a sectoral approach requires detailed further discussion and may eventually have to be resolved in the UNFCCC negotiations.

Double counting and project boundaries. Introducing a sectoral CDM alongside the current approach raises the question of what happens if an already existing local CDM project is encompassed in or connected to a new sectoral CDM project or, alternatively, if a project developer intends to develop a local project that is directly or indirectly connected to an already existing sectoral project. Different sectoral projects within one country may also well overlap with each other. The linkages between projects would therefore need to be carefully examined for each particular case in order to make sure that climate benefits are not credited twice. It may be necessary to have guidance established by the UNFCCC negotiations.

How should projects be approved? In principle, there are two options for managing a sectoral CDM. It could follow the current CDM model, or the project approval could be based on international negotiations. Considering the impact and volume of CERs created by large-scale sectoral projects, an in-depth political examination may be warranted. This issue is especially pertinent with regard to the sustainable development aspect since under the current CDM rules the Non-Annex I Parties would be checking whether their own projects contribute to sustainable development.

3 The Sectoral CDM and the Kyoto Regime

This paper has highlighted some of the specific design features that need to be addressed when developing the CDM into a sectoral mechanism. Apart from these more or less technical details, one also needs to consider how a sectoral CDM could contribute to improving the Kyoto regime.

On the positive side, the sectoral approach has several features which could help to boost the development aspect of the CDM. Firstly, it could contribute to achieving sector-wide transformations in the host countries. Secondly, it might be a way to include activities which have beneficial development aspects but are not as cost-effective as others. The project boundary could be drawn in such a way that the project would contain components with both low and high abatement costs, so that the overall price of the CERs would be competitive. Thirdly, a sectoral CDM that includes policy-based projects would solve the “perverse incentives” issue, i.e. the problem that governments might shy away from climate protection measures for fear of thus rendering potential CDM project non-additional. To the contrary, they would actually be rewarded for initiating ambitious climate policy (Cosbey et al. 2005: 56).

Through economies of scale a sectoral approach might also entail lower transaction costs than the project-specific approach and thus help to address the procedural barriers inhibiting the current CDM. However, as has been outlined regarding the projects’ baselines, it is not guaranteed that a sectoral CDM would generally be less complex than the current one. The mechanism’s complexity would also depend on factors such as the definition of additionality, the regulations concerning project boundaries and double counting and the management of the approval process.

On the downside, one has to consider that in order to be able to establish a credible baseline the sectoral approach would necessitate having reliable emission inventories and projections for the host countries or at least for the respective sectors. The reliability of the emissions monitoring would also need to be ensured (Samaniego and Figueres 2002: 99). At the moment, probably only a few, if any, Non-Annex I Parties dispose of the necessary technical capacity. Introducing a sectoral CDM therefore raises the prospect of exacerbating the current geographical imbalance of CDM projects even further. This effect could only be countered by substantial capacity building measures by the Annex I Parties. One option might be to introduce sectoral policies as a joint effort of a Non-Annex I and an Annex I Party, where the Annex I Party supports the establishment of the necessary infrastructure and in return receives part of the generated CERs.

At the moment, there are at least two projects in the CDM pipeline which pursue a sectoral approach. One aims at changing the transport system in Santiago de Chile, the other at introducing energy efficiency standards for air conditioners in Ghana. Should the CDM Executive Board register these projects, the CDM would in effect be able to organically develop towards a sectoral mechanism. Should the issue be funnelled

into the international political debate instead, the sectoral CDM may become one of the many elements in the negotiations surrounding the second commitment period of the Kyoto Protocol and thus only be implemented after 2012 (Bosi / Ellis 2005: 15f).

A sectoral CDM might reinforce the climate regime's basic premise that Annex I Parties are to take the lead in climate protection. Considering that their emission targets would be driving the demand for sectoral CDM projects, the ambitions of Non-Annex I Parties to abate or sequester GHG emissions would follow the ambitions of Annex I Parties (Samaniego and Figueres 2002: 97f). Then again, a failure of Annex I Parties to undertake domestic efforts also leads to a high demand for CERs, as can currently be seen. Nevertheless, a regime with a sectoral CDM may be politically more acceptable than a regime where the Annex I Parties are required to directly finance mitigation efforts of Non-Annex I Parties.

A related aspect that needs to be handled with care is the general expectation that a sectoral CDM would be able to generate significantly more CERs than in its current form (Cosbey et al. 2005: 55f). This might be used in a positive way provided it encourages Annex I Parties to adopt emission targets for the second commitment period that are stricter than expected. In this way a sectoral CDM could actually achieve a net positive climate benefit. However, if Annex I Parties do not adopt ambitious targets after 2012, a sectoral CDM delivering large volumes of CERs could easily extinguish any domestic efforts by Annex I Parties.

In the medium term, a sectoral CDM may also be a way for Southern countries to gradually move towards emission limitation commitments in the framework of the climate regime. It would stimulate the establishment of the necessary technical capacity and infrastructure such as detailed emission inventories and projections, and let governments gain experience with large-scale climate protection policies. Moreover, this could be achieved without having to make substantial changes to the current structure of the Kyoto Protocol.

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