

CARBON MECHANISMS REVIEW

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Net Means More

How a net decrease in emissions helps
mitigate climate change

Double counted?

Drawing a line between
mechanisms old and new

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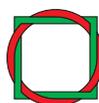
Dear Reader,

Preparations for the next UN climate change summit in Lima are well underway. Although the EU is proposing a 2030 emissions reduction target, there are signs that the sum of all proposals together will not be enough to adhere to the two degree limit. So can market mechanisms help raise climate change ambition? This question has been looked at from several angles in previous issues of Carbon Mechanisms Review (CMR). In this issue, the focus widens to ask if the 'net atmospheric benefit' discussed for market mechanisms in UNFCCC negotiations can serve as a building block in this process. Also in this issue, a look both at the new Pilot Auctioning Facility (PAF) aimed at supporting stranded CDM projects and the role of quality labels like the Gold Standard could play in a future climate change regime.

On behalf of the CMR team, I wish you an interesting and informative read.

Christof Arens

P.S.: 'Arguing the Point' had to be omitted from this issue for technical reasons. It will be back in its usual place next time round.



Wuppertal Institute
for Climate, Environment
and Energy

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Double Counting (not) Excluded

International rules needed for emission reduction accounting and market mechanism design

By Lambert Schneider, Anja Kollmuss and Michael Lazarus, Stockholm Environment Institute

Avoiding double counting of emission reductions is an important policy concern for Parties to the UNFCCC. A recent study commissioned by the Swiss Federal Office for the Environment (FOEN) systematically assesses how double counting can occur and how it might be addressed. The study finds that the two specific forms of double counting – double issuance (the issuance of two units for the same reductions) and double claiming (the accounting of the same reductions both in a greenhouse gas inventory and in units towards fulfilling a mitigation pledge) – pose the greatest potential concerns. As a result, countries could appear to meet established mitigation pledges, while total emissions exceed these levels. Addressing double counting effectively will require international coordination in three areas: accounting of units, design of mechanisms that issue units, and consistent tracking and reporting on units.

Background

Double counting of emission reductions occurs when a single greenhouse gas (GHG) emission reduction or removal is counted more than once towards fulfilling mitigation pledges or financial pledges. If emission reductions are double counted, actual GHG emissions could be higher than the sum of what individual countries report. As a result, countries could appear to meet established mitigation pledges, while total emissions exceed these levels. Double counting of

emission reductions would also make mitigation efforts less comparable. If significant double counting were to occur, it could also reduce the efficiency and effectiveness of market-based approaches to mitigate climate change. Avoiding double counting is thus a key policy concern for Parties to the UNFCCC.

How can double counting occur?

Two important forms of double counting are double issuance and double claiming. Double issuance occurs if more than one unit is issued for the same emissions or emission reductions. Double issuance can involve a single mechanism or multiple mechanisms, and a single entity or multiple entities. In a fragmented carbon market, with multiple mechanisms under international, bilateral, national or non-governmental governance, there is a risk that two mechanisms issue units for the same emissions or emission reductions. Double issuance can also occur if one or more mechanisms issue units for indirect emissions reductions that occur upstream or downstream of the entities taking the mitigation action. For example, in a project to promote efficient lighting in households, the households could claim the emission reductions, but so could an energy service company distributing efficient lamps, as could the producers of those lamps. Double issuance due to the accounting of indirect emissions can be particularly

challenging where mechanisms account for life-cycle emissions.

Double claiming occurs if the same emission reductions are counted twice towards fulfilling mitigation pledges: by the country where the reductions occur, through reporting of its reduced GHG emissions, and by the country using the units issued for these reductions towards meeting its pledge. Double claiming is mainly discussed in the context of the transfer of units from developing to developed countries. As with double issuance, double claiming can occur in more indirect ways when mechanisms account for indirect emissions. This is particularly relevant when the emission reductions occur in other countries than where the mitigation action takes place, such as in multinational electricity systems.

Addressing the risk of double counting

Parties to the UNFCCC established two work programmes under the Subsidiary Body for Scientific and Technological Advice (SBSTA), one on a framework for various approaches (FVA) and the other on a new market-based mechanism (NMM) – the aim being to consider different aspects of market-based as well as non-market based mechanisms. Recognizing the importance of avoiding double counting, they have also agreed to consider the issue of double counting. However, whether to address the risks of double counting and how to go about it has proven somewhat controversial.

One important question is whether double counting needs to be prevented ex-ante or whether it is sufficient to determine ex-post how much double counting is occurring. We argue that ex-post determination alone is not enough. It could create disincentives to use international carbon market instruments, because EU Emissions Trading Scheme (ETS) and public purchase programs could be reluctant to purchase units if the units or emission reductions are also used by other jurisdictions towards fulfilling pledges, and could thus increase the global costs of GHG

abatement. It could also be difficult to identify or quantify indirect forms of double counting ex-post. Even if the amount of double counting were known ex-post, it could be difficult to assign responsibility, make a single country or entity liable, and request compensation or reconciliation. Preventing double counting in an ex-ante manner is thus essential.

It is often argued that a system for consistent tracking and reporting of international units is sufficient to addressing double counting. While that is important to facilitate the transfer and accounting of units, it is not sufficient to prevent double counting. Addressing double counting requires a coherent set of rules which address all stages of the life-cycle of units, including their issuance, transfer and use.

Accounting of units

Accounting rules are key in addressing double claiming. For a post-2020 climate agreement, we recommend "accounting for net flows", where units issued for emissions that fall within the scope of the seller's mitigation pledge and are sold to other countries are added to the reported emissions of the seller country and subtracted from the reported emissions of the country using the unit. This approach is simple and provides a "logical" way of accounting for units. It ensures full fungibility of units and enables international linking of emissions trading schemes.

Up to 2020, accounting of units is politically difficult to address. Units issued for emission reductions in countries with the mitigation pledges made under the Cancun Agreements may be double counted by both the exporting and the importing country. However, the underlying context is important with regard to those pledges. Many developing countries have made a mitigation pledge under the Convention for the first time and some were expecting to use the international mechanisms to fulfill them. In this regard, it could be argued that adding sold units to reported emissions would constitute a burden for developing countries. For the period up to 2020, a shared approach for the accounting of units could be



Photo: UNFCCC / Dengmei / CDM 2230

CER or CCER? Clear rules needed for offsetting of Chinese climate change activities

considered. For example, developed countries could only use half of the purchased units for compliance and developing countries could only add half of the sold units to their reported emissions. This option would avoid double counting, support developing countries in fulfilling their 2020 pledges, and may still reduce the costs for developed countries in meeting their pledges. In the absence of any international agreement to address double claiming, caution may be needed in considering the use of units to fulfill pledges.

Design of mechanisms

Rules for the design of mechanisms are mainly needed to address double issuance but also to avoid indirect forms of double claiming. Transparent information on mechanisms and credited activities is important to identify any double counting, and also to verify that double counting is not occurring. We recommend establishing a centralized information platform under the UNFCCC which includes general information on each mechanism. Furthermore, each

crediting mechanism should maintain a publicly accessible database on credited activities.

To avoid that one or more entities seek credits for the same emission reductions under the same or different mechanisms, we recommend combining several approaches:

- Crediting mechanisms could require that any entity seeking the issuance of credits for a mitigation action sign a declaration that it has not and will not seek issuance of credits for the same emission reductions from another crediting mechanism or the same crediting mechanism through another credited activity.
- Parties could agree that host countries should have oversight to ensure that no double counting occurs within their jurisdiction. This could be achieved through issuance of letters of approval for any emission reductions that are claimed within their jurisdiction, such as under the CDM.
- Third-party verifiers or the regulators of a mechanism could be required to check for each issuance request whether the same reductions have already been issued as credits in the same or another crediting mechanism.
- Crediting mechanisms could establish transparent procedures to terminate crediting or transfer a credited activity to another mechanism.

The risk of double issuance or double claiming due to the accounting of indirect emissions could be addressed through appropriate principles for the design of mechanisms. For example, baseline and project emission factors can be determined in conservative ways that avoid indirect forms of double claiming and double issuance.

Consistent tracking of units

A system of consistent tracking of units is needed to facilitate the identification and avoidance of double counting through appropriate oversight on the issuance, transfer and use of units. An important pre-

requisite for avoiding double counting is that sufficient information is attached to the units. Each unit should have a globally unique serial number which should include comprehensive information by means of relevant identifiers, including the mechanism, the country, the vintage and type of units, and the credited activities.

Conclusions

To effectively address the risk of double counting, international agreement on rules for both accounting of units and design of mechanisms is key. Addressing that risk is politically controversial for the period up to 2020. If the post-2020 climate regime is to have a single and coherent architecture which applies to all Parties and if a large proportion of global GHG emissions are covered by economy-wide, multi-year mitigation pledges, double counting of emission reductions within these pledges could be addressed through the use of relatively simple rules for accounting and reporting of units.

The full study is available at:

<http://www.sei-international.org/publications?pid=2479>

Maximum Benefit

The Principles that will Fuel Effective Climate Policy and Economic Value

Adrian Rimmer, CEO, The Gold Standard Foundation

Despite fragmented and inconsistent climate policy and a general lack of confidence about the chances of a meaningful global agreement, the Gold Standard feels encouraged by the tremendous amount of activity that presses on in the lead up to Paris 2015. Within what could have been a vacuum following the expiry of international commitments, 20+ distinct carbon markets are moving ahead in various stages of development, clearly demonstrating the interest in market-based approaches. And, quite rightly, carbon markets are not the only game in town.

A range of tools and policies are needed to fit the differing needs and circumstances of countries. Many different types of Nationally Appropriate Mitigation Actions (NAMAs) are cropping up around the world and the Green Climate Fund is slowly but surely coming to life, most recently benefitting from a \$1 billion pledge of funding from the German government. So our outlook is optimistic and intensely focused on building on this momentum by increasing confidence in the effectiveness of climate measures.

Yet we're fully aware that the climate community faces a formidable task. The most critical challenge is the need for climate interventions to deliver sustainable long-term growth by transforming the way land and other natural resources are managed, to improve the lives of the world's poor, to prepare people and places for resilience to 'locked-in' climate change — and to do this on a huge scale.

How Transformational Change Can Happen

Overcoming these challenges is possible only if future schemes and financing mechanisms incorporate what we've learned about what works and does not work over the last 10 years. Whatever the details of international agreements, regardless of what mechanisms, processes or frameworks arise, they must integrate three core principles:

1. Robust design that considers all potential positive or negative impacts of the activity, mitigates potential downside and maximises the upside.
2. Good governance and transparency, such as ensuring the engagement of local stakeholders throughout design, implementation, and monitoring. Far from a burden, this reduces many aspects of risk to the activity, funder and system.
3. Long-term, consistent and comparable measurement of outcomes. Why would countries or investors not want to know how well a scheme or activity has delivered on its goals?

This approach works – and it is transferable. The Gold Standard and its supporters across civil society, the private sector and government have proven the effectiveness of these principles over the last decade. The evidence is not anecdotal. It is quantifiable and can be measured in financial terms. It is replicable. And it is compelling. While policymakers and analysts have long talked about the costs required to stay within 2°C, the climate community has historically come



Photo: © 2014, Gold Standard Foundation

The Tiilpaalga cooking stove project in Burkina Faso: Local engagement and capacity boosting – two underlying Gold Standard principles

up short in demonstrating the value of action in quantifiable terms. This is why this year, The Gold Standard commissioned a third-party study by Net-Balance, a respected sustainability consultancy, to quantify and put an economic value to the outcomes of fully certified Gold Standard projects.

The Economic Value of Robust Climate Action

The findings of the report, “The Real Value of Robust Climate Action,” show as a fallacy the notion that we

must choose between the environment and economic growth. In fact, well-designed climate mitigation projects that reflect Gold Standard principles not only reduce greenhouse gas emissions, but they also create economic opportunities, help poor communities meet basic human needs, improve health, conserve natural capital and enhance biodiversity.

Table 1 shows a snapshot of the economic value that Gold Standard certified projects deliver – above and beyond reducing a tonne of carbon. Each tonne of carbon mitigated from cookstove projects creates an additional \$93 in livelihood benefits. Safe water pro-

Table 1: Economic value created per tonne of carbon (International \$ - 2013)

	Biodiversity	Balance of Payments	Employment	Livelihood	Health Impacts
Afforestation / Reforestation	\$ 150		\$ 27		
Wind		\$ 19	\$ 2		
Cookstoves	Not quantified		\$ 3	\$ 93	\$ 55
Water Filters	Not quantified		\$ 1	Not quantified	\$ 117
Biogas			\$ 2	\$ 7	\$ 32

For every Gold Standard carbon credit purchased, buyers not only reduce GHG emissions but also create much greater economic value in wider social and environmental impacts

jects deliver \$117 per tonne of CO₂ reduced in health improvements. And afforestation/reforestation projects provide \$150 in biodiversity conservation for every tonne of carbon they sequester. These are powerful figures that cannot and should not be ignored. But they only arise to this extent and in a quantifiable way because the design, implementation and management of the projects leverages a greater potential through the Gold Standard framework.

Proven outcomes and value = funder confidence

The certainty that every dollar invested will not only reduce carbon emissions—but that it will work even harder in delivering socio-economic benefits that transform lives and the local environment—allows money to flow where it can have the greatest impact and thus where it is most needed. These delivered results, will amplify the impacts, elevate funder confidence and increase investments — a growing and virtuous cycle. And it is this kind of momentum that can be truly transformative, empowering us to meet the

very ambitious UN Sustainable Development Goals, which aim to end hunger and poverty, provide access to sustainable clean water, ensure sustainable energy for all, and promote economic growth.

To do our part in meeting those goals, The Gold Standard is advocating for policymakers to ensure that these principles of robust, participatory design, strong governance and clear, consistent measurement of outcomes are brought to the table in Paris next year in order to help gain collective international support for a meaningful global agreement for rapid action to address climate change.

Beyond advocacy, The Gold Standard intends to continue working with and on behalf of civil society to ‘demonstrate by doing.’ We will develop tools and frameworks that ensure tools such as NAMAs can be effective and transformational, with consistent Monitoring, Reporting and Verification of all outcomes. Recognising the vital role of private sector investment in combination with public funding, we will expand our Gold Standard Cities certification for large-scale sustainable infrastructure programmes. We will help governments define and achieve their



Photo: © 2014, Gold Standard Foundation

Improved biodiversity, health and livelihoods: The WWF project to distribute efficient cooking stoves achieves a nine-fold greenhouse gas reduction in China's Sichuan Province

targets at a landscape level by ensuring that small and large-scale activities of different types can be integrated. We will continuously improve the tools and frameworks with field experience, so that whatever the source of funding, every dollar does more to create a safe environment and equitable global community.

Further information:

The study "The Real Value of Robust Climate Action" can be downloaded at <http://www.goldstandard.org/report-the-real-value-of-robust-climate-action>

Net Means More

Net emission reductions as market mechanisms' own contribution to increased ambition

Thomas Forth

The Kyoto Protocol contains emission reduction targets for industrialised countries. The Paris Protocol will contain abatement contributions for all countries. The Kyoto Protocol's flexible mechanisms served cost-effective target achievement, and the mechanisms under the Paris Protocol will serve the same purpose. In both cases, the targets will achieve more if the differing costs involved in abatement around the world are exploited and resources do not go to waste. The use of mechanisms to increase ambition must thus impact the global ambition levels of the international community as a whole. There will be no extra margin for the use of mechanisms. But then, this easily invites the question of whether the availability of mechanisms has contributed in any way to the setting of ambitious targets and to complaints that the targets have been diluted. This has led in the past to sweeping arguments, with the use of mechanisms being challenged wholesale. Indeed, greater objectivity could be achieved if it was made clear what the respective national targets are and what the use of mechanisms is designed to achieve.

The debate on the EU's 2030 emission reduction targets is dominated by internal target-setting for the EU. This provides an opportunity to debate the use of the mechanisms as an add-on feature. Some of the countries considering use of the mechanisms have indicated that it might be possible to set a specific margin, say 40 plus 10 percent (UK). Germany has decided on a 40 plus formula, but has left the margin open. This could be a good way, in the ongoing debate on EU targets, to provide transparency regarding the scope for using market mechanisms – perhaps when

determining the 'intended nationally determined contributions' (INDCs).

But will there still be room for net emission reductions if scope to allow the use of international market mechanisms is actually created, the EU Emissions Trading Scheme (ETS) is re-established as an effective climate change policy tool, a link is made between regional emissions trading schemes and the international market mechanisms, and national mechanisms are coupled via the Framework for Various Approaches (FVA)?

Towards a net decrease in emissions

The term net decrease has entered the debate and it is here to stay. There is talk of how, in the negotiations and talks, some groups reached a sudden consensus on the need to go beyond offsetting. But opinions were not always shared. The idea of a net decrease still triggers reservations among most developing countries. They fear a similar situation to that in which Annex I countries tried to force developing countries to make own contributions under the Kyoto Protocol. To the extent that this assumption is justified, it is quite understandable that the developing countries see such an attempt as unfair given the country responsibilities assigned under the Kyoto Protocol. The recent SB meetings in June shed some important light on the term 'net decrease'. One outcome of the mechanism negotiations was the joint realisation that the term and the idea have yet to be properly defined.



Photo: UNFCCC / Bin Gu / CDM 1368

Pure offsetting, a net decrease or own contributions? Climate change mitigation to get more complex in developing countries

The range of possible interpretations is huge. A recent SEI study on this topic provides helpful insight. It shows the diversity of leverage points for strengthening the net decrease effect. Their failure to breathe life into or operationalise the term 'net decrease' after such a long time is one of the best-kept secrets of the climate negotiations. A stalemate cannot be broken simply by announcing a desire for more rational discourse. Nonetheless, the ongoing attempts to objectify and define help give a better idea of what is being fought for or against. It is thus important that in the upcoming climate change conference in Lima, a detailed negotiation text be presented which allows the Parties to work their way through specific proposals.

The following discussion focuses on the CDM only because this can still play a key role in the period up

to 2020. Of course, if introduced under the CDM, the concept is also of importance both for the other market mechanisms and the Framework for Various Approaches (FVA).

Does a net decrease differ from own contributions?

What is understood by a net decrease if the term is to be interpreted differently to own contributions? Own contributions are expected to find their way into the Paris Protocol as an outcome of the ADP negotiations. The aim here is for an agreement in which all countries agree to share the responsibility for global climate change in line with the two degree pathway. This will lead to a new definition of the CBDR/RC principle and will make redundant the outdated

architecture of the Kyoto Protocol, with its division into industrialised and developing countries.

But then the CDM review is designed to look at the current situation under the Kyoto Protocol. The negotiations on this point have the dual purpose of finding a solution for the period up to 2020 under the Kyoto Protocol and also one for the period governed by the Paris Protocol. Naturally, the CDM currently operated under the Kyoto Protocol must be legally embedded into the new climate change protocol as well. This is, however, primarily a matter of political will, making complex interim rules unnecessary. Opportunities to use the CDM under the Kyoto Protocol will become increasingly unattractive and will eventually fade away.

What is more important is the question of whether all the provisions needed for the period beyond 2020 can be agreed now. If the CDM is to be modified to take on a different structure to the one set out in the Kyoto Protocol and if the own contributions of all countries are to influence use of the mechanisms, then it pays to hold fire until the provisions set out in the Paris Protocol are known – and likewise until the time has elapsed that is needed for national contributions to be introduced and made binding. Determining the INDCs will be the first important step in this regard, but it may not be enough to determine how the mechanisms are assigned.

In this light, there is no reason at all to burden the current CDM negotiations on modalities and procedures with a discussion that cannot be held until many session periods in the future. It thus makes sense for post-2020 issues to be discussed at a later date and to schedule the next review for some time in 2019, one year before the Paris Protocol enters into force. I do not share the fear expressed by some that, by then, the developing countries will no longer be willing to adapt the CDM and that this would result in the CDM continuing ‘as is’. While buyer states might be interested in using low-cost emission reductions, the willingness of host countries to simply give away this potential at international level will drop dramatically if they want to commit to climate policy targets of their own. I think that the negotiations on the mechanisms should not, therefore, be conducted on the basis of the current situation, but on that of a scenario in which the Paris Protocol has been agreed.

But what is meant by a net decrease if it is positively construed and given substance?

Let us return to defining ‘net decrease’. The issue of a net decrease is not one that should be postponed until the next CDM review if it is separated from the aim of mobilising own contributions in developing countries. A net decrease must thus be given policy legitimacy in its own right.

The starting point is to define the term ‘net decrease’ as an abatement contribution that goes beyond the prevailing global agreement, meaning that it does not supply certificates for use in achieving targets and thus delivers additional emission reductions which can count towards adhering to the two degree global warming limit. In other words, it directly benefits the Earth’s atmosphere, making the term ‘net atmospheric benefits’ used in this connection more than fitting.

Be that as it may, the question that now arises is why aim for a net decrease above and beyond the reduction targets already agreed? There are three reasons:

1. Increased ambition

Justification for increased ambition is based on a potential policy deficit: if the reduction targets contained in the Paris Protocol are still too low, use of the mechanisms themselves can certainly contribute to increased ambition.

2. Social acceptance

Although the CDM has advanced, methodologies have been developed, the additionality checks have become reliable and the UNFCCC process and institutions have been significantly improved and tightened up, the CDM still comes up against the same criticism that was expressed in its early years. With the introduction of a net decrease, the much-criticised concept of offsetting could be saved and the own contributions made via use of the mechanisms could help change mindsets.

3. Climate financing

Climate financing cannot by definition result in tradable certificates. But at minimum, it must be ensured that the certificates cannot be used for mandatory or voluntary compliance purposes. The certificates involved must be set aside as they

constitute a net decrease in and of themselves. But the fact remains that the net decrease in emissions has actually occurred and must be recorded. This is why both tracking of certificates and avoidance of double counting are important. Use of the CDM to reduce emissions gives rise not only to a good MRV process and results-based financing, it also, through the issuance of certificates, provides a basis on which to apply the accounting rules contained in the Paris Protocol – rules which must not be less stringent than those of the Kyoto Protocol. Climate financing is thus an area in which the rules that will apply from 2020 onwards must be tried and tested today.

Broad range of net emission reduction effects

It would be easy to identify at least a dozen places where the CDM project cycle could be adjusted and where, in the interests of accurate calculation of the additional emission reduction effects, deductions could be made which would benefit the Earth's atmosphere. Whether these are suited to boosting net emission reduction effects is highly questionable, however. They mainly involve technical issues in identifying the additional reductions, including that of safety deductions and politically-motivated rules which place the mechanisms in the overall climate policy framework. Any attempt at a rough classification of net emission reduction effects soon ends in the elimination of questionable approaches. I should like to set out four categories:

- 1. Technical aspects often seen as incremental approaches:**
 - a. Calculation and measurement
 - b. Periods in which certificates are issued
- 2. Politically-motivated intervention:**
 - a. An 'historical-genetic' approach which places the net decrease in relation to previous regulations
 - b. Keeping back certificates upon issuance for direct set-aside

As outlined earlier, Option 2b is preferred. But what are the arguments against the others?

Calculation and measurement

Calculation and measurement serve both the accuracy and reliability of the emission reductions achieved. It is from this that project developers derive their greatest motivation to engage in specific activities and measures. It is important to them to recognise technical, organisational and behavioural performance. Aggregate treatment, by way of contrast, has a demotivating effect. Any politically inspired interference in this would destroy both their motivation and the inherent economic incentive contained in the mechanisms.

Periods in which certificates are issued

The existing rules are not problematic because of the seven to ten year periods involved, but because of the inadequate checks done when projects are extended. The value of the fixed-term crediting period lay in its standardisation and was a key outcome of the Marrakech Accords. If the current rules were replaced by a process involving individualised, small-scale calculation of the crediting periods, it would counteract any standardisation and simplification efforts. A blanket shortening of the crediting period, which is also being considered, would have additional negative aspects: market-driven regulation would be made redundant and publicly-regulated allocation would ensue which would in turn favouritise cost-effective emission reduction activities. This may be found acceptable subject to sufficient demand. In the foreseeable future, however, one outcome of huge policy relevance would be that the resulting bias would affect countries with difficult-to-finance projects and which had already been affected by the existing inequitable distribution of CDM projects.

Historic-genetic approach

I could be very sympathetic towards this approach. Criticism directed at the Kyoto Protocol often targeted the lack of participation by developing countries. Offsetting under the CDM fuelled that criticism. In any future climate change agreement, the CDM, as a flexible mechanism, must reflect this. The desired change thus involves distribution of the costs and benefits between Annex I and Non-Annex I countries as defined under the Kyoto Protocol. The 'net' issue thus relates to the idea of having Annex I countries make a reduction contribution that goes beyond the emission reduction targets

agreed under the Kyoto Protocol. Looking ahead to the new climate change agreement post-2020, that same question takes on a very different dimension. On the one hand, all Parties are required to contribute to adhering to the two degree global warming limit. This would settle the issue of participation compared with the situation under the Kyoto Protocol. On the other, the question arises as to whether under an ambitious agreement there would still be room for further reductions. When looked at from this historical-genetic standpoint, which focuses on how climate change agreements are developed, there would only be room if the new agreement is not ambitious enough.

Keeping back certificates

It will be important to agree on a quantity that will have neither a negative impact on determining developing countries' own contributions nor push project developers' costs so high that the incentive function of the market mechanisms is weakened.

If a consensus is reached on this point, use of the mechanisms could in itself help to boost climate change policy efforts. Firstly, setting aside a specific quantity of certificates would constitute a direct contribution towards mitigating climate change. Secondly, this approach towards achieving net reductions could spark additional ideas. How, for example, looking at the EU, might reduction quantities be defined by purchasing states? And by the same token, the supplier states could in turn define the extent to which they would use the mechanisms when purchasing states generate new demand. These two situations could feed one another. And they would provide an incentive for developing countries to differentiate between the phases before and after 2020. This means that after 2020, developing countries could offer to reduce emissions whereby a portion of their own contributions is bound under a new climate change agreement to specific commitment on the part of buyer states to purchase certificates.

When it comes to ideas on net emission reductions, it is important to decide on a quantity that has neither

a negative impact on determining the own contributions to be made by developing countries nor pushes project developers' costs so high that they weaken the incentive function of the market mechanisms.

Outlook: Lima negotiations

Lima will show who is and who is not interested in a detailed negotiation text. Looking ahead to the CDM review process, it appears that neither of the two

Size of the net decrease

The net emission reduction contribution will be similar to the share of proceeds. Nonetheless, the question must be addressed as to the purposes for which deductions in certificate allocation are justified in climate policy terms and which are not. The financing options are completely different now compared with those at the time the CDM was introduced and they therefore need no longer add to its burden.

However, before actual quantities are agreed, sensitivity analyses should be conducted for differing price and demand scenarios. The spread of CERs and EUAs has long ceased to provide any conclusive evidence in this regard. What are the leverage points in market-based pricing for international emission certificates? And finally, the question must also be asked as to who is responsible for the net decrease? Other than with own contributions, the host country will not be politically responsible. Responsibility will fall instead to industry relative to the activities and sectors involved.

The principle of capacity and responsibility at industry level will or will not result in financial participation of the host country. And in some cases, capacities will not be sufficient to accommodate certain project types. Many programmes in the CDM Programme of Activities (PoA) approach likely belong in this category and it would thus be wise to assess whether payment of a net reduction contribution actually makes sense.

extremes – ‘the CDM should remain as is’ versus ‘the CDM must finally deliver own contributions by developing countries’ – can win because they each bank on their opponents failing at the negotiation table. A clash of these extremes such that the existing blockades are further reinforced will most severely affect countries whose low-carbon development strategies could further benefit from the CDM.

Visible advancements in the CDM reform would thus be welcome which go beyond technical and incremental improvements. These include a net decrease in emissions, a better definition of how the market

mechanisms are to be used for INDCs and, perhaps, doing without an E+/E- policy. Such detailed proposals pose significant difficulties for proponents of the two extreme camps and could thus help to move the negotiations a considerable step forward.

Further information:

Die im Text angesprochene SEI-Studie zu Nettoemissionsminderungen findet sich unter <http://sei-us.org/publications/id/503>

Use and Build on What You Have

Is a bilateral process suited to testing sectoral approaches that are based on the CDM?

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The international carbon market is in a state of transition, moving away from project-based carbon market mechanisms like the Clean Development Mechanism (CDM) towards new international mechanisms which have yet to be defined and finalised. The poor demand for carbon certificates and the uncertainty surrounding the design of a New Market Mechanism (NMM) hinders the initiation of new reduction activities in developing countries via the carbon market. In this current phase, bilateral agreements could provide a basis to allow immediate implementation of pilot projects which would allow practical experience to be gained with sectoral approaches and also contribute towards the design process for an NMM.

Other than in least developed countries (LDCs), the positive impact of the CDM in stimulating greenhouse gas reduction activities has significantly lessened of late. There is thus an urgent need to find solutions to tackle the associated challenges and mitigate the risks involved. A balanced continuation of the CDM and pilot activities with a focus on new market mechanisms could serve as a basis on which to secure both the existing knowledge base and the tried and tested approaches used with the CDM. Against this backdrop, a project initiated by the German Emissions Trading Authority (DEHSt) aims to analyse opportunities and barriers on the basis of bilateral agreements, and then develop proposals on how pilot activities might be introduced. The starting



Photo: Mi Wenju / UNFCCC

Power plant construction in China. Can bilateral agreements promote new market mechanism pilots?

point for this initiative is found in Article 11a (5 & 6) of the EU Emissions Trading Directive, which provides for the use under the EU Emissions Trading Scheme (ETS) of carbon credits generated by means of agreements with third countries. Given the current situation, demand for credits must be generated via bilateral agreements until such time as actual market demand has regained stability. To ensure immediate use of this approach and to prevent further fragmentation of the international carbon market, the project will continue to use the CDM as a kind of ‘tool box’ and will also take into account its compatibility with the pre-defined pillars of an NMM. By focusing on specific sectors in two potential host countries, the project also ensures that the activities involved come as close as possible to every-day practice.

One important difference between sectoral approaches (such as NMM) and the CDM, besides their reach, is the requirement for the NMM to achieve a net emission reduction in the host

country – meaning that it must go beyond pure offsetting. The net reduction to be achieved has not, however, been quantified to date. This is also something that has to be laid down in bilateral agreements, and a policy decision is needed for the purpose. Aside from the ambition level and the host country’s capacity, sector-specific incentives to attract investment in reduction activities also play a role. Alongside the difficulty involved in drawing a line between net reduction and carbon credit generation, this provides an opportunity to deviate to a certain extent from prescribing an exact quantity for the emission reduction to be achieved. In the parallel transition from project-based activities to sectoral-level transformations, net reductions can at best be verified at inventory or sectoral indicator level. It is thus necessary to ensure that environmental integrity is maintained and that carbon credits are only issued for actual reductions achieved.



The project

In a first phase, the project looks at suitable partner countries for potential implementation of sectoral pilot activities under a bilateral agreement. For this purpose, a shortlist of non-LDC countries was drawn up using objective ranking criteria. With this approach, the focus is initially placed on countries particularly affected by the decline in CDM activities, but which demonstrate a high level of ambition and activity in climate change policy and the carbon market. Also, preference was given to countries with a role model function or regional importance. From that shortlist, Chile and South Africa were selected for further analysis, with one sector in each being identified for further consideration. The electricity sector was chosen for Chile and the buildings sector for South Africa, with special focus being placed on the low-income housing segment which is designed to provide large numbers of homes for the poorest members of society. Sectors with extreme dif-

ferences in their starting conditions were thus chosen in order to cover the full range of possible preconditions (see Table 1). Focusing on the sub-segment of low-income housing in the buildings sector ensured the project's general feasibility as that segment often falls back on standardised building designs.

In a second phase, a benchmarking process was used to develop models that provide the most transparent and verifiable basis for the use of carbon credit thresholds. General benchmarking steps were used to analyse the opportunities and challenges in selected country-sector combinations. Agreement on the size of the net reduction is aided by the use of transparent and reproducible processes. The setting of benchmarks is widely used in this context and is well-accepted as a reliable basis. Benchmarking enables assessment of the relative performance of the respective activity and offers an objective picture of the net reduction or 'own contribution' required. Also, benchmarking approaches have been

Table 1: Comparison of carbon market-related sector characteristics

	Electricity Generation	Buildings Sectors
Data availability	Good, no confidentiality issues, experience with the CDM via calculation of net emission factors	Difficult due to the heterogeneity of buildings and ownership/property structures
Average emission reductions per CDM project activity	Ranging from minimal to vast	Low; up-scaling is desirable but difficult
Success with the CDM	Baseline well represented; high share of projects and methodologies, tried and tested calculation tool for net emissions factors, first standardised baseline	Minimal, low penetration rate, very low actual issuance of emission reduction certificates, generally isolated measures in specific buildings
CDM Barriers to the CDM	Great differences in regional baselines and associated incentive levels	Monitoring (MRV), boundary setting, high transaction costs, high ,signal to noise’ ratio
Benchmarks in EU ETS (2013-2020)	None: no free allocation of certificates	None: not covered by EU ETS

incorporated, either directly or indirectly, into the CDM rules and have also been used as a basis for free allocation of certificates in the third trading period in the EU ETS.

Electricity generation in Chile

Plans for the Chilean electricity sector have largely been developed in consideration of the fact that electricity generation is currently dominated by gas and hydropower plants, although future capacity expansion is likely to be based for the most part on burning domestic coal reserves in order to reduce the country’s dependency on imports. The Chilean electricity grid comprises four separate regional grids and all regions have the potential to produce renewables-generated power. There is evidence that many components of the CDM could be used either directly or

in an adapted form. Changes are possible as regards whether four grid-specific emission factors are needed and also when taking account of generation capacity which the CDM describes as ‘low-cost/must run’. This capacity is defined as power plants with low marginal costs or those which operate independently from daily or seasonal demand. These rules could be justified in project-based mechanisms that provide for full offsetting (meaning 100 percent), although the sectoral mechanisms have the primary goal of promoting general sectoral transformation. Where the threshold for issuance of carbon credits is significantly below actual reductions, there is no need to know exactly how many kilowatt-hours of electricity are substituted and the associated emissions in order to maintain environmental integrity. Only the stipulation of the net reduction then remains subject to significant uncertainty, the acceptability of which will be decided at policy-making level. Methodologi-

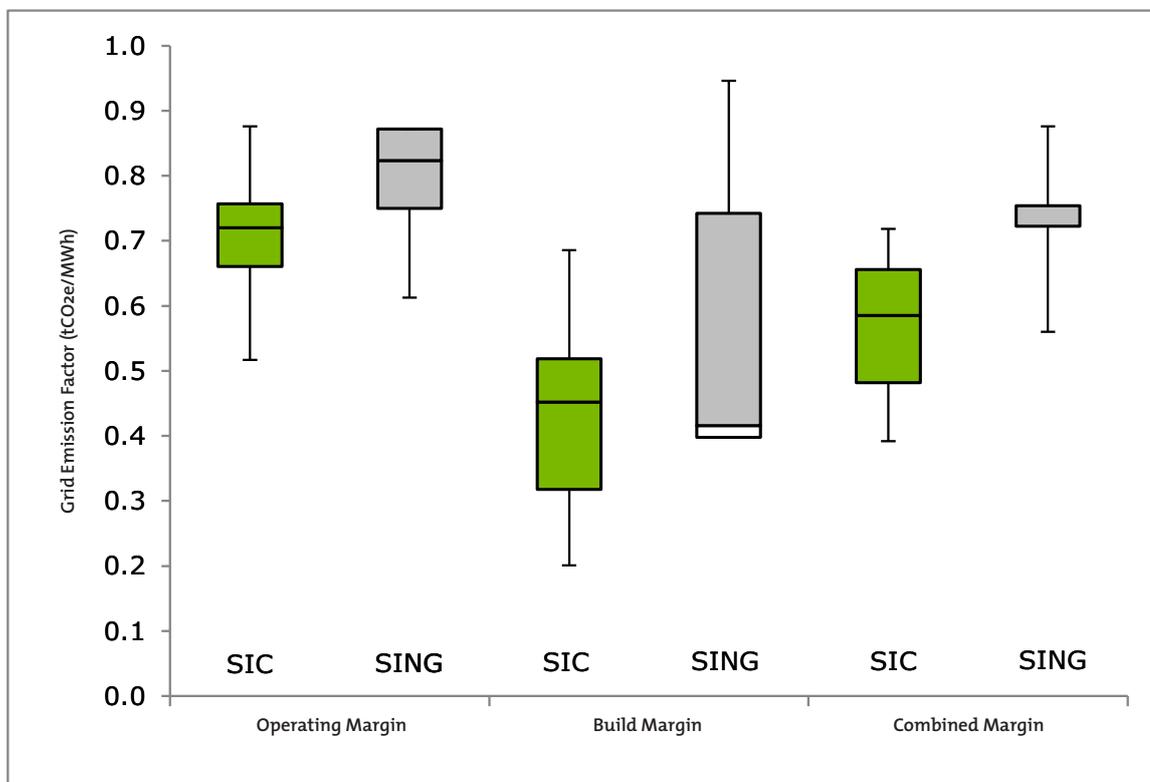


Fig. 1: Range of variation in grid emission factors of Chilean CDM project activities for Chile's two biggest electricity grids (SIC and SING). (Box plots based on data taken from the IGES Grid Emission Factors Database on 1 April 2013)

cal adaptation to match national inventories and statistics can, however, provide for greater transparency and consistency. Figure 1 shows the variations in the emission factors in Chilean CDM projects.

South African buildings sector

Despite the huge emission reduction potential it harbours, only few CDM projects have been implemented in the buildings sector which are designed to cover the building as a whole and not just certain systems within it (such as lighting). Various barriers are the cause of this low success rate: in some cases, the CDM principles of achieving actual, measurable, verifiable, additional emission reductions appear incompatible with sectoral characteristics. The CDM monitoring rules require the exact quantification of

each and every tonne of emissions reduced, but due to the low signal-to-noise ratio, this is extremely difficult to achieve in the buildings sector. Interfering effects such as changes in user behaviour or interaction with other measures are often hard to quantify. Also, projects in the buildings sector tend to be extremely complex because of the numerous potential energy sources involved and the differing services used within the project's boundaries.

The CDM methodologies available in this sector are either too specific or offer no practicable solutions with which to tackle these challenges in a pragmatic way. This results in high transaction costs in relation to rather low absolute emission reductions per project. Most registered projects achieve reductions far below 10,000 tCO₂e per year and have only limited multiplication potential (for example, as a PoA). In addition, the full potential of the reduction measures

is achieved over a building's entire life-cycle, which is usually much longer than the CDM crediting periods. Thus, the CDM contributes only marginally to shortening investment payback periods, which in turn means that building-related measures remain less attractive when compared with alternative investment opportunities.

Given these findings, it is recommended that each mechanism designed to exploit reduction potential in the buildings sector should take a pragmatic MRV approach, have both indirect and long-term impacts, and enable consolidation of less homogeneous, isolated activities in order to achieve the greatest possible sectoral coverage.

For South Africa's low-income sector, with its large number of houses built to standardised specifications, it is therefore helpful to apply greatly simplified approaches for the setting of thresholds as a basis for the issuance of carbon credits. These are based on default values and the number of houses built to those standardised specifications. Full implementation of ambitious energy efficiency building standards can serve as a threshold because this is rarely achieved in practice in this segment. Whether this sector can contribute to a reduction effect not achieved by means of carbon credits is less likely than in the electricity sector due to the generally low incentives involved.

There is evidence that the current CDM rules for the buildings sector can provide approaches, but they cannot supply the overarching framework or the sectoral approaches needed to effect a direct and significant increase in available reduction potential. Simplifying, pragmatic approaches can be found in earlier project proposals, but these have not led to successful verification and issuance of certificates. Bilaterally supported pilot activities could provide an attractive basis on which to test the practicability of new sectoral requirements for replication in full-scale house-building programmes.

Conclusion

The findings show that in the current activity gap bilateral agreements can provide an attractive basis for piloting new market-based approaches at sectoral level. Bilateral activities could also help to secure the knowledge and staffing capacities generated under the CDM in the countries involved and could also be used to meet the requirements arising from the introduction of future standards. For the country-sector combinations assessed, there is evidence of differences in the available scope for further use of CDM methodologies. While in the electricity sector, changes are needed most of all to achieve an alignment of sectoral approaches, the existing methodological approaches are only suited in part to exploiting large sections of the reduction potential in the buildings sector. It is necessary to avoid transferring the high individual transaction costs from the CDM to sectoral approaches, meaning that adapted solutions are needed. This can be achieved with a switch from a 100 percent offsetting system to the generation of net reductions in host countries – a switch which would also secure the environmental integrity of the activities in question.

Further Information

The findings presented here are based on an ongoing research project which is financed by the German Emissions Trading Authority (DEHSt). The research is conducted by NewClimate Institute together with Ecofys. The opinions expressed in this article are those of the author and do not reflect those of the DEHSt. The author would like to thank local experts and all those involved for their helpful contributions during the project's implementation. Further information can be found in the interim report at: http://www.dehst.de/SharedDocs/Downloads/EN/JI-CDM/Carbon-markets-in-transition.pdf?__blob=publicationFile

In the absence of abatement targets

Stranded Investments and Suppressed Supply

Thomas Forth

The ongoing lack of demand for international emissions certificates hinders the implementation of new CDM projects and impacts emission reductions already achieved with the CDM. The future of existing projects which are wholly or largely dependent on revenue from the sale of certificates is thus at risk. Where they are able to do so, buyers are starting to withdraw from agreements they now see as unprofitable and countries are proving unable to find ways to use the CDM projects on their territory. As a result, the CDM pipeline faces considerable pressure and its potential contribution to closing the ambition gap is threatened.

Industrial gas study findings

Certificates from domestic industrial gas projects were always viewed with some scepticism in the EU and their use will not be allowed from the start of the third trading period of the EU Emissions Trading Scheme (ETS). Most EU member states have adopted this ruling in relation to the effort-sharing sectors. Nonetheless, it cannot not make good climate policy sense to halt the emission reduction efforts from these projects and allow the situation to return to the way things were before the CDM was introduced.

Against this backdrop, in 2013 the German Environment Ministry commissioned Öko-Institut to assess available options for the continuation of greenhouse

All Industrial Gas Projects

	2013	2014	2015	2016	2017	2018	2019	2020
Abatement potential	384	387	391	390	397	403	409	415
Implemented CDM projects	161	160	158	156	154	153	152	151
New CDM projects	22	24	25	27	28	30	31	33
New JI projects	17	17	18	18	18	19	19	20
Non-eligible installations	184	186	190	189	196	202	207	211
Credit supply potential	174	129	117	109	93	89	87	86
Implemented CDM projects	158	111	100	92	76	72	71	70
New CDM projects	10	11	11	11	11	11	11	11
New JI projects	6	6	6	6	6	6	5	5



Photo: UNFCCC / Fredes / CDM 1229

Stop or go? Emission reductions from industrial gas projects hang in the balance

gas abatement from CDM and JI projects in the industrial gas sector (HFC 23, N₂O). In that study, authors Lambert Schneider and Martin Cames estimated the contribution made by these industrial gas projects towards closing the 2020 ambition gap at between three and five percent. It is thus a contribution that should not be neglected: it is one that can be effectively achieved by means of a manageable number of individual projects and, as the study also shows, in a cost-effective way. But looking not just at the abatement potential covered by the CDM/JI pipeline, but also at the emission sources of both these industrial gases overall, the total abatement potential for the period 2013 to 2020 is estimated at 3.2 Gt CO₂e. Of this amount, around 1.2 Gt would be covered by existing CDM projects if continued. Also, available data shows that, particularly regarding the

quantities not already covered, continuation of the Kyoto mechanisms could bring considerable benefits.

Looking at the emission reduction targets for 2030, Schneider and Cames assume an abatement potential of up to 7.5 Gt CO₂e in current CDM countries and the JI countries of Russia and Ukraine (given that the policy framework remains as is). They arrive at abatement costs of an average 60.47 per t/CO₂e for industrial gas projects. It is thus evident that this abatement potential is the most suitable option available when it comes to making a significant contribution to closing the ambition gap up to and beyond 2020. If almost all of this abatement potential is exploited, its contribution to closing the reduction gap will more than double – to around 10 percent. The CDM and, under certain circumstances, JI can still serve as a

purposeful tool in exploiting that potential. In the longer term, however, ongoing coupling of reductions to revenue from CER sales will be highly questionable in both policymaking and economic terms. In the mid-term, such low-cost potential of this magnitude could be directly exploited by countries with mid-level and higher incomes, and they could then count those 'own contributions' towards global climate change targets. The situation is somewhat different for low-income countries, for example in relation to the fertiliser production sector. Although use of the CDM is clearly justified into the next decade, these countries should also be required to introduce national arrangements after 2020.

The political transformation aspect of cost-effective abatement potential using both CDM and JI activities and the provisions of prevailing national climate change policy is key in determining own contributions to global climate change targets. These should in any case already be taking shape with a view to preparing 'intended nationally determined contributions' (INDCs). And they should in no way be used by the industrialised countries to deliver a cost-effective form of flexibilisation potential beyond 2020.

In looking at ways to secure the CDM and JI pipeline, focus was largely placed on cost structures that would allow project continuation. In the case of JI, a completely new climate policy requirement scenario would need to be developed to meet transformative criteria. Plus, climate financing funds would not be available for JI countries.

The study highlights the fact that the technical operation costs involved in project continuation are extremely affordable, at go.10. And they remain so even after adding the CDM transaction costs for MRV and certificate issuance. The study thus provides good reasons to finance projects via public programmes, not least to allow these projects to be used towards future global climate change mitigation contributions by developing countries after 2020. It also speaks in favour of keeping the projects in place until such time as private certificate demand has been revived.

The climate policy message is clear: stranded investments must not ensue. To allow this to happen would be a fatal flaw in the international climate change regime.

N₂O From Nitric Acid Production

	2013	2014	2015	2016	2017	2018	2019	2020
Abatement potential	58	60	60	61	62	64	65	67
Implemented CDM projects	19	19	18	16	16	15	15	15
New CDM projects	22	24	25	27	28	30	31	33
New JI projects	17	17	18	18	18	19	19	20
Credit supply potential	35	35	34	32	31	30	29	27
Implemented CDM projects	18	18	17	15	14	13	12	12
New CDM projects	10	11	11	11	11	11	11	11
New JI projects	6	6	6	6	6	6	5	5

Pilot Auctioning Facility (PAF) links new auctioning process to security for CDM projects at risk

The issue of stranded investments burst onto the scene immediately following the slump in demand for international emission certificates under the EU Emissions Trading Scheme (ETS) and the associated certificate price collapse. Launched in September by the World Bank and funder countries like the US, Sweden and Germany, the Pilot Auctioning Facility (PAF) aims to ensure that CDM projects at risk can be continued. The PAF will address methane and other greenhouse gases. In the first auctioning phase at the start of 2015, methane abatement CDM projects in the landfill, organic waste and wastewater treatment sectors will be eligible. Further auctioning phases will follow for other types of greenhouse gas. It is expected that the PAF will mobilise some g100 million from funder countries overall. While this is nowhere near enough to revive stranded investments, it is a first step in gaining experience in how this abatement potential can be secured by means of the climate financing process.

A key issue in all of this is whether the PAF can provide a model to stimulate and foster new project activities. The Öko-Institut study has shown that the existing CDM project pipeline has failed to include the new emission sources in the N₂O sector and that a further strong rise in N₂O emissions can be expected. As the incentive effect of the CDM for new projects has dwindled since the start of the decade due to the lack of new emission reduction targets, it can be expected that for many investors the climate change aspect of the CDM and JI has been lost and has not been replaced by other incentives or obligations. What remains is a situation that can be described as 'suppressed supply'.

For primary emission reductions, however, very different amounts of finance are needed than those required to secure existing investments. Thus, these aspects should certainly be discussed following initial experience with the first PAF auctioning activities. The extent to which more recent carbon pricing models can deliver a solution will be addressed at

that time. But it can be assumed that the PAF must focus on long-term solutions to 'dry up' emission sources in host countries.

This also applies for the most important strategic consideration of the World Bank and the funder countries when positioning the PAF, meaning whether and to what extent the PAF can take on a pilot function for climate financing of attributable and actual emission reductions. This will largely involve the question of whether the operational approach taken with the PAF is suited to generating large-scale emission reductions in a cost-effective way. A basis for comparison is provided in the form of experience gained during the first Kyoto commitment period and with the public purchasing programmes.

What must be remembered, however, is that apart from calculating technical reductions, the robustness and reliability of the CDM should also play a role. With its certified MRV process and the issuance of certified emission reductions (CERs), the CDM provides a reliable basis for greenhouse gas abatement, including as part of the climate financing process. The ability to track emission reductions must be ensured, both for the market and for climate-financed abatement, to prevent double counting and indirect trading of emission reductions from the outset. For reductions to be counted as a contribution towards international climate financing, certificates must be firmly set-aside irrespective of whether they will be attributed to the buyer or host country.

But first and foremost, it is important that enough experience be gained with the PAF and that it be analysed for its suitability as a climate financing model.

New methane and industrial gas study

Given the ongoing debate regarding the revival of stranded investments and the identification of new and what are currently hidden emission sources, the German Environment Ministry is funding a new

industrial gas sector study conducted by Öko-Institut. In the coming weeks, Öko-Institut will step up its research activities on industrial gas abatement potential and expand it to include the potential offered by methane and SF6. In addition, implementation-focused questions will be taken up regarding the selection and accreditation of projects under climate financing purchasing programmes. This includes the question of whether and how purchasing programmes can provide a transformative incentive for self-regulation in host country climate change policy. The core issue is whether, under climate financed purchasing programmes, it might be possible to follow different distribution patterns than those allowed by the CDM and the COP so far. This includes not just creative licence on the purchaser side, but also the willingness for transformation in the host countries – for example with regard to the E+/E- policy or the altered, ambitious baselines which signal willingness to switch to national arrangements. Greater responsibility on the financing side is equally as desirable because the issue at hand is not merely the transfer of financial resources, but the development of a global policy on adhering to the two degree global warming limit which, in addition to money, takes in the mobilisation of expertise, access to technology and a low carbon economy. These aspects call for considerably greater cooperation between participating private and public stakeholders than that seen in the CDM boom phase of the past, where cherry-picking of cost-effective reduction potential was the norm.

The initial findings of the study will be published at the start of 2015. They will be used to develop criteria for the purchase of certificates in the following areas: long-term transformation, prevention of negative effects on sustainable development, the environmental integrity of projects and avoidance of double counting of emission reductions. In this context, an analysis will be performed as to whether and how new or only already registered facilities should be eligible.

The analysis will look at the following project types: avoidance of HFC 23 from HFC 22 production, of N2O from adipic acid and nitric acid production, of SF6 in electricity distribution, and of CH4 in coal mines, transport and gas supply, and the extraction of natural gas and oil. Potential eligibility criteria and support measures for purchasing programmes will be developed and discussed for the selected project types, taking into account such issues as:

- Prevailing legislation in developing countries
- Incentives for governments to address emissions by means of national climate change policy
- Possible negative effects from the various project types
- The robustness of the available baseline and monitoring methodologies
- The available technologies
- The practicability, objectivity and verifiability of potential criteria

The benefits and disadvantages of the various criteria will be identified and weighed, and the findings will then be used to develop recommendations for action for each project type.

Further information:

The study by Schneider and Cames is available for download via the JIKO website at:
www.jiko-bmub.de/1408

See the World Bank website for more on PAF:
<http://www.worldbank.org/en/news/feature/2014/09/15/pioneering-new-financial-instrument>

Global Collapse, Local Impacts

New study shows the effects of the market crisis for the private sector

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The two central goals of the Clean Development Mechanism (CDM) are to achieve climate change mitigation and sustainable local development. This includes the involvement of local private entities from non-Annex 1 countries in the CDM project value chain. In order to facilitate their participation in the CDM and to create a local CDM industry, capacity-building activities were established. The empirical analysis presented here suggests that a transfer of value creation towards non-Annex 1 countries did occur. However, with the start of the CDM's demand crisis, the capacity building efforts were not sufficient to preemptively increase the resilience of local CDM participants, e.g. by helping them diversify their business models outside the CDM. The industrial capacity that was created during the growth phase of the CDM quickly became unsustainable and a substantial number of participants went out of the market. This destruction of industrial capacity and the resulting lack of trust in political markets are major obstacles for the successful adoption of New Market Mechanisms (NMM). How might capacity building evolve to better prepare market participants for unstable market cycles?

Private sector engagement for climate change mitigation is a key design feature of the Clean Develop-

ment Mechanism (CDM), complementing the goal of sustainable development for the non-Annex 1 member states – the host countries – of the Kyoto Protocol.

The challenge is thus to enable private-sector entities in non-Annex 1 countries to participate in the global carbon trade value chain. To facilitate the growth of a local CDM sector in non-Annex 1 countries, the Conference of the Parties codified a framework for capacity building in the 2001 Marrakesh Accords. This article focuses on the qualification of private sector participants such as companies and non-governmental organisations, and refers to it as industrial capacity building for the CDM market.

While the CDM market itself is very transparent, mainly due to the publication requirements of its governing bodies, the multitude of capacity building initiatives and organisations makes it difficult to assess the direct impact of specific CDM-related capacity development programs. Empirical findings on the local effects that capacity building had on the emergence of a sustainable local industrial structure in non-Annex 1 countries do not exist on an aggregated scale. Information that does exist is often anecdotal. This article aims to fill this gap by delivering a systematic overview of the CDM industry's local development. We therefore explore the CDM market's

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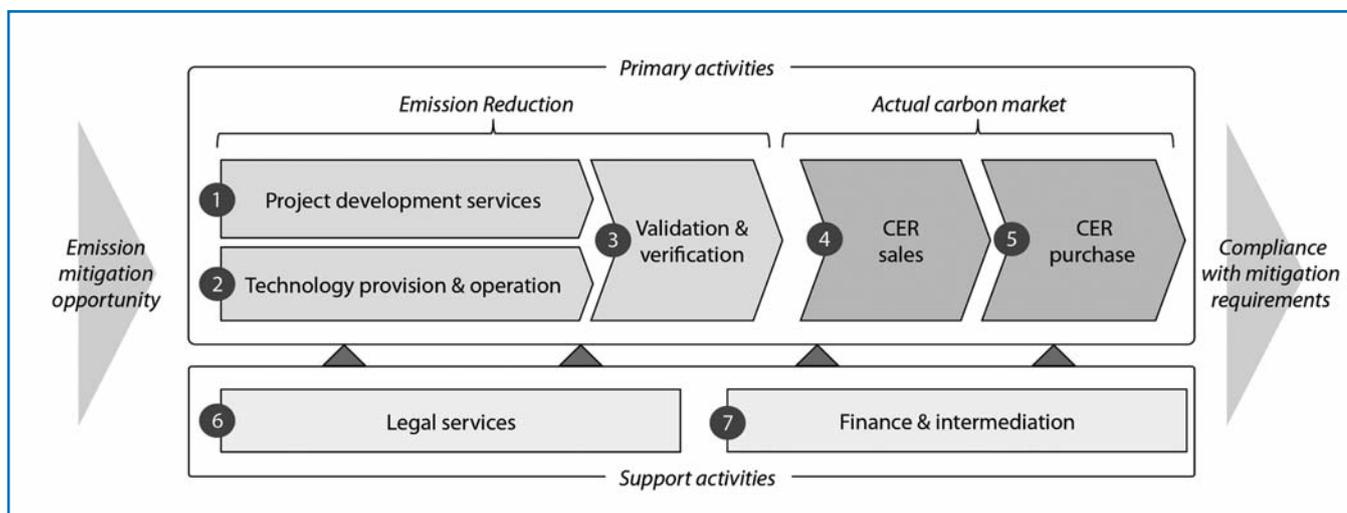


Figure 1: The Carbon Value Chain

structure by empirically establishing its value chain and the corresponding business models. Both are inferred from self-reported activities within the CDM market among 1137 market participants from the UNEP Risø Center's CDM Bazaar database.¹ The research question that guided the empirical work was to identify the current industry structure and its geographic composition. This was done by first establishing a value chain model of the market, followed by an analysis of which specific business models occurred along the value chain.

The CDM's value chain has well-defined boundaries: It starts with project origination and ends with the retirement of Certified Emission Reductions (CER) for compliance. Yet many different business models are conceivable around the core activities within the CDM. Firms can, for example, either focus on a specific activity or act as integrated providers, aiming at a broad presence in the market.

Based on a factor analysis of 26 activities listed in the CDM bazaar database, **Figure 1** shows the identified

value chain. Table 1 shows representative activities that are performed at each step.

Certain value chain steps, such as Validation and Verification, are represented by a single or few activities. Other value chain steps, notably project development services, encompass a wider range of activities such as identifying projects and assisting project owners with their project design document (PDD). This is immanent to the CDM process, and becomes most obvious for the Validation and Verification step, where specific regulations define the scope of activities, thereby framing the Designated Operational Entity (DOE) business model.

Clustering the value chain steps into business models opened the way for a more detailed analysis of value creation in the industry. Table 2 summarises the nine identified business models.

A comparison of the 2012 snapshot of 1137 companies with a 2008 snapshot of 495 companies used in an earlier study shows a maturing CDM market. The major development during this time period was the

¹ On a cautious note, by the nature of the data acquisition, a self-reporting bias will be present in the data. The study was extended by qualitative interviews with carbon market professionals as well as participant-level research to verify the empirical findings and to get a picture of how the market crisis impacted private-sector participants.

Table 1: The Carbon Value Chain and its Activities

Value chain steps	Project Development Services	Technology Provision & Operation	Validation & Verification	CER Sales	CER Purchase	Market Enablers	Finance & Intermediation
Related activities (sample)	Baseline development, assistance with PDD, project identification, assisting registration	Technology solutions, feasibility studies	Designated operational entity (DOE)	Primary and secondary CER sales	CER acquisition and compliance	Legal advisory, commercial advisory, due diligence, HR training, publishing	CER procurement, CER sales, financial services

integration of activities along the value chain. This development was mainly brought forward by dominant firms in the market. They used their experience to provide additional services: departing from their

original, rather specialist, business model they developed into broad-spectrum CDM service providers. Also, the project promoters business model was not present in the 2008 sample, but in the 2012 data the

Table 2: CDM Business Models

Business Model	Description
Integrated Firms and Traders	Mainly engage in certificate trading, with CDM-specific competence such as certificate portfolio management, carbon asset management
Technology and Finance Firms	Focus on technology and technical service provision for CDM projects, project management, training and to a lesser degree financial consulting
CDM Specialists	Provide highly CDM-specific consulting services and possess a high level of methodical know-how in specific areas, but do not necessarily show a high level of integration and are not technology-focused
Primary and Secondary Market Sales	Sale of CERs originating from captive projects, project developers selling directly to the market
Integrated Non-traders	Provide a wide range of CDM-related services and technology expertise but do not engage in trading
Buyers	Mainly purchasing of certificates for compliance purposes, retail activities in voluntary carbon markets
Project Promoters	Specialists in consulting project developers to identify buyers for primary market certificates, support CER registration
DOE	Verification and validation of CDM projects
Enabling sService Providers	Includes legal firms, trade magazines, recruitment firms, trade fair organisers

difference with respect to primary and secondary market sellers was very well reflected. Project promoters generally do not engage in secondary transactions in CERs.

Comparing the two datasets regarding their spatial distribution, Annex 1 countries had the largest share of industrial capacity in both the 2008 and 2012 datasets. However, there is a moderate trend that points to a transfer of value creation towards non-Annex 1 countries. In the 2012 sample, 53% of the participants were headquartered in non-Annex 1 countries, up from 48% in 2008. This five percent growth, which might seem unsubstantial, has to be viewed relative to the already high number of non-Annex 1 firms present in the 2008 sample, especially when compared with the distribution of value creation in other global value chains. Also, the spatial distribution varies greatly by business model. Project Promoters is the business model with the largest share of non-Annex 1 capacity with 71%. Many of these firms have a very local activity scope and focus on fostering project activities within their domestic market. On the opposite side are Buyers, with only 14% of industrial capacity in non-Annex 1 countries. This stands to

reason: Participants in this business model are mostly compliance buyers and their trading subsidiaries.

While it is difficult to quantify how much of this knowledge transfer is directly attributable to capacity building efforts, these numbers still signify the successful advent of a non-Annex 1-based industrial capacity in the CDM's growth phase.

Regional characteristics within the group of non-Annex 1 countries show a more differentiated picture.

Figure 2 shows the total growth of industrial CDM capacity in nine regions. Europe experienced the highest absolute growth, with the Asian region (excluding China and India) trailing. The comparatively low growth of industrial capacity in China is counterintuitive at first sight. Participant-level research and expert interviews with Chinese market participants revealed that the structure of the Chinese industry is fundamentally different from other countries, because activities are concentrated in fewer but larger, mostly state-owned, entities. This is in contrast to the less centralised growth of entrepreneurial capacity in India, for example. In terms of rel-

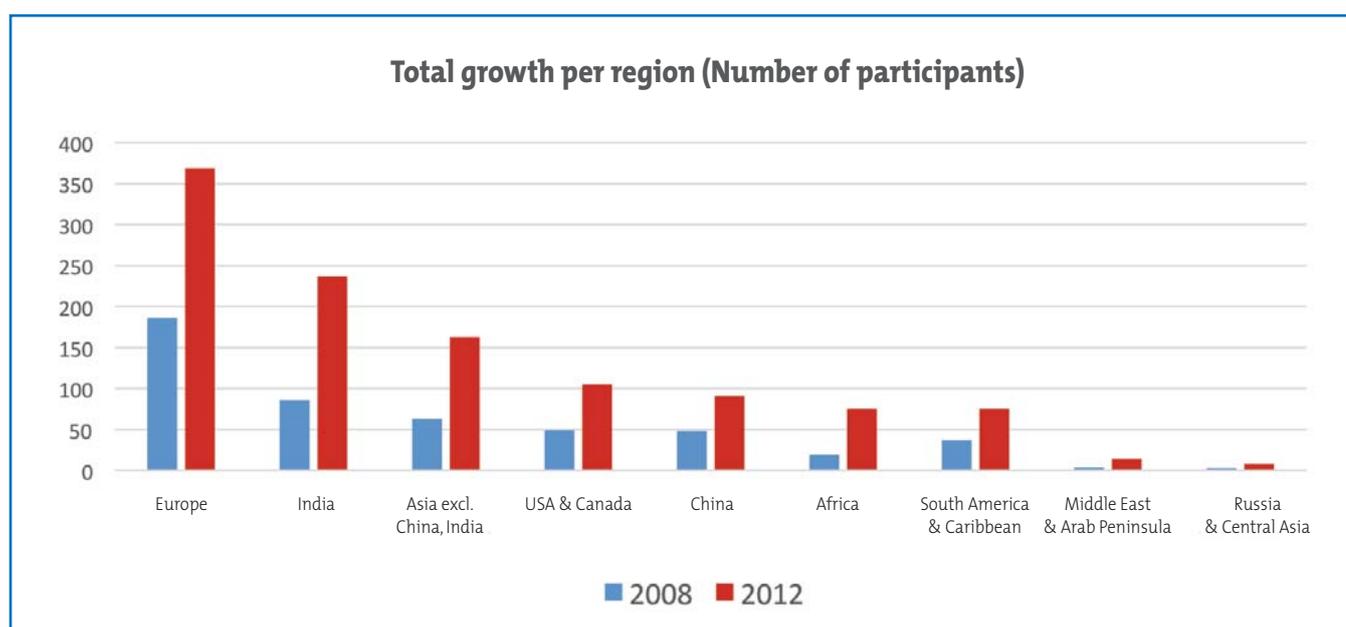


Figure 2: Regional Growth of CDM Market Participants

ative growth, Africa is in the lead. The African industrial capacity represented in this data sample nearly quadrupled between 2008 and 2012. Still, given how susceptible Africa is to the effects of climate change, the region remains underrepresented in the CDM market. It should also be noted that South Africa alone accounted for about 30% of the total African capacity. The comparatively small number of CDM projects implemented in African host countries underscores this issue. **Figure 3** conclusively shows the Annex 1 and non-Annex 1 growth patterns by business model.

Impact of the crisis

To estimate the impact of the market crisis on the CDM industry, we traced the development pathways of the 1137 market participants at participant-level. This was done by either contacting the participants individually or ascertaining their fate in the market downturn, e.g. from an official bankruptcy filing or a notice of two participants merging their operations.

After contacting market participants individually and conducting expert interviews with market observers, it was concluded that this information cannot be traced reliably enough for an empirical analysis bearing high statistical significance. Especially in developing countries, there are too many factors at play that decide why a given participant might be impossible to reach. However, the results are still useful because they reflect general trends in the market that were confirmed by multiple participants in each region,

Given the negative market outlook and diminishing opportunities for CDM-related revenue, it is assumed that businesses ought to develop along three major pathways:

The first development pathway is to adapt to the lower level of business activity and remain in the CDM market, down-sizing operations if needed. In this scenario, core capacity would remain in the market and could be scaled-up once the CDM market or a NMM revives demand. In terms of capacity building,

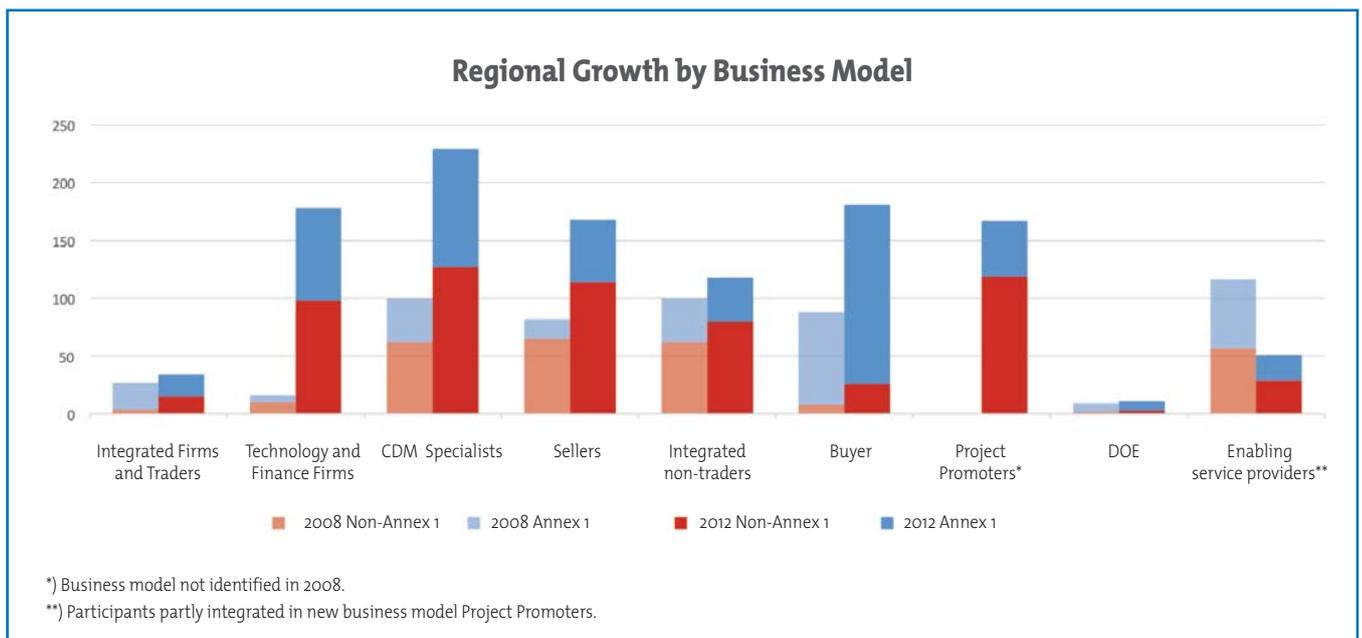


Figure 3: Growth by Region and Business Model

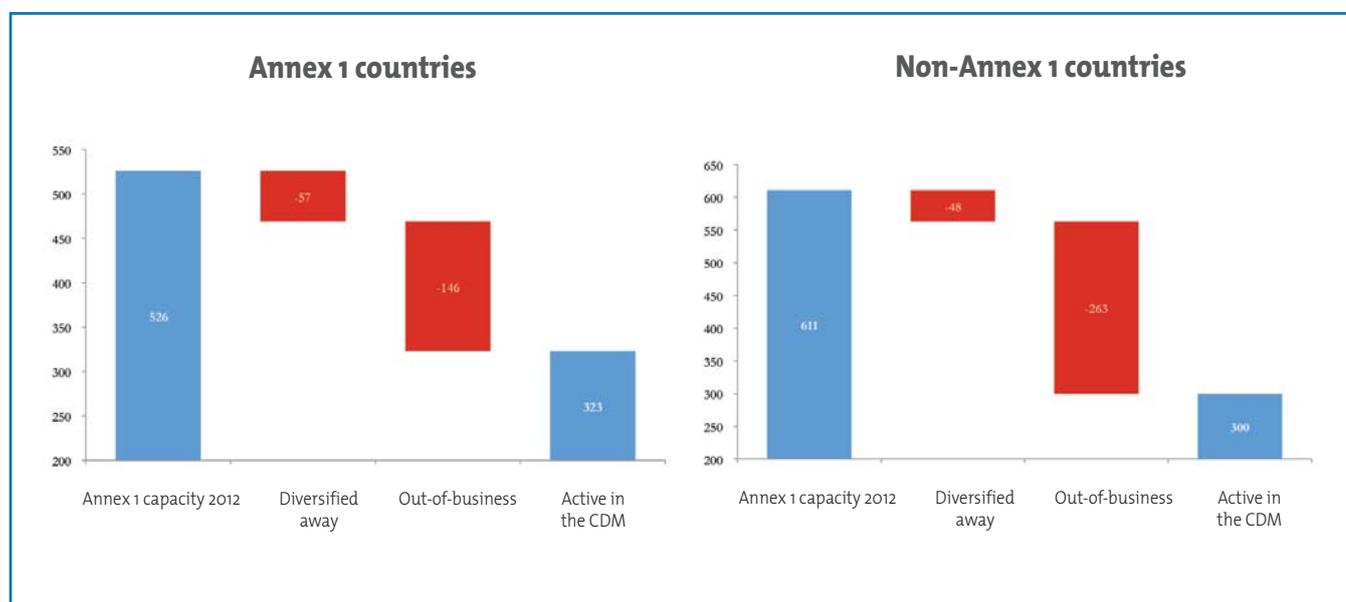


Figure 4: Estimated Capacity Loss and Diversification

this scenario can be considered the best of the bad choices in an unravelling market.

The second pathway is to enter other industrial sectors that require a similar skill set relative to a participant's business model and positioning along the CDM value chain. Companies from the Technology and Finance cluster, for example, might use their technology know-how to offer products and services that do not require a refinancing mechanism such as the CDM. Yet, companies that withdraw from the CDM can still contribute to sustainable development, for example if they diversify into energy efficiency consulting. The diversification of activity in this case can be interpreted as a positive spill-over effect, but remains a drain on the CDM market.

The third pathway is a consequence of unsuccessful pursuit of the first two options: Going out of business. For capacity building, this represents the worst-case scenario. Not only does it erase experience and damage knowledge networks, businesses ceasing operations through bankruptcy or liquidation will also raise red flags with future entrepreneurs, investors and other organisations to engage in the CDM. It diminishes the perception of the CDM's reliability

as an instrument on which to base a business model.

Across all regions, it is indicatively estimated that about 40% of global industrial capacity was not successful in following the first two pathways of downsizing or diversification: This capacity has been lost. Like the initial growth of capacity, the loss rate estimates also vary by region: Annex 1 countries experienced roughly a 30% loss rate, whereas non-Annex 1 countries suffered from a loss rate of roughly 45%. The number of participants that successfully followed the second pathway – diversification away from the CDM – seems to be very limited with a tentatively estimated maximum of 10%. For the remaining companies that were able to remain in the CDM market by downsizing as necessary, not much data is available to estimate the scale of adaption, however large downsizing operations were reported.

Figure 4 shows the estimated capacity loss and diversification rate across Annex 1 and non-Annex 1 member countries.

Within non-Annex 1 countries, Africa seems to be the region most impacted by the market crisis. In the region, a total of 60% of participants could not be

contacted anymore, even after a thorough research of publicly available information. India scored second, with 52% of participants unable to be contacted. Figure 5 gives detailed estimates on selected regions. Again, the capacity loss can be due to many factors, and should not only be attributed to the lack of demand in the market.

Implications for New Market Mechanisms

Based on these insights, it can be tentatively argued that developing countries in regions especially vulnerable to climate change have also been most vulnerable during the ongoing CDM crisis. In interviews with market participants in these regions, three hypotheses were primarily brought forward as explanations:

- Companies founded during the CDM's initial strong growth phase had limited incentives to develop customer relationships and services out-

side the CDM. This could also be described as over-reliance on the CDM's future market prospects, resulting in too narrow business models. It was stated several times that among start-up founders there was a feeling of a CDM 'gold-rush'. While this positively shows how market mechanisms can spur local private-sector development, it also shows the level of political responsibility required to provide a stable environment. In any market mechanism, young companies are especially vulnerable to market disruptions, because they often lack financial capacity, a deep level of integration in existing value chains and political clout. Möglichkeiten, an einer tiefen Einbettung in existierende Wertschöpfungsketten und an politischem Einfluss fehlt.

- Market participants from developing countries have limited diversification potential due to the lack of economic opportunities in many developing country host countries. With very limited financial resources to undertake, say, renewable energy projects, developing countries offer few

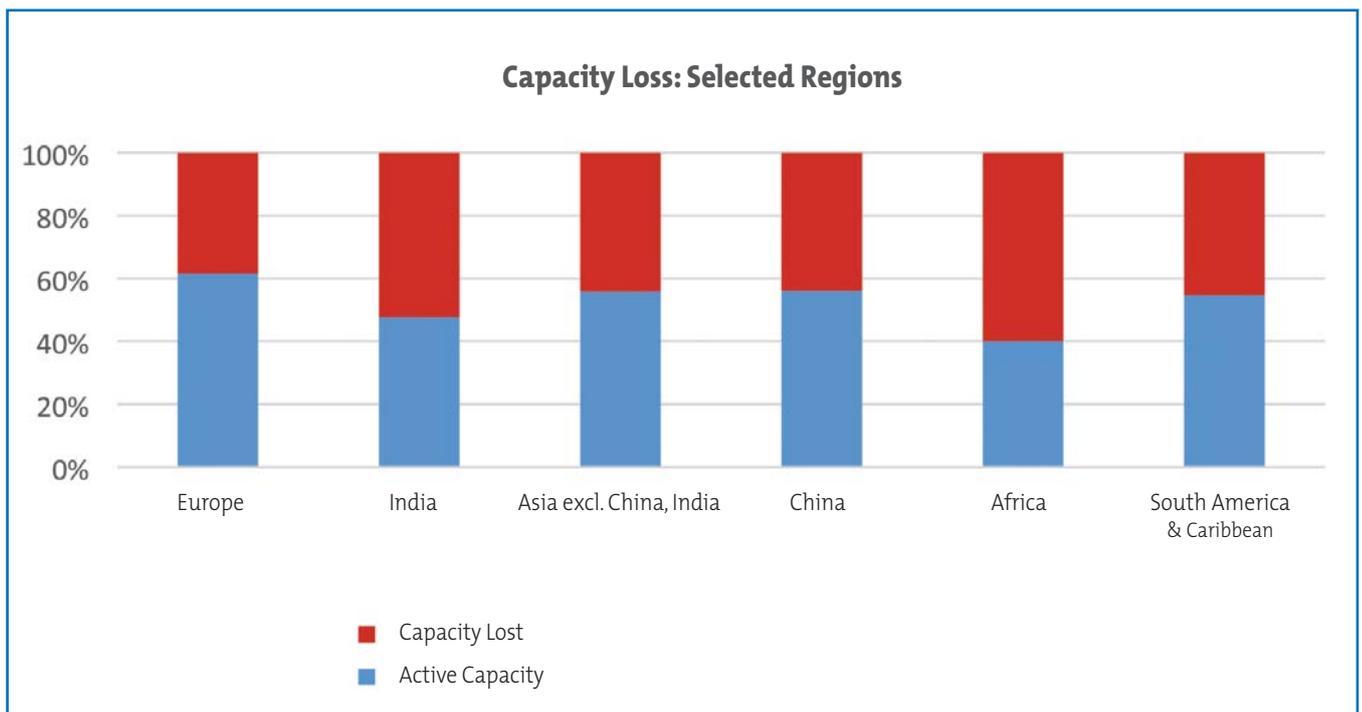


Figure 5: Capacity Loss in Selected Regions

opportunities for local engineering firms or project developers to diversify outside the CDM. Research shows that high risk premiums in developing countries increase the cost of capital to a degree that project development is no longer economically viable (Waissbein et al., 2013). Public finance will remain a vital funding source for climate investment in developing countries.

- Market participants' capabilities were deemed adequate enough to provide CDM services within their home countries, yet too limited to successfully compete in international markets. This is an issue especially with technology companies. This is part of a bigger issue revolving around technology transfer in the CDM. It should be explored how the definition of technology transfer can be expanded towards actually creating an environment where companies from developing countries can learn to develop, manufacture and market appropriate technologies themselves, and open markets outside the CDM.

To increase the long-term sustainability of businesses active in any future New Market Mechanisms, capacity building programs for the private sector should adopt a broader perspective on business model development: Virtually every market is cyclical, which means that diversification into related industries should be emphasised from the beginning. The focus should be to help entrepreneurs develop well-rounded business-models to render these participants more resilient in an unstable environment such as international climate policy. One approach might be to include financial instruments in capacity building efforts. Reliable, targeted climate finance could ensure a minimum level of constant project development activity for local businesses. This 'incubation finance' would create a protected environment and provide such local entities with the opportunity to learn and aggregate know-how over time. Companies that manage to create a good track record under the incubation finance program, e.g. project developers, could then qualify for enhanced

financial guarantees or similar derisking tools to lower financing costs.

Building sustainable local capacity will be a long-term process. Also, any new market-based mechanism will face an uphill battle regaining the trust of market participants that witnessed the Conference of Parties' limited success of rebalancing the CDM.

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CARBON MECHANISMS REVIEW



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Glossar

All CDM/JI-specific terms and abbreviations are explained in detail in the glossary on the JIKO website. You can view the glossary here: www.jiko-bmub.de/75