pmr | PARTNERSHIP FOR MARKET READINESS

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Crediting Mechanisms Overview

December 1, 2012

Background

This document provides a summary assessment of (proposed) scaled-up crediting instruments as well as existing project-based crediting schemes against a number of important general characteristics of such instruments. Its purpose is to provide insights that may inform the design and use of possible "scaled-up crediting instruments".

This summary assessment begins with an examination of proposals for scaled-up crediting mechanisms. It then considers existing crediting instruments, i.e., (i) Kyoto project mechanisms (CDM and JI); and (ii) VER schemes (in the non-compliance/voluntary markets)[1].

The characteristics (or issues) covered are:

- National and international circumstances for market-based mechanisms and how these interact
- Coverage and boundary setting
- Participation and Incentives for participation
- Caps, baselines and allocations (or issuance)
- Market integrity and credibility
- Monitoring, reporting and verification (MRV)
- Program authority and administration
- Potential scaling up modalities

Additional recommended sources of further resource material are also provided.

[1] There are also existing and proposed domestic offset schemes; these are typically tied to a domestic emissions trading scheme which generates the demand for domestic offsets. An overview of key features of emissions trading schemes will be discussed in a separate technical note.

December 1, 2012

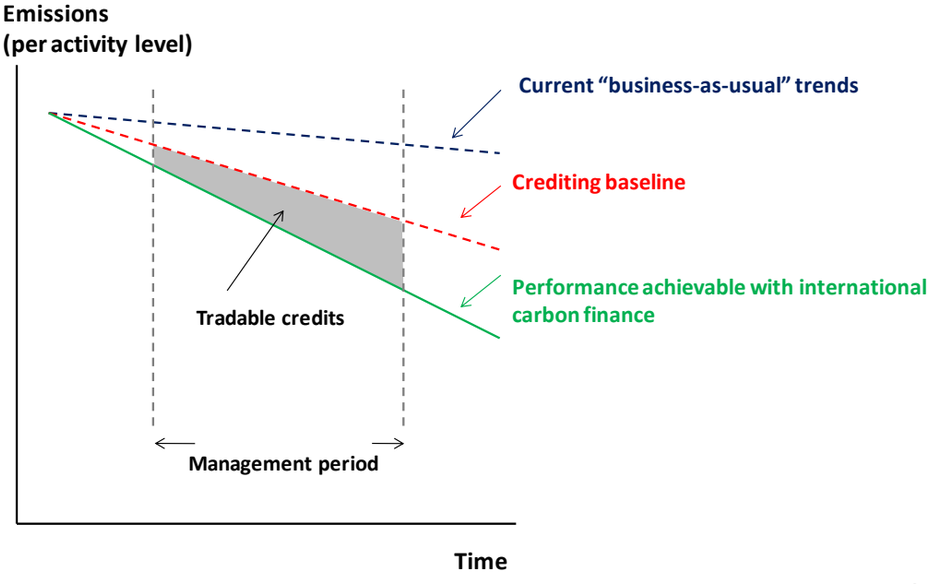
1. Scaled-up crediting mechanisms

At this time scaled-up crediting mechanisms essentially exist as proposals being explored in the context of UNFCCC negotiations for the post-2012 period. The following discussion seeks to summarise and elaborate key issues that commonly surface in this debate.

National and international settings

Scaled-up crediting mechanisms have frequently been described as international policy instruments that can generate credits at a sector-wide (or sub-sector) level. These credits can then be sold in an international carbon market. A generic depiction of this concept[2] is shown in Figure 1.

Figure 1. Simple depiction of a crediting baseline



A crediting baseline (red dotted line in Figure 1), shown here in emissions intensity[3] terms – but which could also be in absolute emissions terms – is determined through some means across a future management period. This crediting baseline reflects improvements beyond just "business-as-usual", thereby ensuring that mitigation is greater than what is credited. Where the actual emissions performance (green solid line) in the period is better than the crediting baseline, credits can be generated (shaded area) and traded on international carbon markets.

In recent years the concept of nationally appropriate mitigation actions in developing countries has evolved into discussions under the UNFCCC of so-called "NAMAs". In turn, these have been sometimes been divided into three categories for the purpose of distinguishing their funding sources (although there is no agreement in the negotiations to these):

- Unsupported (or unilateral) NAMAs – by which is meant actions for which countries are not seeking support from developed countries.
- Supported (but not credited) NAMAs – by which is meant actions for which countries are seeking support from developed countries but not in the form of international carbon finance, so not actions that produce compliance-grade carbon credits to be used by developed countries to meet (or "offset") their emissions reduction commitments.
- Credited NAMAs – that involve some element of international carbon credits (beyond the CDM) that can offset

[2] Such illustration of the concept can be found, for example, in the 28-1-2009 European Commission Communication "Towards a comprehensive climate change agreement in Copenhagen

[3] Sometimes also referred to as "relative"

developed countries' emissions reduction commitments.

In practice, NAMAs that might be proposed by developing countries need not be just one of these three types. Indeed, in the context of the consideration of scaled-up crediting instruments as an international mechanism, it is most likely that a NAMA could have elements of all three. For example, this could be the case for a comprehensive NAMA program in the electricity generation sector of a developing country. The "unsupported NAMA" elements might include domestic regulatory reforms, the "supported NAMA" elements include initial financial support for a feed-in tariff incentive and perhaps capacity building training and local manufacturing, and then, finally, international carbon finance could be sought for performance beyond an established crediting threshold. As a result, in practice such combinations may entail a blurring of the mitigation impacts associated with the different sources of funding.

A simpler approach to scaled-up crediting and which might be applicable in some cases, e.g. for emissions intensive industry sectors, may be the use of **performance benchmarking**. This is conceptually the same as standardised baselines discussed under CDM/JI, but employed more broadly at a company or sector-wide level in a given country or region. Like standardised baselines, this concept is usually described as an emissions intensity instrument. In a benchmarks mechanism, a performance target is established for a defined group of entities that exceeds the current performance. Credits are awarded for performance beyond the benchmark. A key question in the case of baselines or benchmarks devolved to individual entities within a sector is whether individual companies (or even individual new plant investments for a given company) can earn credits whenever their performance is better than the benchmark performance. Or would the full sector (or full company) have to beat the benchmark before any credits are generated? In turn this connects to a question of who the expected buyers are of these credits, in particular whether these are 'underperformers' within the sector (e.g. as part of a regulatory baseline and credit system for the performance of the sector as a whole) or buyers outside the sector. And if the latter, are these buyers in other sectors in the same country that also have performance obligations, or are they buyers for entities in other countries seeking credits to offset their emissions obligations?

These questions highlight the possibility that such crediting instruments may function either just as domestic mechanisms, or mechanisms providing credits across country borders. Conceivably, if just domestic, these mechanisms could be nested within an overall national NAMA for the sector concerned. In this case, the functioning of such a mechanism is not with a view to eventually create credits to be used as offsets in an international carbon market. Instead, the purpose is to use market mechanisms to help achieve cost effective domestic action, rather than having to rely on other, perhaps more costly or difficult to implement, policy instruments to achieve the desired performance outcomes.

Participation and Incentives for participation

As with all markets the key first issue is who will be the buyers and what (and why) do they need to buy. Taking the possibilities just discussed above, a number of scenarios can be envisaged of ultimate users (demand) of the traded commodity and the originators (supply).

<u>Demand:</u>

International

- Countries/regions with obligations in an international agreement (or self imposed national/regional target)
- Entities in countries/regions with obligations in domestic schemes

Domestic

- National or local governments that have (voluntarily) taken on some obligations
- Sectors (and sub-sectors) with obligations in

<u>Supply</u>

- Companies/Organisations ("entities")
- Sectors (and sub-sectors)
- Governments (national and local)

domestic emissions control schemes

- Companies with obligations in domestic emissions control schemes

This matrix of possible scenarios is further explored in Appendix 1

A better understanding of the demand and supply 'stories' for a given proposed market in turn provides a clearer sense about other key questions, e.g. What is the likely demand and will it increase over time? What could be the political milestones that could trigger more interest in the mechanism, and the underlying actions (perhaps including specific NAMAs) that may be part of it or support it? What might make people motivated (or reluctant) to participate on the supply and demand sides?

As noted above, a key issue here is whether the mechanism is a domestic only mechanism, or is it intended to generate credits for the international carbon market to be used as offsets for developed country commitments. In practice, the rules governing the supply side of the market most often are to address the circumstances and needs of the demand side.

This policy issue aside, the participants in the market created by these mechanisms may fall into four categories:

- market regulators – who set the rules that create the settings for there to be demand and acceptable supply, and who ensure that rules are complied with, including operating or verifying key parts of the quality assurance systems (e.g. unit registries and MRV of emissions performance)
- the demand side – the 'end' buyers that have a need (or desire) for the commodity based on some obligation they are required to meet
- the supply side – the producers (sometimes called originators) of the commodity who will respond to the demand
- intermediaries – the players that help buyers and sellers to 'meet' each other and complete transactions with proper due diligence, integrity and surety (e.g. exchanges, brokers, carbon funds, banks, lawyers, insurers and market information providers). These are especially relevant in cases where there are several participants.

Coverage and boundary setting

Given the broad demand-supply architecture being understood, deciding what specific emission sources will be in the accounting system, and which are out, is a crucial next step. This boundary issue is about both coverage and scope. This may also have to be done in a prospective sense, i.e. taking account of what new sources may come into the system, and also those that may be retired, during the period for which any credits might be determined and issued. The issue of new entrants is particularly relevant in cases of sectors or countries with projected rapid growth.[4]

Setting clear boundaries is core to be able to tell the "what will happen otherwise" story[5] fundamental to setting baselines for a crediting mechanism. In this sense, smaller and tighter boundaries can be more practical, especially in early stages of implementing such mechanisms. But if they are too small and tight, they may begin to just resemble project crediting mechanisms like the CDM and lose the advantages sought in moving to scaled-up crediting mechanisms. As well, MRV of reduction/sequestration benefits applied at the more micro ('every tonne') level is costly.

Given the NAMA framing outlined above, it will also be important to understand how either internal or external support (technology, finance and capacity building) will affect the "what will happen otherwise" story, i.e. serve to improve the emissions performance within the boundary. This consideration may help to identify logical and manageable boundaries. For example, specific types of support available to specific actors may be known already, or may be part of

[4] Note that dealing with new entrants and retirements is one reason why emissions intensity baselines have most often been discussed for scaled-up crediting mechanisms.

[5] By this is meant the counterfactual of what would be the case in the absence of the crediting mechanism and the actions that have been induced to happen because of it. In project based crediting mechanisms this is usually described as the "additionality" of a project.

a broader proposed NAMA program within which a scaled up crediting mechanism may reside.

A key concern of those active in the current CDM-based carbon market is that any new market mechanisms do not serve to chill investment interests occurring now at a project scale, and mostly by private sector actors. This concern is particularly important because there is not yet a clear understanding of how such investments might be alternatively treated (and get credited) when they occur within a sector that would now be inside the boundary of a new scaled-up mechanism.

How CDM-type projects are to be treated, including those that may already be implemented and operating in the sectors being considered for scaled-up crediting mechanisms becomes an important consideration in how the boundary of a mechanism is set. Note that this could, for example, be handled by 'extracting' such projects out of the accounting when crediting baselines are set and emissions performance is later measured. An additional crucial issue will be to ensure the compatibility of project systems co-existing with NAMAs to avoid double counting (and/or double 'crediting') of emission reductions.

The terms "coverage" and "scope" are sometimes used interchangeably, so the meaning may not be clear. Here, coverage is intended in the more macro sense of sectors and geographies and scope in the more micro sense of emissions sources and perhaps institutions. So, using a program in the electricity sector as an example, options for coverage may be:

- the whole electricity sector supplying the national grid; or
- a regional sub-set of generators, e.g. related to regional initiatives of states or even major cities

And options for scope may be:

- all generators over a certain size threshold; or
- all generators using certain fossil fuels; or
- a combination of the above; or
- a combination of the above, but not combined heat and power plants serving specific industries (which instead might be covered under similar mechanisms for those specific industries, e.g. cement).

Caps, baselines and issuances – setting the baseline

The determination of a crediting baseline (or threshold) is arguably the most critical step in the application of any crediting mechanism. It directly affects the scale of the potential number of credits, so the economic values involved. It also can have a direct effect on atmospheric greenhouse gas levels (e.g., a stringent baseline set below BAU levels will imply that there are emission reductions that are not credited and thus not used to offset emissions elsewhere) and potentially other environmental co-factors.

Important institutional and technical issues are:

Institutional

- Who proposes the baseline, and develops the 'what would happen otherwise' story including with an understanding and foresight/foreknowledge of other issues and support elements that may affect emissions performance with the boundary?
- Who gets to agree or decide on the baseline?
- What is the process by which this is done, and who are the key players?
- What legal status does the baseline have? Or put another way, how does the baseline gain legal status?

technical

- What is the basis for the analysis of the emissions performance within the boundary given the broader elements of the 'what would happen otherwise' story? Is a highly granular bottom up approach taken that, for example, builds the emissions story up from a detailed understanding of all key emissions sources, existing and

prospective? Or is a more top down benchmarking approach taken?

- What is the methodology for assessing the possible effects on emissions in the sector of any new internal or external support initiatives that are proposed.

The answers to some of these questions, so treatment of these issues, are likely to be quite different in the case of a mechanism intended just for domestic application versus one that would create internationally tradable credits. But in either case, one way to think about this is: What are the effects of 'getting the baseline wrong'? What does it matter? Who or what gains an advantage; or is disadvantaged? The simple fact is that setting baselines will always be imperfect. It is not possible to ever know with absolute precision what would happen otherwise. The extent to which rules should be stringent and inflexible, versus more lenient and pragmatic will hinge to a significant degree on the answers to these questions.[6]

For an international mechanism, considerations may be:

- The atmosphere (and the 2°C pathway) is at risk if lenient baselines result in large numbers of credits for actions that likely would have occurred anyway, as credits will be used to offset mitigation actions that would otherwise have been required by the buyer/user. In this situation, emissions to the atmosphere would increase.
- For credits to be accepted in the international markets, the process by which they have been originated, including how baselines have been set, may need to meet international standards, or the standards established in key 'buyer' markets.

For a domestic mechanism:

- If mitigation actions within an established NAMA program boundary are set within an overall pledged national mitigation goal, the issue is less about the effect on the atmosphere and more about the balance of where actions will need to be taken to meet the pledge. This is an internal distribution issue, and the stringency or leniency of the approach to establishing the crediting baseline will reflect domestic circumstances and choices.

A key question is whether baselines should be set on an absolute or intensity basis. Absolute baselines (like absolute 'caps' in a cap-and-trade scheme) are often viewed as a barrier to economic growth.[7] There is therefore a risk in the case of absolute baselines of setting overly generous baselines and allowing credits to be generated without any mitigation action (a form of 'hot air'), especially if economic growth is less than that used for projecting emissions used to determine the baseline. Where intensity is chosen, a key technical issue then is: What is the metric of the baseline? The numerator will most often be in units of emissions (e.g. tonnes CO_2e), although there may be other units that proxy emissions (e.g. numbers of some low carbon or energy efficient technology installed). The denominator could be in economic terms (e.g. GDP) or, more likely, in levels of an underlying produced commodity (e.g. MWh for electricity or tonnes of cement or steel).

A key issue for intensity baselines is that both the numerator and denominator factors must be able to be predicted and measured (or estimated) with levels of certainty and accuracy that are deemed adequate by decision makers – on both the demand and supply sides of the market.

Achieving and sustaining market integrity and credibility

A well designed and implemented institutional framework is a key part of a successful start-up of a market mechanism. For the commodity in any environmental market to have a value, there needs to be confidence in the underlying process by which it has been generated. On the market demand side, this particularly applies to the establishing of obligations that have the effect of creating scarcity (so value) of the traded commodity, and the subsequent enforcement of these obligations. On the supply side, it is about the setting of baselines and, the measurement, reporting and verification of actual emissions performance and the issuing of credits into secure unit registries.

[6] Also, using a principle of 'conservatism' in cases where the costs of being more precise are increasingly high, can potentially be a useful mid-position approach.

[7] In practice, however, they often just identify a threshold point beyond which growth in emissions will bear additional costs.

All this needs to be established in a robust legal framework, which would be expected to be established by government, or government mandated, institutions. The choice of exactly which existing or new institutions may be needed in developing countries would reflect national circumstances.

For an international scaled-up crediting mechanism, a key question is what international institutions might be involved. This is not clear at this time, given that negotiations for new market mechanisms under the UNFCCC AWGLCA are still ongoing. One possibility is an outcome in the negotiations where there will be no requirement for an involvement of international institutions. Instead, rules established by developed countries that regulate the nature and quality of credits that can be used as compliance instruments in their schemes (i.e. on the buying end) may be effectively what sets the regulatory bar in the market.[8] This would result in multiple QA/QC (quality assurance/quality control) controls for each buyer, which could make the suppliers' situation more difficult, since they would have to decide on which buyer to seek to link] their crediting mechanism to in advance and would lose some financial negotiation opportunities that would be achieved under a more cohesive market. Under the first scenario, it might be expected that such rules and links are established through bilateral or plurilateral discussions. It makes little sense for the demand side to regulate things without consideration to the views of regulators on the supply side. These market mechanisms, after all, are intended to facilitate significantly scaled-up mitigation activity and in many cases attract the underlying private sector investment needed to help make this happen.

Beyond the regulatory institutional players, there will usually be an array of ancillary market players, mostly in the private sector, that are important to the operation of an effective and credible market. [9]

They include:

- forums for buyers and sellers to connect with each other, which can range from formal carbon trading exchanges to web-based platforms accessible from smart phones
- legal services, to provide contracts needed by buyers and sellers (noting that much of the buying and selling could be done on a forward basis to enable investment in the underlying activities that, in turn and in time, will generate credits)
- insurance services, to address and spread risks if something doesn't happen as expected
- market information services, that provide details of trading activity, and prospective activity, given trends in underlying fundamentals that lead to demand and supply
- consulting services that advise clients about how to mitigate their carbon risks or capture carbon opportunities

In devising an overall operational framework for a new market, it is important to keep in mind this full set of institutional and ancillary players. The government side of this, as crucial as it is to create the underpinning legal basis and ongoing regulatory side operations, is just the beginning to get a scaled-up and effective market up and running. However, it can be expected that the private side players "will come" as long as the regulatory framework has been "built" in a way that has not created explicit barriers or left critical gaps in its design that serve to discourage private sector engagement.

Monitoring, reporting and verification (MRV)

A key issue for scaled-up crediting mechanisms is that, with respect to MRV, their boundaries may fall between the project-based methods developed for the CDM/JI and VER markets and the methods developed for national inventories under the UNFCCC that typically use national level activity data and emission factors to derive national GHG numbers.

[8] This is similar to what has occurred with supply chain carbon footprinting requirements, which in most cases are driven from the consuming market end. Notably, this has led to the increasing standardisation around specific independent third-party international standards, e.g. GHG Protocol and ISO.

[9] An exception here would be if a crediting scheme only operates at a government level, e.g. all credits accrue to a host government and they sell these to another government, or governmental purchasing institution.

A challenge that may be faced for MRV methodologies to work within scaled-up program boundaries is that neither top down or bottom up MRV approaches can capture all, and just, the emission sources within the program. Efforts to identify and fill gaps will be needed. It may be that new MRV methodologies will have to be developed that are a hybrid of the bottom-up 'GHG Protocol' or ISO 14064-1 standards commonly used for international carbon footprinting occurring within global supply chains (so already prevalent in developing countries' goods producing sectors) and the top-down UNFCCC inventory methods. These issues are best addressed at the time of setting program boundaries and determining what is inside and what is not.

Program authority and administration

Given the prospective nature of this discussion on scaled-up crediting mechanisms, this topic is generally covered above under the section on *Achieving and sustaining market integrity and credibility*. Some key issues that, however, can be expected include:

- is it possible to build on current domestic institutions dealing with the CDM (i.e. national DNAs) to take on the additional tasks for scaled-up mechanisms (noting that they may have had limited experience in the often technically complex and contentious matters of setting baselines and MRV methods)? Or will completely new domestic institutions be needed?
- What kind of institutional (and regulatory) readiness will be needed to support developing country governments?
- On the demand side, what additional institutional processes in countries are warranted, given there is not the CDM EB process to undertake the lion share of the quality assurance needed to manage the supply side of credit origination and issuance?

Potential scaling up modalities and issues

This modalities covered above include:

- Establishing 'program boundaries' at a sectoral or sub-sector level and then agreeing crediting baselines taking account of the circumstances of the sector, including the nature of proposed national and international support for mitigation actions in this sector/sub-sector. (A performance-based benchmarks approach may simplify this exercise for some sectors).
- Developing/adapting MRV methods suitable for the sources of emissions (and removals) included within the given boundaries
- Identifying an appropriate registry system to handle the credits that are issued pursuant to the rules of the scaled-up crediting mechanism
- Doing all this with the collaboration of, and in consultation with, the key players on both the demand and supply sides of this market

A fundamental issue throughout this effort is being mindful of the likely demand and supply dynamics of this new market.

Resource material – Scaled-up Crediting

UNFCCC, *Views on the elaboration of market-based mechanisms – Submissions from Parties*, FCCC/AWGLCA/2011/MISC.2, March 2011

Carbon Markets and Investors Association (CMIA), *Working Paper: Proposal for a global architecture for GHG emissions management including the definition of two new flexibility mechanisms*, February 2011

International Emissions Trading Association (IETA), *IETA response to the AWG-LCA call for input regarding new market-based mechanisms*, February 2011

Aasrud, A., R. Baron, B. Buchner and K. McCall, *Sectoral Market Mechanisms – Issues for Negotiations and Domestic Implementation*, October 2009, IEA Information Paper.

European Commission, *Towards a comprehensive climate change agreement in Copenhagen*, January 2009

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2. Existing project-based crediting instruments

This section highlights key features and issues encountered in existing project-based crediting mechanisms. The Kyoto Protocol's Clean Development Mechanism and Joint Implementation are examined, as well as Voluntary Schemes.

These instruments may provide useful insights/foundation upon which to build for the development of scaled-up crediting mechanisms.

Kyoto Protocol (KP) project-based mechanisms: Clean Development Mechanism (CDM) pursuant to KP Article 12 and Joint Implementation (JI) pursuant to KP Article 6

CDM: Project activities (and programmes of CDM project activities (CPAs)) in developing countries that reduce emissions or enhance sequestration by sinks compared to a business-as-usual baseline, and are judged to be additional to what would otherwise have occurred – as well as contribute to sustainable development objectives of the host country, can generate credits that can be used by developed countries to 'offset' their emissions commitments under the Kyoto Protocol. The credits can also be recognised by other compliance programs, e.g. domestic emissions trading schemes.

JI: Projects (and programmes of project activities) are undertaken in developed countries that are included in Annex B under the Kyoto Protocol, i.e. countries with emission reduction commitments under the Kyoto Protocol. JI has two tracks: Under the Track 1 process, the determination of the eligibility of the project, as well as the monitoring and verification of emission reductions, is subject to national rules and procedures only; while under the Track 2 process, project eligibility determination and verification are conducted under the auspices of an international body, the Joint Implementation Supervisory Committee. In both tracks, the host country is responsible for the issuance and transfer of credits (Emission Reduction Units). The first track can only be used by developed countries with national MRV systems meeting all Kyoto mechanisms eligibility requirements; while this is not a pre-requisite for the second track. This 'Track 2' JI is very similar in principle and practice to the CDM. The JI discussion below essentially reflects Track 2 JI, unless otherwise indicated.

National and international settings

- The CDM and JI are 'offset' mechanisms established under international law (Kyoto Protocol). The creation of traded commodities representing tons of CO_2eq under each system (CERs, tCERs, lCERs under the CDM and ERUs under JI) is regulated by the relevant international bodies under the UNFCCC – the CDM Executive Board (EB) and the JI Supervisory Committee (JISC), in the case of JI Track 2.
- National requirements of CDM project host countries are primarily the establishment of designated national authorities that, inter alia, are required to provide letters of project approval. Each individual country may have more or less elaborate rules and procedures associated with obtaining host country approvals for CDM projects (i.e., requirements and procedures may vary between countries). In the case of JI (both tracks), host countries have had to also put in place procedures for the issuance and transfer of emission credits. As noted above, more elaborate national systems on the rules, modalities and procedures for determining project eligibility, validation and verification have been developed in countries hosting JI Track 1 projects. Having said this, each country may develop its own modalities and procedures. Similarly, there may be different requirements or constraints on the acceptance and use of the emission credits from the CDM and JI by the ultimate 'offset' user/buyer countries (e.g. rules of the EU ETS).
- National systems developed for the Kyoto project mechanisms could be a base upon which countries build domestic scaled-up mechanisms.

Coverage and boundary setting

- Coverage can be all sectors and all greenhouse gases included under the Kyoto Protocol, with some exceptions, e.g. CDM

does not allow nuclear and limits land use projects to afforestation and reforestation only. In practice, while the CDM and JI have stimulated projects in many different sectors, the bulk have occurred in the energy sector, with noteworthy little uptake in sectors like forestry and land-use (due to a combination of restrictive rules, e.g. on permanence, and the exclusion of credits from these sectors in key buyer markets such as the EU ETS).

- Boundaries are established at the project level – although this can be expanded under programmes of activities (see below) and is being expanded to a greater level aggregation (e.g., sector level), as a result of decisions to allow standardised baselines.

Participation and Incentives for participation

- The CDM and JI have attracted broad participation primarily from the private sector in terms of the origination of projects and the primary CER/ERU commodities, although some national origination (e.g. China, Indonesia, South Africa, Uganda etc) and national buyer programs (e.g. Denmark, Japan, Netherlands, Sweden) exist. The origination experience of governments with programs may be especially relevant for scaled-up crediting approaches to the extent they imply greater involvement and engagement of governments.
- Market demand has mostly been created and given scale through the obligations placed on emitting sectors in developed countries under government emissions reduction programs, e.g. through the EU Emissions Trading Scheme (EU ETS), the New Zealand Emissions Trading Scheme (NZ ETS) and Japan's voluntary emissions trading scheme (JVETS).
- In turn it is this demand that, in the first instance, establishes the value of CDM/JI units in the market – noting that, in practice, demand reflects the scarcity of the total number of compliance units available (including units issued and allocated under such emissions trading schemes) compared with the level of emissions in countries and sectors covered by these obligations. The value of CDM/JI units also reflects the market's assessment of delivery risk, i.e. that projects will be implemented, and that implemented projects and those in 'the pipeline' will perform as expected, so provide the supply of units the market expects in given time periods.
- A comprehensive international market for CDM/JI units has developed, with key market players being:
  - carbon funds by public sector development banks, private banks and private finance groups
  - project developers (originators)
  - financial intermediaries – including exchange trading and 'over the counter' (OTC) trading
  - market information providers
  - carbon lawyers and carbon insurers
- Project developers have found that the sale of CDM/JI units (or forward contracts for such sale) has provided a valuable international 'currency' that helps mobilise needed underlying project finance contributing to enhancing projects' financial viability. (However, insufficient regulatory predictability and uncertainties with aspects of the mechanisms have constrained the mechanisms from achieving their full potential.)

Caps, baselines and issuance

- The CDM and JI are 'baseline and credit' type market mechanisms (so not 'cap and trade'). There is no consequence if emissions go above a baseline. Credits are simply not issued in such cases.
- Baselines for specific project types, and projects, are developed through the submission of baseline (and monitoring) methodologies which must be approved (by the EB/JISC following review by a methodology panel).
- Issuance and transfer of credits are made ex-post (i.e. after emissions reduction performance is independently verified), in the first instance to the project participants[10]. In the case of CDM, credits are issued by the CDM Executive Board; while in the case of JI, credits are issued and transferred by the host country.[11]

Achieving and sustaining market integrity and credibility

[10] In the case of the CDM, to cover the CDM administration costs and provide funds for adaptation, a 'share of proceeds' fee denominated in units is deducted from the credits (i.e. Certified Emission Reductions) issued to project participants.

[11] To not expand the Kyoto cap on emissions from developed countries, JI credits (i.e. Emission Reduction Units) are created by converting countries' assigned amount units to ERUs. In other words, any ERU issued by a JI project in a given host country is compensated by one less Assigned Amount Unit (AAU).

- The CDM and JI Track 2 are highly regulated market mechanisms. On the supply side the EB/JISC are the primary regulator – and in turn answerable to the UNFCCC Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (COP/MOP). On the demand side, regulation occurs according to national rules in developed countries where CDM/JI units are acceptable as compliance units in domestic schemes or to meet the country's GHG commitments under the Kyoto Protocol.
- In practice, environmental and market integrity and credibility is mostly an issue on the supply side and is enabled through a distributed responsibility model, involving:
  - rules and guidelines setting bodies – the EB/JISC and its methodology panel
  - accredited third parties – called designated operational entities (DOEs) in the CDM and accredited independent entities (AIEs) for JI – that are responsible for validating projects and verifying the outcomes of projects
  - the EB/JISC accreditation panels – which advise the EB/JISC on the accreditation, and potential dis-accreditation, of DOEs/AIEs.
  - countries' Designated National Authorities for CDM and JI Designated Focal Points for JI.
  - the issuance and transferring of units only within international and national unit registries that must conform with strict design and operation rules developed under the UNFCCC and agreed by the COP/MOP

Monitoring, reporting and verification (MRV)

- Monitoring methodologies (developed in conjunction with baseline methodologies) must be approved by the EB/JISC.
- Projects must be designed at the outset to follow these methodologies (through a project design document, PDD) in order to be validated (approved) by DOEs/AIEs.[12] A Validation and Verification Manual (VVM) has been developed to aid CDM project developers.
- The monitoring of the actual performance of projects must then be in accordance with these methodologies for DOEs/AIEs to certify the outcomes and the number of CERs/ERUs to be issued for a given project activity in a given period.

Program authority and administration

- There are two distinct sides to this market for CDM/JI units – the demand side and the supply side. These occur in quite different international jurisdictions.
- On the demand side, the authority behind this is firstly international law under the Kyoto Protocol. This is then supplemented by domestic law in countries that have created compliance regimes which recognise CDM/JI units as offsets. In practice it is the second of these that is the most important as it is here where sovereign obligations for meeting GHG mitigation targets under the Kyoto regime have been transferred to GHG obligations for domestic private sector entities that are responsible for the bulk of the buying in this market.

  The administration on the demand side of the market is therefore mostly in accordance with processes of the domestic market mechanisms. However, this connects back with the international scheme when CDM/JI units are included in the accounting of whether, and how, developed countries have met their international obligations. In practice, the key administration role is that played by the national 'emission units' registry body responsible for the secure receipt, holding, transfer and, ultimately, use of the CDM/JI units in both the domestic schemes and overarching Kyoto regime.
- On the supply side of the market, the administration is performed by bodies created through specific rules and guideline under the Kyoto regime, i.e. the EB/JISC and their various panels, with the primary administration support provided by the UNFCCC secretariat. In addition, at the national level, there are the administration functions of the CDM Designated National Authorities and JI Designated Focal Points.

Potential scaling up modalities and issues

- The two main efforts under the CDM and JI to enhance the basic project-based model have been (i) programmes of activities and, most recently, (ii) standardised baselines.
  - A **programme of activities** (PoA) is a voluntary coordinated action, by a private or public entity which coordinates and

[12] Validation under the Kyoto mechanisms is the process of independently evaluating a project activity on the basis of the Project Design Document (PDD) against the CDM requirements (or JI requirements, as appropriate).

implements any policy/measure or stated goal (i.e. incentive schemes and voluntary programmes) which leads to GHG emission reductions or net removals by sinks that are additional to any that would occur in the absence of the PoA via an unlimited number of CDM/JI programme activities. A PoA aims to enable projects with a high replication potential that are implemented over a longer period of time, typically several years to over a decade. In contrast to regular CDM/JI, where the pooling of individual abatement activities is restricted to a one-off 'bundling' of a number of small similar projects, a PoA creates an umbrella structure that supports the inclusion of multiple and unlimited bundles of subprojects over time.

  - **Standardized baselines** is an approach for sector-specific baseline setting that does not require the baseline to be established at the individual project level, but rather at a higher level of aggregation (e.g. 'sector' or 'sub-sector' level). Activities can potentially be seen as automatically additional by their nature (e.g. if they meet certain pre-defined criteria), and a standardised baseline, e.g. of X tonnes CO_2 per MWh, can be established for a given type of activity in a given country circumstance as the basis against which to compare the emission performance of a project activity. The use of standardized baselines could reduce transaction costs, enhance transparency, objectivity and predictability, facilitate access to the CDM/JI and they could be developed to both scale up the abatement of greenhouse gas emissions, while ensuring environmental integrity.

- Any effort to scale up mitigation/sequestration activities under the CDM/JI, however, cannot just rely on approaches to scale up the supply side. For the market to function and for the price of carbon to be sufficient to provide the needed economic incentives for activities to be viable, there needs to be adequate demand (scarcity) of the commodity – in this case, compliance units acceptable in key user (buyer) schemes.
- For a given country, or region it may be possible to scale-up the level of activities occurring under the CDM/JI by domestic governments taking a more proactive and strategic approach to encourage and support the development of projects, including the enabling investment environment. Also approaches such as standardised baselines and automatic additionality for micro scale CDM projects have been established.
- In considering the scale-up of mitigation, one issue is whether this is viewed at a macro global level, i.e. the ultimate effect on the atmosphere. Some have argued that the CDM and JI, designed to generate credits compared to a BAU baseline, by definition cannot scale-up mitigation as they contribute to fully offsetting emissions elsewhere (zero sum). In practice, however, it may be argued that conservative assumptions and limits within methodologies, especially in terms of baselines, mean that some emission reductions do not get credited. Moreover, as experience is gained and economies of scale achieved, baselines 'shift' so future similar activities may no longer meet additionality criteria, i.e. projects' additionality may change over time, and with it, the possibility of generating emission credits .
- Separate of the effect on greenhouse gas emissions in the atmosphere, there is also the general sustainable development (SD) co-benefits of CDM projects. Indeed, CDM projects must also meet host country SD priorities[13].

[13] The UNFCCC Secretariat has recently conducted work to better highlight and assess the contribution of the CDM to technology transfer (UNFCCC 2010) as well as the CDM Development benefits (http://cdm.unfccc.int/about/ccb/index.html)

Resource material

– General

- *10 years of Experience in Carbon Finance – Insights from working with the Kyoto Mechanisms, 2010,* World Bank www.carbonfinance.org
- *State and Trends of the Carbon Market, 2011*, World Bank http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/StateAndTrend_LowRes.pdf

– selection on CDM and JI

- *UNFCCC Clean Development Mechanism*, Homepage http://cdm.unfccc.int/
- *UNEP Risoe CDM/JI Pipeline* http://cdmpipeline.org/
- *CDM in Charts, Version 14, Updated to EB62*, Institute for Global Environmental Strategies, Aug 2011 http://enviroscope.iges.or.jp/modules/envirolib/upload/835/attach/charts.pdf
- *The Handbook for Programme of Activities,* Climate Focus, May 2011 http://www.climatefocus.com/documents/the_handbook_for_programmes_of_activities_practical_guidance_to_successful_implementation
- *Guidelines for the establishment of sector specific standardized baselines*, UNFCCC CDM Executive Board, Report of EB62 - Annex 8, July 2011 http://cdm.unfccc.int/filestorage/4/I/Y/4IY1RB7DMKLWPGF59XC3UE6JNH8Q2A/eb62_repan08.pdf?t=c0N8bHJyOWxrfDAI2FpjoP5btmPBWS4B9B6y

  and http://cdm.unfccc.int/stakeholder/workshops/dna/kathmandu/pres_2.pdf
- *UNFCCC Joint Implementation,* Homepage http://ji.unfccc.int/index.html
- *JI Rulebook*, an online information resource provided by Baker and McKenzie *http://www.jirulebook.org/Home*

VER Schemes

The term "VER" which has been variously described as 'voluntary emission reductions' or 'verified emission reductions' can be seen as a generic term for the traded commodity in what has usually been called the 'voluntary carbon market' (or now also the 'non-compliance carbon market'[14]). That a number of terms are used for similar ideas and trading models is simply representative of the fact that these markets exit outside of any government structured mandate. But they are not unregulated, per se. Instead they are regulated by the use of specific standards to which buyers and sellers choose to adhere so as to be able to participate in the markets. This is common in many commodity markets worldwide. Some of the key current and emerging standards are:

- The Voluntary Carbon Standard (VCS), rebranded in 2011 as the Verified Carbon Standard
- Chicago Climate Exchange Offsets Registry Program (CCX)
- American Carbon Registry Standard (ACR)
- Climate, Community & Biodiversity Standard (CCBA)
- Climate Action Reserve (CAR)
- Gold Standard
- Brasil Marta Viva (BMV) Standard
- Plan Vivo Standard
- VER+ Standard
- Carbon Fix Standard
- SOCIALCARBON Standard
- ISO 14064/5
- J-VER
- Panda

Most of these standards are for international application. Others are for specific in-country use, e.g. the BMV in Brazil, J-VER in Japan and Panda in China. Some standards have methodologies applying to multiple greenhouse gases and sectors; others are focused on specific sectors, in particular the forest sector, e.g. Carbon Fix, Plan Vivo. Some standards focus on the co-benefits of actions that are taken to reduce carbon emissions, e.g. CCBA, or require there to also be co-benefits, e.g. Gold Standard, Plan Vivo, SOCIAL CARBON.

There are a number of reasons why these markets exist, i.e. demand-side drivers. The first has been so-called 'pre-compliance' markets, e.g. the CCX 'cap and trade plus offsets' scheme set up in 2003 after it was clear that the United States would not join the Kyoto Protocol, but in the expectation that a domestic cap and trade scheme would eventually emerge. (The CCX cap and trade scheme was discontinued at the end of 2010 although the offsets component has remained in 2011). The second primary driver has been 'corporate social responsibility' (CSR) programs operated by many of the world largest corporations (and many smaller ones) that include some level of lowered carbon footprint and even carbon neutrality elements. An extension of CSR has become supply chain carbon footprint requirements, in particular those relating to the carbon labelling of consumer goods by major multinational retail organisations. A third demand-side market group have been philanthropic organisations and individual responsibility buyers, sometimes aggregated through intermediate actors, e.g. airlines. A final key driver has been the inability of the Kyoto Protocol mechanisms to adequately address the climate change mitigation opportunities in the forest sector by limiting eligibility only to afforestation and reforestation projects and because of the temporary nature of the credits generated by these types of projects under the CDM. By default, projects in the forest sector have shifted to the 'VER space'.

National and international settings

[14] A general term just to distinguish these carbon markets from the market in 'compliance units' stemming from compliance obligations taken on by developed countries under the Kyoto Protocol. However, the term compliance markets itself is beginning to broaden as cap and trade schemes are being considered and, in some cases, implemented in jurisdictions beyond just developed countries with Kyoto obligations.

- The VER markets, by definition, are unconnected with regulatory programs of governments, either international or national (although there may be some implicit connections, e.g. where VER markets are seen as being 'pre-compliance' markets).
- One growing aspect of the VER market that has clear cross-border implications is supply chain carbon footprinting. Given that for most major retail organisations driving this movement the majority of their manufacturing is done in developing countries, there already exists significant programs of 'carbon MRV' at the corporate entity level occurring in developing countries.

Coverage and boundary setting

- Establishing the coverage and boundaries of specific project activities is a feature of individual standards. As noted above, for some standards this is relatively open; for others it is quite specific, e.g. just for forest projects.

Participation and Incentives for participation

- A key point of the VER market is that buyers establish their preferences and the supply side, including the standards and registries that facilitate it happening, responds accordingly. There is therefore greater flexibility and choice than exists under the Kyoto project mechanisms – but, correspondingly, there may be possible implications for the perception of environmental integrity of these projects. However, it is worth pointing out that most of the leading voluntary market standards build their methodologies off the base of methodologies developed in the CDM/JI, thereby creating some consistency in the calculation of emission reductions and their monitoring.
- Many of the private sector market players that are active in the Kyoto mechanisms are also active in the VER market. This is particularly the case for the intermediaries, e.g. those in the finance, legal and insurance fields. Many will have clients that have needs for both Kyoto compliance and VER units.
- Project developers in both compliance markets and VER markets are normally private sector firms. It can often be a business choice as to whether to try and take a project through the usually slower and more challenging route of Kyoto mechanisms (but where CERs will likely command a higher price) or take the project through a VER approach. As noted, for forest projects, the restrictions of the Kyoto mechanisms are so great, that this is where the VER market has been especially relevant.
- A key player in the VER market has been unit registries. These are analogous to the national unit registries in the Kyoto mechanisms space. However unit registries in the VER space will often play added roles, e.g. 'registering' the detail of the co-benefits that are central to some of the standards, and as well potentially playing a buyer-seller matching and financial closure role (i.e. where the transfer of units happens simultaneously with the transfer of funds).
- The VER market plays an important role in its ability to add co-benefit elements to projects and contribute to sustainable development. Buyers, especially in the CSR market (and increasingly in the discerning consumer labelling market) can make clear their preferences and sellers can differentiate the qualities of their projects. This means the VER market is not just about the commodity of carbon – individual project qualities matter and can command higher prices, whether built into the carbon price or for the actual co-benefits themselves, whether these be other ecosystem services or possibly social impact services. Connected with this, VER markets have been able to target very small dispersed project types that have only recently become possible under the CDM through the PoA route.
- For all these attributes, the VER market remains very small in total when comparing the values of trades in this market with those in the Kyoto-related compliance markets (under 1%).[15] However, as markets evolve in the future, the role for markets that are not just of offset commodities used by developed countries to meet their obligations (and additionally can involve the recognition of other co-benefits) can be expected to grow in volume and importance. Moreover, the terms "voluntary market" and "compliance market", and what is currently the understanding of what these entail, is likely to evolve into a number of what might better may be generally described as compliance markets and non-compliance markets.

Caps, baselines and issuance

- Apart from the (now defunct) CCX voluntary cap and trade schemes, the VER market, like the CDM and JI are 'baseline and

[15] Note however, that such comparisons often are not like-for-like, e.g. trades of project units reflect actual underlying emission reductions, whereas trades in allowances in cap and trade schemes most often do not.

credit' type market mechanisms.

- Baselines for specific project types, and projects, are developed through the submission of baseline methodologies which must be approved by the processes of the particular standard. In many cases these reflect methods of the Kyoto CDM/JI approach (there is in fact significant overlap), but typically – and importantly - with an attempt to simplify and streamline the approvals process.
- Issuances of credits are usually made ex-post (i.e. after the emissions reduction performance is verified). But, in some cases, some standards will issue credits ex-ante (in advance of the project actually generating emission reductions), as long as the 'story' of the particular projects warrants this and there are systems in place to guarantee (and insure) that the performance will occur. Ex-ante crediting has been typical, for example, for some types of forest ecosystem restoration projects.

Achieving and sustaining market integrity and credibility

- In earlier years the voluntary carbon market was tarred with the brush of 'carbon cowboys'. The evolution of multiple standards and sophisticated registries has largely put this reputation to rest, but this can depend on the particular standard (or registry) and its administration. Some have become more dominant because of the higher quality and transparency of their systems and service.
- There remains an element of opinion that only the rigorous systems of the CDM/JI can ensure the credibility, including the additionality, of project credit schemes. It seems premature to expect that government compliance schemes are likely to recognise credits from the VER market as offsets in their schemes. But some standards in the VER market are seemingly working to this end and increasingly are mirroring and extending the processes of the CDM/JI.
- Environmental and market integrity can be ensured with sound methodologies and approval processes and assurance that there is no double-counting of credited emission reductions to the detriment of market participants and/or the expected mitigation effect of activities.

Monitoring, reporting and verification (MRV)

- MRV is a key feature of all the main standards in the VER space. The approach taken to MRV and the rigour with which it is applied depends on the specific standard. For sectors such as power generation or industrial processes, MRV approaches are typically similar across standards and may have common roots, e.g. the GHG Protocol by WRI and WBCSD or the ISO 14064 standards. In other cases, e.g. the treatment of smaller scale projects or projects in the forestry and land-use sectors, individual standards may take their own customised approach to strike the appropriate balance between rigour and transaction costs.
- The approach to MRV can also depend on the target market for the standard, i.e. what do buyers want. So, for example, standards targeting projects in communities that also have high ecosystem and other social impact benefits and are catering to philanthropic buyers that will not use the credits to offset emissions as part of carbon neutrality claims, need not necessarily be held to the same expectations of environmental integrity rigor as standards focused on other market groups.
- In short, the VER market can provide more of a 'horses for courses' choice in terms of MRV approaches. In the final analysis, the market rules. Standards that allow projects through that are deemed to be of questionable MRV quality will not survive, as this lack of credibility will transfer to the reputations of buyers.
- In addressing this credibility point, leading standards in the VER space will usually have panels of experts and stakeholder groups working in transparent, public processes to assist them in the development of methodologies, including for MRV.

Program authority and administration

- The program authority and administration depends, in the first instance, on the nature of the buyers in the particular segment of the VER market, e.g. pre-compliance, CSR, supply chain footprinting.
- On the supply side, it relates to the standard and registry group that specific projects will be employing to 'take their project to market' and complete a deal with a buyer.

Potential scaling up modalities and issues

- Programme of Activity (PoA) approaches and the use of standardised baselines are equally relevant to the VER market as

the CDM/JI market. (See this discussion in the CDM/JI section, including the relevant recommended resource material.) Indeed, some of the ideas for PoA and standardised baselines have first emerged and been worked through by expert groups supporting the methodological work of leading standards in the VER market.

- A key scaling-up issue going forward is likely to be how the VER markets (described above as operating in the non-compliance space) interact with the regulated compliance market space. This will be an increasingly complex issue post-2012, as the current Kyoto Protocol-dominated compliance space evolves into something different and incentive support schemes in developing countries move beyond just the CDM, e.g. the consideration of new market mechanisms and NAMAs under discussion in the UNFCCC. Issues of potential double counting (affecting greenhouse gas emissions to the atmosphere) and double crediting (affecting the financing of achieving emission reduction outcomes) will need careful attention.

Resource material – VERs and the voluntary market

- *State of the Voluntary Carbon Markets 2011*, Ecosystem Marketplace, Bloomberg New Energy Finance http://www.ecosystemmarketplace.com/pages/dynamic/resources.library.page.php?page_id=8351&section=our_publications&eod=1

Domestic offset schemes

A number of domestic offset schemes exist or are proposed internationally that are similar to, but not the same as, CDM/JI and VER project schemes. The key qualifying difference to these project-based offset schemes is that they function as 'add-on' parts of a domestic government compliance scheme, whereby some regulatory obligation on entities to reduce emissions (e.g. through a domestic cap-and-trade scheme) can also be met by purchasing offsets from projects occurring outside the boundary of those covered by the obligations. These offsets need to comply with eligibility rules set by the regulator.

Details on the possibility of offsets for domestic cap and trade schemes are elaborated in a separate PMR Technical Note providing an Overview of Emissions Trading Schemes[16]

[16] The PMR Technical Note (2) will be circulated to PMR Participants for their review and consideration.

December 1, 2012

APPENDIX 1 MATRIX OF POSSIBLE SCENARIOS OF DEMAND AND SUPPLY IN SCALED-UP CREDITING MECHANISM MARKETS

Notes:

1/ **Rows are sources of market demand** (and cover what could be seen as compliance driven markets); **Columns are sources of market supply.**
2/ The boxes of the matrix then describe the demand and supply scenarios that apply for the given intersection of row and column.
3/ All sources of supply are domestic; International sources of demand are shaded light blue; Domestic sources of demand are shaded pink.
4/ By "subsectors" is meant, for example, electricity generation or transport or buildings, which are subsectors of the energy sector.
5/ By "regions" is meant sub-national, which can also mean sub-national that can cross national borders (e.g. the Western Climate Initiative)
6/ "Governments" implies national or local governments taking responsibility for emissions for all (of some of) emissions sources within a defined boundary.

	Companies ("entities")	**Sectors (and subsectors)**	**Governments (national or local)**
Countries/regions with obligations in an international agreement (or as self imposed) **The feature of this international demand (and in the case of the "entities" row below) is that the demand occurs in one country and the supply comes from mitigation actions in other countries that comply with the applicable rules and guidelines.**	**Demand side:** International (or self imposed) scheme allows acceptance of credits for mitigation actions at a company level in host countries. If this to be more than just current CDM and JI (including PoA), implies acceptance of new scaling-up ideas such as company-wide performance benchmarks with credits acceptable when company performance is better than the benchmark. **Supply side:** Requires new procedures for establishing agreed company-wide benchmarks, and then for MRV and credit issuance. This may be specified by an international process or on the demand side, e.g. rules and guidelines of buying countries/regions.	**Demand side:** International (or self imposed) scheme allows acceptance of credits for mitigation actions at sector/subsector level in host countries. This implies acceptance of new scaling-up ideas such as sector-wide performance benchmarks or sector-wide crediting baselines, with credits acceptable when the sector performance is better than the benchmark or baseline. **Supply side:** Requires new procedures for establishing agreed sector benchmarks or baselines and then for MRV and credit issuance. This may be specified by an international process (e.g. for new crediting mechanisms), or on the demand side, e.g. rules and guidelines of buying countries/regions.	**Demand side:** International (or self imposed) scheme allows acceptance of credits for mitigation actions at government level in host countries. This implies acceptance of new scaling-up ideas such as "baseline and credit" trading schemes, most likely with intensity targets (but technically could also be absolute targets). Credits are acceptable when the performance within the host-government established boundary is better than the baseline. **Supply side:** Requires new procedures for establishing agreed government baselines and then for MRV and credit issuance. This may be specified by an international process (e.g. for new crediting mechanisms), or on the

	Companies ("entities")	Sectors (and subsectors)	Governments (national or local)
			demand side, e.g. rules and guidelines of buying countries/regions.
Entities in countries/regions with obligations in domestic schemes	As for countries/regions above Except: On **demand** side, governments accept these credits as compliance units from the obligated entities in their domestic schemes	As for countries/regions above Except: On **demand** side, governments accept these credits as compliance units from the obligated entities in their domestic schemes	As for countries/regions above Except: On **demand** side, governments accept these credits as compliance units from the obligated entities in their domestic schemes
National or local governments that have taken on some obligation(s) **The "market" in the cases covered with governments being the point of demand is of a different nature to the market in other cases. It is more akin to a bilateral purchase agreement between the government (the buyer) and the seller.**	**Demand side: :** To help meet their obligations, national or local governments purchase 'credits' from domestic mitigation actions undertaken in company-wide mitigation programs that comply with their rules and guidelines. **Supply side:** Rules and guidelines for the supply of 'credits' could be modelled after current CDM multi-project and PoA rules, but using national decision-making (so akin to Track 1 JI in this respect). Or they could include new scaling-up ideas such as performance benchmarks or crediting baselines. They also could employ models such as contestable bids for company-wide actions. The **price** for credits might either be set by the government or be established through a contestable process (e.g. of a reverse auction nature where government sets a	**Demand side:** To help meet their obligations, national or local governments purchase 'credits' from domestic mitigation actions undertaken in sector/subsector mitigation programs that comply with their rules and guidelines. These would employ new scaling-up ideas such as sector-wide performance benchmarks or sector-wide crediting baselines, with credits acceptable when the sector performance is better than the benchmark or baseline. **Supply side:** Requires new procedures for establishing agreed sector benchmarks or baselines and then for MRV and 'credit' issuance. Because of the sector-wide nature of the mechanism, these procedures are more likely to employ technical 'negotiation'-based rulemaking than using a contestable process. The **price** for credits, therefore, is likely	**Demand side:** To help meet their obligations, national governments purchase 'credits' from domestic mitigation actions undertaken in local government mitigation programs that comply with their rules and guidelines. These would employ new scaling-up ideas applicable to local government programs run within local government boundaries. **Supply side:** Requires new procedures for establishing the basis upon which performance beyond some baseline is rewarded. The **price** for credits will depend on these new procedures, including on whether some form of price discovery through a contestable process is employed.

	Companies ("entities")	Sectors (and subsectors)	Governments (national or local)
	quantity of reductions it is seeking to achieve in a given bid round).	to be set through a government process (somewhat akin to the setting of power purchase agreement tariffs). There could also be a stepped price schedule for higher levels of outcomes, reflecting movements up "the cost curve".	
Sectors (and subsectors) with obligations in domestic emissions control schemes	**Demand side:** Under national regulations, sectors/subsectors have obligations to meet specific emissions targets, performance benchmarks or technology standards. They are allowed to use emission credits from mitigation actions undertaken in company-wide mitigation programs that comply with specified rules and guidelines. **Supply side:** Rules and guidelines for the supply of credits could be modelled after current CDM multi-project and PoA rules, but using national decision-making (so akin to Track 1 JI in this respect). Or they could include new scaling-up ideas such as performance benchmarks or crediting baselines.	**Demand side:** Under national regulations, sectors/subsectors have obligations to meet specific emissions targets, performance benchmarks or technology standards. They are allowed to use emission credits from mitigation actions undertaken in mitigation programs in other sectors/subsectors that comply with specified rules and guidelines. **Supply side:** Requires new procedures for establishing agreed sector benchmarks or baselines and then for MRV and 'credit' issuance. Because of the sector-wide nature of the mechanism, these procedures are more likely to employ technical 'negotiation'-based rulemaking.	**Demand side:** Under national regulations, sectors/subsectors have obligations to meet specific emissions targets, performance benchmarks or technology standards. They are allowed to use emission credits from mitigation actions undertaken in local government mitigation programs that comply with specified rules and guidelines. These would employ new scaling-up ideas applicable to local government programs run within local government boundaries. **Supply side:** Requires new procedures for establishing the basis upon which performance beyond some baseline is rewarded. These could be the same as, or similar to, sector benchmarks or baselines, depending on the nature of the mitigation activities.
Companies with obligations in domestic emissions control schemes	**Demand side:** Under national regulations, specified companies have obligations to meet specific emissions targets, performance benchmarks or technology standards. They are	**Demand side:** Under national regulations, specified companies have obligations to meet specific emissions targets, performance benchmarks or technology standards. They are	**Demand side:** Under national regulations, specified companies have obligations to meet specific emissions targets, performance benchmarks or technology standards. They are

	Companies ("entities")	Sectors (and subsectors)	Governments (national or local)
	allowed to use emission credits from mitigation actions undertaken in other company-wide mitigation programs that comply with specified rules and guidelines. **Supply side:** Rules and guidelines for the supply of credits could be modelled after current CDM multi-project and PoA rules, but using national decision-making (so akin to Track 1 JI in this respect). Or they could include new scaling-up ideas such as performance benchmarks or crediting baselines.	allowed to use emission credits from mitigation actions undertaken in mitigation programs sectors/subsectors, other than the one under which they fall, that comply with specified rules and guidelines. **Supply side:** Requires new procedures for establishing agreed sector benchmarks or baselines and then for MRV and 'credit' issuance. Because of the sector-wide nature of the mechanism, these procedures are more likely to employ technical 'negotiation'-based rulemaking.	allowed to use emission credits from mitigation actions undertaken in local government mitigation programs (but not involving their company) that comply with specified rules and guidelines. These would employ new scaling-up ideas applicable to local government programs run within local government boundaries. **Supply side:** Requires new procedures for establishing the basis upon which performance beyond some baseline is rewarded. These could be the same as, or similar to, sector benchmarks or baselines, depending on the nature of the mitigation activities.

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