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# **Tracking and Trading: Expanding on Options for International Greenhouse Gas Unit Accounting After 2012**

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## ABSTRACT

The use of tradable greenhouse gas (GHG) units to meet emissions reduction goals is likely to continue after 2012 as many countries have expressed support for using market mechanisms to promote and enhance the cost-effectiveness of mitigation. Most such mechanisms would use tradable GHG units but it is not yet clear how such units will be accounted for and recognised as contributions toward national pledges or targets.

This paper examines the systems and processes that may be required to achieve effective use of tradable GHG units by first considering what international framework would be required to provide a reliable, functional platform for use of tradable GHG units. One effective system would be for national emissions to be reported using common inventory accounting rules, with subsequent additions and deductions according to net flows of tradable units. The paper then analyses more detailed options for two core aspects of GHG unit accounting: governance of international crediting mechanisms and systems for tracking international unit transactions.

For crediting mechanisms, three options are presented for deciding which units may be eligible to count towards national emissions targets: i) only units issued from a centralised mechanism regulated by the UNFCCC would be eligible, ii) units issued from country-led systems would be eligible provided that they are verified to meet internationally-agreed eligibility criteria and iii) a transparency approach whereby all units would be accepted provided that countries meet minimum disclosure requirements. For unit tracking systems, three further options are presented: i) a continuation of the existing International Transaction Log (ITL) that performs both technical and policy-related checks, ii) a ITL or similar tool that performs only technical compatibility checks, and iii) a decentralised system with no central hub. Accounting issues related to domestic emissions trading system units are also explored, notably in cases where such units are traded internationally. The paper concludes that only certain combinations of the various options presented would lead to a viable system that is both practical and provides sufficient assurance of the environmental integrity of units.

**JEL Classification:** F53, Q54, Q56, Q58

**Keywords:** Climate change; greenhouse gas units; emissions reduction goal; market mechanisms; crediting mechanisms; unit tracking

## RÉSUMÉ

L'utilisation d'unités négociables de gaz à effet de serre (GES) pour atteindre les objectifs de réduction des émissions se poursuivra vraisemblablement après 2012 dès lors que de nombreux pays se sont déclarés favorables au recours à des mécanismes du marché pour favoriser et renforcer l'efficacité par rapport aux coûts de l'atténuation. Pour la plupart, ces mécanismes devraient s'appuyer sur des unités négociables de GES, mais il n'apparaît pas encore clairement comment ces unités seront comptabilisées et admises en tant que contributions à la réalisation des engagements ou des objectifs nationaux.

Ce document se penche sur les systèmes et les procédures qui peuvent s'avérer nécessaires pour que l'utilisation des unités négociables de GES donne de bons résultats, en commençant par analyser dans quel cadre international il serait souhaitable de mettre en place une plate-forme fiable et fonctionnelle à cette fin. Il serait efficace, par exemple, d'appliquer des règles communes de comptabilisation des inventaires pour notifier les émissions nationales, auxquelles des unités viendraient ultérieurement s'ajouter ou se soustraire en fonction des flux nets d'unités négociables. Ce document analyse ensuite des possibilités plus détaillées concernant deux aspects essentiels de la comptabilisation des unités de GES : la gouvernance des mécanismes internationaux d'attribution des crédits et les systèmes de suivi des transactions internationales portant sur ces unités.

S'agissant des mécanismes d'attribution des crédits, trois possibilités sont présentées pour décider à l'aune de quelles unités il pourrait être admissible de mesurer la réalisation des objectifs nationaux d'émission : i) seules seraient admises les unités délivrées par un mécanisme centralisé réglementé par la CCNUCC, ii) les unités délivrées par des systèmes placés sous la houlette de pays seraient admises sous réserve de vérification au regard de critères d'admissibilité arrêtés d'un commun accord au niveau international, et iii) une approche axée sur la transparence selon laquelle toutes les unités seraient acceptées à condition que les pays respectent des exigences minimales de divulgation d'informations. Quant aux systèmes de suivi, trois autres possibilités sont décrites : i) le maintien du Relevé international des transactions (RIT) existant qui effectue aussi bien les vérifications techniques que celles relatives aux politiques, ii) un RIT ou dispositif équivalent qui effectue seulement les vérifications de compatibilité technique, et iii) un système décentralisé sans aucune plaque tournante. Les questions de comptabilité qui se posent eu égard aux unités utilisées dans le cadre de systèmes nationaux d'échange de droits d'émission sont étudiées également, notamment dans les cas où ces unités font l'objet d'échanges internationaux. Ce document conclut que seules certaines combinaisons des différentes possibilités analysées constitueraient un système viable, à la fois pratique et susceptible de garantir suffisamment l'intégrité environnementale des unités.

**Classification JEL:** F53, Q54, Q56, Q58

**Mots-clés:** Changement climatique; unités de gaz à effet de serre; objectif de réduction des émissions; mécanismes de marché; mécanismes d'attribution des crédits; système de suivi

## FOREWORD

This document was prepared by the OECD and IEA Secretariats in summer-autumn 2011 in response to a request from the Climate Change Expert Group (CCXG) on the United Nations Framework Convention on Climate Change (UNFCCC). The CCXG oversees development of analytical papers for the purpose of providing useful and timely input to the climate change negotiations. These papers may also be useful to national policy-makers and other decision-makers. Authors work with the CCXG to develop these papers in a collaborative effort. However, the papers do not necessarily represent the views of the OECD or the IEA, nor are they intended to prejudge the views of countries participating in the CCXG. Rather, they are Secretariat information papers intended to inform Member countries, as well as the UNFCCC audience.

Members of the CCXG are Annex I and OECD countries. The Annex I Parties or countries referred to in this document are those listed in Annex I of the UNFCCC (as amended by the Conference of the Parties in 1997 and 2010): Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, the European Community, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, New Zealand, Norway, Poland, Portugal, Romania, the Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom of Great Britain and Northern Ireland, and the United States of America. As OECD member countries, Korea, Mexico, Chile, and Israel are also members of the CCXG. Where this document refers to “countries” or “governments”, it is also intended to include “regional economic organisations”, if appropriate.

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## Executive summary

Greenhouse gas (GHG) emissions units have played a key role in international climate change policy to date. GHG units are currently used to track implementation of Annex I countries' emissions commitments under the Kyoto Protocol (KP) and they also underpin the operation of market mechanisms including the KP flexible mechanisms, such as the Clean Development Mechanism (CDM), as well as domestic or regional emissions trading schemes (ETSs).

Uncertainty in the international climate policy framework after 2012 means that the future role of GHG units as a tool for supporting countries' achievement of mitigation pledges at the national level is less clear. In negotiations under the UN Framework Convention on Climate Change (UNFCCC), many countries have expressed support for using market mechanisms to promote and enhance the cost-effectiveness of mitigation. Most such mechanisms would use a system of tradable GHG units but there remains uncertainty over how tradable units will be recognised as contributions toward national pledges or targets, especially for countries not participating in a second commitment period of the KP. Further, credit units originating in a country with a mitigation pledge have the potential to result in double counting towards the mitigation efforts of two different countries. Effective tracking of internationally-traded GHG units will be important to maintain international trust in the use of market mechanisms. This paper builds on previous analysis (Prag *et al.*, 2011) for the Climate Change Expert Group (CCXG) to propose options for how certain aspects of the GHG accounting framework may function after 2012, for countries using units outside of the KP. It considers units from crediting/offset mechanisms rewarding emissions reductions as well as tradable allowance units from domestic or regional ETSs.

Previous CCXG analysis (Prag *et al.*, 2011) emphasised the uncertainty about how GHG unit accounting may proceed and presented scenarios for unit accounting after 2012 that comprised a spectrum of decreasing centralisation of the international framework. These scenarios were constructed using a number of building blocks, each representing a core element of GHG unit accounting. In particular, the analysis focused on two scenarios: (i) a continued KP with emissions commitments for some Parties, and (ii) a "pledge and review" scenario based on country pledges defined using some degree of common rules and metrics. A "middle ground" option was identified that combined elements of these two scenarios.

This paper examines in more detail what systems and processes would be required to achieve effective use of tradable GHG units under the "middle ground" scenario. The paper first considers what international framework is required to provide a reliable, functional platform for use of tradable GHG units, and explores accounting issues related to international trade of domestic ETS units. More detailed options are then analysed for two core aspects of GHG unit accounting: governance of international crediting mechanisms and systems for tracking international unit transactions.

### Ensuring a functional platform for GHG unit systems

To date, GHG trading has mostly been carried out within tightly-defined rules and procedures with clear accountability for creation and use of units, particularly within the KP mechanisms. This has provided a stable platform for international trading of emissions units. In a more complex post-2012 international policy framework, the existing rules may be insufficient if GHG units generated outside of the KP system are used to contribute to achievement of national emissions pledges. Both developed and developing countries may seek to use tradable GHG units from market mechanisms to help them achieve their UNFCCC mitigation pledges, regardless of whether or not they take on targets under a second KP commitment period. Countries may seek recognition by the UNFCCC process of GHG units created from new crediting mechanisms or domestic ETSs.

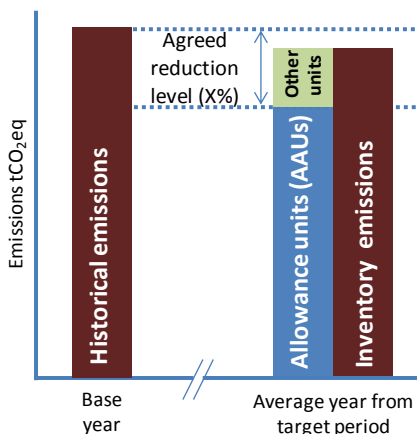
The issue of accounting for *emissions units* is intertwined with the wider issue of national accounting for *emissions*, including the scope and terms of emissions mitigation pledges. Some emissions accounting issues need to be clarified to ensure that creation and trading of GHG units can occur in a robust and rigorous way.



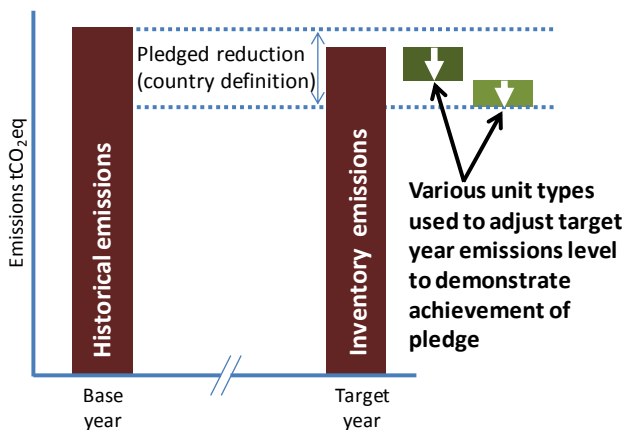
Under the KP, countries with emissions commitments are required to convert their target into a discrete quantity of emissions units (Assigned Amount Units, AAUs). Countries can then add or subtract GHG units from their initial allocation of allowance units via transfers or acquisitions of units using the flexible mechanisms. After 2012, countries could still undertake international GHG unit trading even without such an allowance-based system. In this case international flows of GHG units would need to be reported to enable accurate *ex-post* assessment of aggregate emissions reductions against pledges or targets (Figure 1).

Figure 1: Using GHG units in an allowance-based system and a pledge-based system

**1. Allowance-based system (e.g. Kyoto Protocol):** demonstrating compliance by submitting allowance units plus/minus purchased unit types



**2. Pledge-based system:** various types of purchased units used to readjust inventory emissions in target year



Source: Authors

Countries involved in international trade of GHG units would ideally agree a common basis for their pledges or targets in order to avoid double counting – a basis that takes into account GHG unit flows into and out of the country, as well as changes to the domestic emissions inventory. Perhaps the simplest common basis would be if national mitigation pledges are expressed as tCO<sub>2</sub>-eq to be emitted over a fixed timeframe, with sources and sectors clearly stated according to common terms (see Levin *et al.*, 2010, for a discussion of accounting rules for pledges). Without an overall quantitative goal, adding or subtracting GHG units becomes less meaningful.

The timing and duration of pledges/targets is also a relevant factor. In particular, a pledge or target defined for a single year only might not be comparable to a pledge defined as an emissions trajectory over a number of years, in terms of the quantity of emission reduction units required to achieve the pledge. For example, if a target is expressed as an emissions reduction for the year 2020 only (against a base year), then a government might acquire reduction credits issued in 2013-2019 in order to reduce the net final reported emissions for the year 2020. In contrast, a country with a target defined as a trajectory over a number of years, for example 2013-2020, may be obliged to acquire GHG units to demonstrate a final net emissions position *for each year within that period*. The total number of units acquired would be greater in the latter example, all other things being equal. To reduce this sort of complication, it could be useful to align the duration of country pledges with domestic policy timeframes (for example, starting the pledge period before or simultaneously to a domestic ETS).

A number of procedures and rules already agreed under the UNFCCC could be relevant to providing a stable platform for the continued use of tradable GHG units after 2012. Some aspects agreed under the Convention track of the UNFCCC negotiations are expected to continue to operate in the post-2012 period, such as reporting and review of emissions inventories. Other processes agreed under the KP are currently applied only to Parties with emissions commitments under the KP, such as definition of assigned amounts, rules for emissions trading, project-based mechanisms and the units tracking system. Some of these rules

are specific to the first commitment period, others apply for the duration of the Protocol. Some reporting and review requirements may continue for Annex I Parties under the KP, even in the absence of a second commitment period.

When procedures for unit accounting were drawn up in the early days of the UNFCCC, there was not much international experience in using GHG units and market mechanisms. Now, however, a number of national and sub-national mechanisms already exist under their own rules, and countries may seek for new international processes to be compatible with those systems. After 2012 some countries may seek UNFCCC recognition of the units created by domestic or bilateral market mechanisms. The post-2012 accounting framework may therefore require new forms of international co-ordination to provide international oversight of such mechanisms. Nevertheless, the KP modalities and procedures provide a rich resource of practical guidance as to how to operate a GHG unit accounting system. Some elements of the KP rules could therefore be relevant after 2012 to ensure stable conditions for use of GHG units, even for Parties not participating in the KP. Such guidance, generally of a technical nature, could be made distinct from the legally-binding compliance aspects of the KP.

In this context, this paper examines options for international co-ordination of GHG crediting mechanisms and systems for tracking international transactions. These options are summarised in Figure 2 and further details are provided in Table 2 at the end of the Executive Summary. In addition, there may be cases where allowance units from domestic ETSs become relevant for international unit accounting.

Figure 2: Options for governance of crediting mechanisms and tracking unit transactions after 2012

	<i>Option A</i>	<i>Option B</i>	<i>Option C</i>
<b>Governance of international crediting mechanisms (Section 4)</b>	<b>CRD.A:</b> UNFCCC management of new crediting mechanisms similar to CDM regulatory process	<b>CRD.B:</b> COP agreement on common criteria for recognition of units from crediting mechanisms	<b>CRD.C:</b> Transparency approach, COP agreement on mechanism principles and disclosure requirements
<b>Tracking of unit transactions (Section 5)</b>	<b>LOG.A:</b> Central ITL records unit transactions and conducts both technical and policy-related checks	<b>LOG.B:</b> Central ITL (or other tool) records transactions and conducts technical checks only	<b>LOG.C:</b> No central ITL; inter-registry communication only, transparency ensured by reporting and verification

Source: Authors

### Governance of international crediting mechanisms (“CRD” options)

After 2012, countries may wish to continue to operate international crediting mechanisms whereby emissions reductions occurring in another country, outside of an ETS cap, can be used towards achievement of mitigation pledges. This may involve new crediting mechanisms in addition to the existing KP project-based mechanisms. The governance of such mechanisms, which in turn determines the quality of the resulting units, is an important aspect of international accounting of GHG units after 2012.

New crediting mechanisms might be agreed, developed and regulated within the UNFCCC framework. However, countries may also introduce new crediting mechanisms agreed bilaterally and likely regulated largely under the authority of participating countries. Nevertheless, Parties could agree on a level of international co-ordination of such mechanisms under the UNFCCC. In this case it is likely that the regulatory authority of the UNFCCC bodies would be less comprehensive than the CDM Executive Board (EB) currently is for the CDM. This paper presents three governance options for new crediting mechanisms: option CRD.A considers a new mechanism centrally-regulated under the UNFCCC, whereas options CRD.B and CRD.C explore different levels of international co-ordination of “country-led” mechanisms.

The Cancun Agreements request the COP to consider new market-based mechanisms, taking into account certain principles (UNFCCC, 2011a). Whilst some of these principles are already enshrined in the goals of the KP mechanisms,<sup>1</sup> the following are not: complementing other means of support for nationally appropriate mitigation actions by developing country Parties, stimulating mitigation across broad segments of the economy, and ensuring a net decrease of global greenhouse gas emissions. In the more decentralised options considered here (CRD.B and CRD.C), it would be at countries' discretion whether they design mechanisms explicitly according to these principles. Under the centralised option CRD.A, Parties would agree modalities and procedures based on these principles which would be regulated under the UNCCC process. Such procedures may however be less prescriptive than the existing CDM process and could allow increased flexibility in terms of country-specific procedures. Developing centrally-regulated procedures for ensuring that a crediting mechanism delivers 'net decrease' of global emissions may be particularly challenging.

Option CRD.B would represent a move from a project-level approval process towards one that focuses on mechanism approval. The UNFCCC process would continue to play an important co-ordination role of country-led market mechanisms. Parties would agree common criteria for recognising units from country-led mechanisms, such that only units issued by mechanisms conforming to the criteria would be recognised as valid units for meeting national pledges in the UNFCCC process. Such criteria could focus on ensuring that a mechanism has certain quality-assurance processes in place, rather than on detailed scrutiny of specific projects or activities. For example, Parties might agree that eligible mechanisms must include an environmental quality test to demonstrate the value of units created, and if so, criteria for what the test must demonstrate would be agreed. Details of the design and operation of the test would remain under responsibility of the implementing countries. Under this option, Parties could also agree that the UNFCCC would retain its role to accredit validation and verification agencies, and that units from country-led crediting mechanisms would only be recognised if such certification agencies are employed to verify activities. Nevertheless this option would represent a clear departure from the CDM where the CDM EB, as a body under the UNFCCC, regulates the whole process at the project or programme level.

Under option CRD.C, Parties would agree only general principles for mechanisms along with minimum transparency requirements. UNFCCC involvement would be limited to ensuring that sufficient information is disclosed to satisfy these requirements. In this way, units issued from mechanisms that provide the required level of information disclosure and transparency of projects or programmes would be recognised towards meeting pledges under the UNFCCC process. Such an approach would not in itself ensure consistency between different market mechanisms, but could ensure a minimum level of transparency. This could facilitate market valuation of different credits and improve liquidity in the market to some extent, relative to completely uncoordinated mechanisms.

In contrast to options CRD.A and CRD.B, option CDR.C would not establish any test on the environmental quality of credits and would only stipulate information requirements on which basis the quality of credits could be assessed. Participating countries would retain responsibility for the environmental integrity of the units generated by the mechanisms, and the aim of the transparency requirement would be to encourage countries to undertake the necessary environmental due diligence to ensure that real emissions reductions are achieved. A further level of international comparability could be provided by requiring that verification agencies adhere to non-UNFCCC international standards, such as those described by the International Organization for Standardization (ISO). However, it is not clear that a system based only on general principles and transparency requirements would build enough trust between countries to ensure multilateral recognition of units for use towards meeting international pledges.

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<sup>1</sup> These include: ensuring voluntary participation of Parties, safeguarding environmental integrity, assisting developed country Parties to meet part of their mitigation targets and ensuring good governance and regulation

## Tracking of unit transactions (“LOG” options)

Effective tracking of internationally-traded GHG units is important in order to maintain trust in the use of market mechanisms to help meet national mitigation targets or pledges. Under the KP, tracking is performed by the International Transaction Log (ITL). This centralised tool (i) enables communication between the registries of different countries in order to facilitate transactions of GHG units, (ii) performs both technical and policy-related checks on proposed transactions before executing them, and (iii) ensures that a central record is kept of transactions that have taken place for reconciliation and reporting purposes. This paper presents three options for how tracking of GHG unit transactions could be conducted after 2012; options LOG.A and LOG.B retain an ITL or other centralised tool while option LOG.C features direct registry-to-registry communication only with no centralised checking or recording system. Under all options, developing countries could be encouraged to establish unit registries to facilitate participation in unit-based mechanisms.

Option LOG.A retains a central ITL with the ability to conduct both technical and policy-related checks on transactions before executing them, as at present. If units from non-KP mechanisms were to be introduced, the policy-related checks would reflect the decisions made by Parties regarding the governance of crediting mechanisms and would not be based on the KP accounting rules. For example, if Parties choose option CRD.A (the “UNFCCC regulation” approach) then the ITL could check that the proposed transaction does not infringe any internationally-agreed rules relating to unit transactions (although the origin and quality of the units themselves would not be checked, since under CRD.A all units would be issued into a central unit registry and in effect be “pre-approved”). If Parties choose option CRD.B (the “Criteria for unit recognition” approach), then the ITL could check at the issuance stage whether the activity or mechanism concerned has demonstrated adherence with internationally-agreed criteria for unit recognition, before allowing the transfer of the units to proceed. This check could be carried out using unit serial numbers and could either function at the mechanism level (such that all units from a particular country-led mechanism are pre-approved) or at the activity level (such that the check ensures that transacted units have demonstrated adherence with recognition criteria).

Option LOG.B also retains a central ITL, but without the ability to conduct policy-related checks of transactions. In this scenario, the principle purpose of the ITL would be to record transactions and conduct essential technical checks to ensure the smooth operation of the system. Any transaction proposed between two compatible registries would be carried out, although countries could choose to use the ITL to implement some policy-related checks bilaterally. Under this model some international oversight could be maintained if countries agree to submit a one-off or periodic report describing the systems they have put in place to ensure transparency and environmental integrity, before a connection can be established between the ITL and national registry.

In option LOG.C there would be no central ITL, only direct communication between registries hosted by participating countries. In this scenario, the reporting and verification of information on unit transactions provided by individual countries would play an important role in ensuring transparency. This highly decentralised option would provide maximum flexibility for countries to operate and exchange diverse unit types on a bilateral basis, without requiring further consent by Parties with which they do not trade. However, international visibility of transactions would be entirely dependent on disclosure from registries and it could be difficult for outside observers to determine whether the units and transactions occurring are unique.

In options LOG.A and LOG.B, the UNFCCC Secretariat would play an important role by providing technical specifications for national registries, administering the ITL and preparing periodic reports summarising centrally-recorded data on unit transactions. These centralised models provide greater international visibility of unit transactions than the decentralised model (LOG.C) and offer certain practical advantages (e.g. the possibility to conduct periodic reconciliation exercises, the possibility to perform centralised software updates, use of existing hardware and potentially greater system security). In LOG.C, developed and developing countries would choose which other registries to connect to and how to set up

their registry (although they could be encouraged to use common data standards). However, this model represents the furthest departure from the existing system, could present technical difficulties (e.g. in the absence of a tool to ensure that units and transactions are unique) and would require stringent reporting and verification processes to ensure that an appropriate level of transparency is maintained.

### **Accounting for domestic emissions trading system units**

National, sub-national or regional ETSs have usually been initiated as domestic instruments whereby trades occur only within the country (or regional) boundary. In this way they serve to stimulate emissions abatement within the country (or region) in order to reduce domestic emissions. The trading units are not used directly as a contribution to meeting the country's international pledge and the units are not usually relevant from an international unit accounting perspective.<sup>2</sup> Over time, domestic ETSs could link, allowing trading of units between the entities covered under different ETSs in different jurisdictions. Indeed, a key motivation for using a trading system is the ability to link schemes and trade GHG units internationally to further lower abatement costs. In this case, the question arises as to how these international flows of units might be recognised as eligible units to directly count towards demonstration of country-level pledges or targets.

If a country seeks for international ETS allowance units to be recognised directly toward achievement of its pledge or target, a simple option would be for units traded internationally by ETS participants to be added or subtracted from inventory emissions when reporting the national pledge position. Provided that countries hosting linked schemes have pledges quantified in similar terms and that they take the same approach to accounting, there would not be any double counting of emission reductions. Under this approach, the parameters of the ETSs themselves are of no concern for international accounting: what matters from an international accounting perspective is that pledges take flows of ETS units into account by increasing or decreasing the pledge position according to the net flow.

However, in a more complex post-2012 framework, countries hosting ETSs may have a variety of different types of pledge, with some more precisely quantified than others, and potentially of a different legal character. The linking of ETSs internationally could then transfer emissions units between countries and therefore between these different types of pledge. This raises a number of issues about how to accurately account for these units. A key question is how to ensure that units used directly as a contribution to meeting a national pledge are of adequate quality, while not placing barriers to development and linking of ETSs.

If countries seek to use internationally-traded or banked ETS units as a direct contribution to pledge achievement without the net flow of such units being added or subtracted from the final pledge position, unit quality would depend on the design of the ETS itself. It is possible for baselines and caps in ETSs to be set in such a way that any resulting surplus allowance units would represent over-allocation rather than genuine emission reductions. Regulatory authorities managing ETSs would be unlikely to link directly with other schemes unless they were confident in the stringency of the other schemes' caps. However, to ensure international confidence in environmental integrity, some assurance of ETS unit quality for internationally-traded units used toward pledges may therefore be important. Key questions remain to be answered as to how such processes could work. Issues include whether the UNFCCC or an independent body should play a role in this regard and whether a commitment to transparent reporting would be sufficient.

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<sup>2</sup> An exception has been the EU ETS which, until the end of 2011, has created allowance units directly from KP AAUs, thereby trades of its units have also transfers of units accounted for under the KP.

## Designing an effective GHG unit accounting system

Some combinations of the options presented in the paper may be more appropriate than others. Table 1 lays out how the UNFCCC process would be involved in three possible governance packages for crediting and tracking. The package with most UNFCCC involvement combines CRD.A with LOG.A, so that units from a UNFCCC-regulated crediting mechanism would be tracked by the ITL, which could be programmed to perform some policy-related checks on unit transactions. The package with moderate UNFCCC involvement combines CRD.B with LOG.A, so that country-led crediting mechanisms based on internationally-agreed criteria for recognition of units would be tracked by the ITL that could, still, perform policy-related checks on transactions. In this way the ITL could screen for units from mechanisms that have demonstrated adherence with the criteria for recognition of units. The package with least UNFCCC involvement combines CRD.C with LOG.B. In such a scenario, the UNFCCC would have a very limited role in assurance of crediting units – limited to agreement of general principles and transparency requirements – but a central tracking tool would still be used to facilitate communication and transparent exchange of units. Other combinations of options may also be feasible.

Table 1: UNFCCC role in packages for governance of crediting mechanisms and tracking of units

<b>Most UNFCCC involvement</b> (options CRD.A and LOG.A)	<b>Moderate UNFCCC involvement</b> (options CRD.B and LOG.A)	<b>Less UNFCCC involvement, retaining central tracking hub</b> (options CRD.C and LOG.B)
<i>Rules and procedures for crediting mechanisms</i>		
Rules agreed under UNFCCC process; UNFCCC bodies manage rules and procedures.	Limited UNFCCC role (agrees unit recognition criteria).	Very limited UNFCCC role (only agrees general principles and transparency requirements).
<i>Auditing/Verification of credited activities</i>		
Agreement that UNFCCC bodies accredit verifiers.	Agreement that UNFCCC bodies accredit verifiers for country-led mechanisms.	No UNFCCC role.
<i>Project approval and credit issuance</i>		
UNFCCC bodies approve projects/activities and issues credits on the basis of verification.	No UNFCCC role.	No UNFCCC role.
<i>UNFCCC role in recognition of credit units</i>		
Units are scrutinised by UNFCCC at origin, so automatic recognition as helping to meet pledge.	Units only recognised if demonstrated that recognition criteria have been met. Verification could be part of IAR/ICA process.	Units recognised if sufficient information has been disclosed. Verification could be through IAR/ICA process.
<i>UNFCCC role in tracking of unit transactions</i>		
Continuation of UNFCCC-managed ITL (or other tool), which could perform policy-related checks on transactions	Continuation of UNFCCC ITL (or other tool), which could be used to check that units come from recognised activities/mechanisms	Continuation of UNFCCC ITL (or other tool) that performs technical checks only to ensure smooth functioning of system.

Divergent standards for market mechanisms could lead to a fragmented market and subsequent lack of liquidity and investment. Lack of international oversight for internationally-traded GHG units could also lead to weakened trust in the use of mechanisms because of the lack of international assurance of environmental quality. For GHG unit systems to be most effective at stimulating real enhanced emissions abatement through as broad an international market as possible, a balance may be needed between increased national flexibility in design and governance of market mechanisms on one hand, and maintaining some international regulation to avoid severe market fragmentation and to provide international assurance of environmental quality on the other hand.

The options presented in this paper aim to indicate how Parties to the UNFCCC could agree steps towards establishing a functioning unit accounting system either outside of, or in parallel to, the Kyoto Protocol.

Independently of any decision on the Kyoto Protocol, Parties at COP 17 could take steps to (i) agree what elements of guidance already existing in the UNFCCC and KP could serve to help countries agree a basis for expressing pledges that facilitates use of GHG units, and (ii) agree a framework for how new unit types may be recognised by the UNFCCC outside of the KP, such as the options presented here.

Table 2: Summary of options presented for crediting mechanisms and transaction tracking

<b>Governance of international crediting mechanisms</b>			
	<b>CRD.A: UNFCCC regulation of new mechanisms</b>	<b>CRD.B: Common criteria for unit recognition</b>	<b>CRD.C: Transparency approach</b>
<i>Description</i>	New market mechanisms introduced through UNFCCC process, with Parties agreeing to modalities and procedures for implementation and operation of mechanisms. Regulation would be through approval of emission reduction activities by UNFCCC bodies with subsequent central issuance of credits, similar to CDM. Could still provide some country-level flexibility in procedures at the implementation level.	Through COP process, countries agree criteria for unit recognition defining minimum requirements for UNFCCC recognition of units from country-led mechanisms. Mechanisms proposed by countries would need to demonstrate that these criteria are met. Criteria could include project/activity eligibility criteria (such as an environmental quality test), monitoring standards and methodology principles.	Through COP process, countries agree general principles for market mechanisms and minimum transparency requirements. Units could be recognised under UNFCCC provided that countries operating mechanisms disclosure required information. No direct international assessment of unit quality.
<i>Pros</i>	<i>Maintains international regulation over what qualifies as an international credit unit, should provide maximum fungibility between unit types.</i>  <i>Builds on existing UNFCCC bodies and processes.</i>	<i>Experience from CDM, including work on standardised baselines, could be utilised in developing criteria for unit recognition.</i>  <i>Common criteria and UNFCCC accreditation of DOEs could improve fungibility of units in the market, relative to fragmented system</i>	<i>Greater flexibility in developing new mechanisms which may lead to innovation and new solutions.</i>  <i>Could be rapid to put into place because no development of international criteria and/or accreditation standards required</i>
<i>Cons</i>	<i>Difficult to get full agreement of Parties to establish new market mechanisms under the FCCC, and may take several years to agree new modalities and procedures. Could be seen as inflexible for country requirements.</i>	<i>Common criteria, while less elaborate than CDM procedures, may continue to create bottlenecks for country-led mechanisms.</i>  <i>Criteria that are too detailed could reduce flexibility and sector coverage of country-led mechanisms.</i>	<i>Without common standards other than transparency requirements, fungibility of units may be difficult to establish and it may be hard to built sufficient trust for recognition of units by UNFCCC.</i>  <i>A proliferation of bi-lateral crediting standards could result in market fragmentation, higher transaction costs and lower investment.</i>

<b>Tracking of unit transactions</b>			
	<b>LOG.A: Central ITL records and performs technical and policy-related checks on unit transactions</b>	<b>LOG.B: Central ITL records transactions and performs technical checks only</b>	<b>LOG.C: No central ITL; inter-registry communication only, transparency provided by reporting and verification processes</b>
<i>Description</i>	ITL continues to record and conduct technical and policy-related checks on transactions, based on decisions made regarding the governance of crediting mechanisms and use of international GHG units.	ITL (or new tool) records and performs essential technical checks on transactions with no discrimination of unit types; issuing or buying countries would be responsible for ensuring unit quality and integrity. Could require a one-off or periodic report from countries before connecting to ITL.	Parties choose how to design their registry and which other registries to connect it to, with no UN checks on transactions; reporting and verification of information reported by individual countries ensures transparency.
<i>Pros</i>	<i>Maximum international visibility for quality of units being created and transacted</i>  <i>Builds on existing hardware and processes (including helpdesk, data centres etc)</i>	<i>Retains central recording tool but more flexible to country requirements</i>  <i>Partly builds on existing system</i>	<i>Maximum flexibility for countries to use international market mechanisms according to their own circumstances</i>
<i>Cons</i>	<i>Top-down approach and stringent requirements for developing countries may not encourage maximum participation</i>  <i>Could be inflexible to diverse unit types and market mechanisms</i>	<i>Involvement of UN without control over what passes through ITL might be considered weakening of UN integrity</i>  <i>Difficult to ensure comparability of market mechanisms</i>	<i>Potentially onerous demand on countries to ensure full transparency of transactions and sufficient security</i>  <i>Potential technical difficulties in communications and transaction disclosure without central tool and common unit definition</i>



## 1. Introduction and context

Greenhouse gas (GHG) emissions units play an important role in international climate change policy. GHG units, each representing one tonne of CO<sub>2</sub>-eq, currently underpin emissions accounting in the Kyoto Protocol (KP) via the three flexibility mechanisms (International Emissions Trading of AAUs, the Clean Development Mechanism and Joint Implementation). GHG units are also fundamental to operation of markets in GHG emissions at international, national and sub-national scales.

The end of the first KP commitment period in December 2012 has significant implications for GHG unit accounting. Regardless of the outcome of negotiations on a second commitment period, it is unlikely that after 2012 the GHG unit accounting system will continue unchanged from its present form. One reason is that several developing countries have now submitted quantified mitigation pledges under the Cancun Agreements, so the system will need to provide transparency on whether and how any units transferred from countries with pledges are used towards the mitigations targets of other countries. In addition, after 2012 new types of GHG unit may require tracking because several countries have implemented, or are planning to implement, domestic emissions trading schemes (ETSs) and new emission reduction crediting initiatives that might be organised outside the UNFCCC framework. Further, countries decided at the sixteenth meeting of the Conference of the Parties (COP 16) to the UN Framework Convention on Climate Change (UNFCCC) to consider the establishment of new market mechanisms at COP 17 (UNFCCC, 2011a); crediting of Nationally Appropriate Mitigation Actions (NAMAs) may also be considered under such a mechanism.

The implications on GHG unit accounting of changes to the post-2012 climate policy framework have received relatively limited attention to date. Previous CCXG work (Prag *et al.*, 2011) started to address this gap by analysing the existing framework and identifying building blocks for unit accounting. Five potential scenarios for a post-2012 accounting framework were established, a summary of which is shown in Figure 3.<sup>3</sup> The paper then outlined characteristics of two scenarios “Kyoto Protocol 2<sup>nd</sup> CP (some Annex I)” and “Pledge-and-Review”,<sup>4</sup> before focusing on the “Middle Ground” scenario. This scenario drew on both the Kyoto Protocol and bottom-up models to achieve a viable international GHG unit accounting system that would enable continued use of effective market mechanisms.

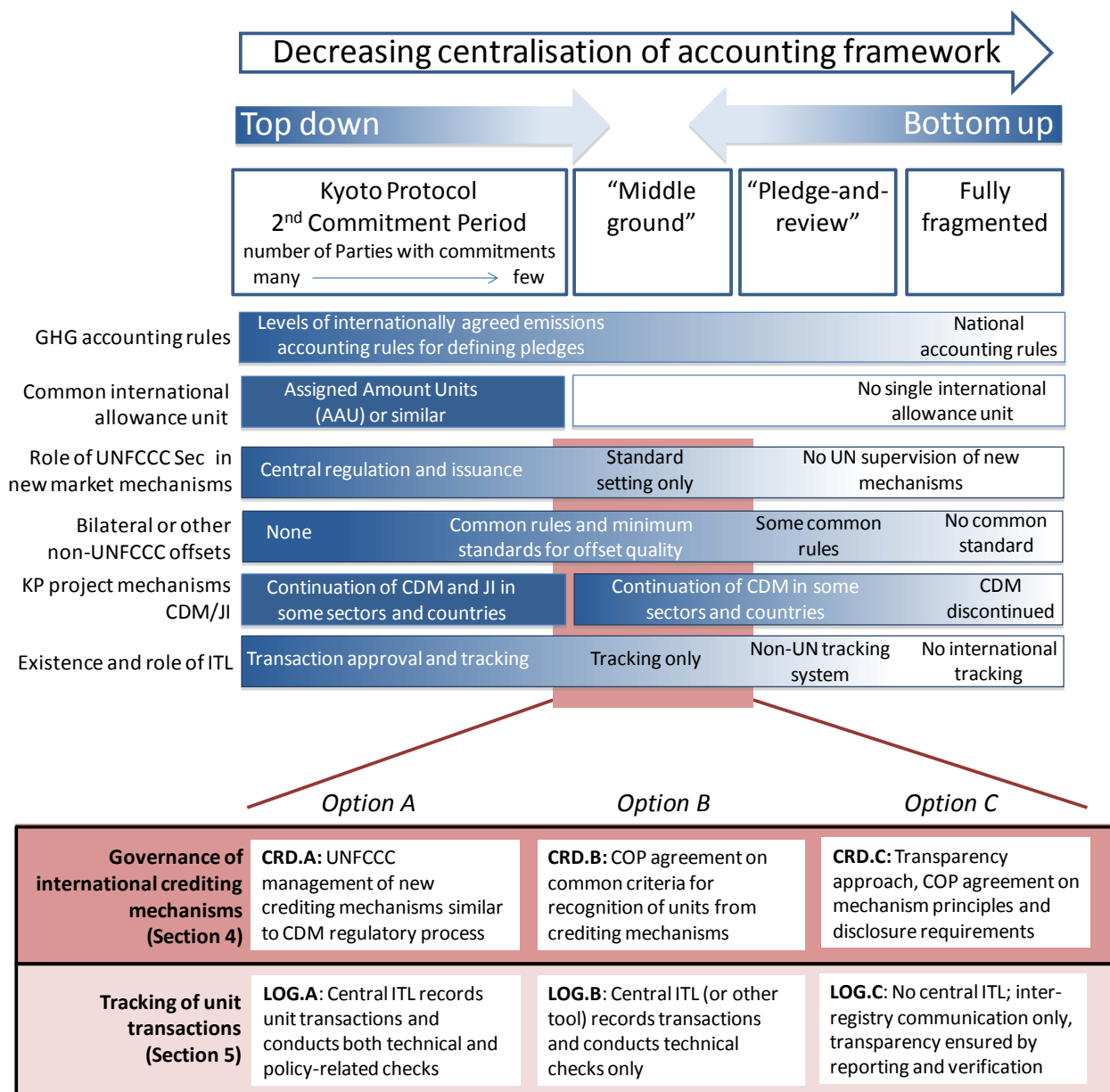
This current paper further explores this “Middle Ground” scenario by presenting options for how some key elements of GHG unit accounting could function. A key feature from the previous paper was increased decentralisation of governance of activities to reduce GHG emissions compared to the existing system. The current paper builds on this by proposing options for how key aspects of the GHG accounting framework could operate in a way that allows robust use of GHG units after 2012. The proposals considered here do not preclude the continuation of the Kyoto Protocol to a second commitment period; the “middle ground” as interpreted here may operate in parallel to a continuation of the KP for some Parties.

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<sup>3</sup> Note that for illustrative purposes, the scenarios in Figure 3 are separated into five discrete columns. The intention of the diagram was not to prescribe a static set of elements for each scenario, but rather to present options that could be selected from different columns for each building block. In reality many scenarios are possible and this is a simplification of potential outcomes. For example, the Kyoto Protocol may enter a second commitment period for some Parties, whilst others adopt accounting principles under the “middle ground”.

<sup>4</sup> Kyoto Protocol 2<sup>nd</sup> CP (some Annex I) included a continued KP commitment period for some Annex I Parties, with continued UN mechanisms plus new parallel bilateral or multilateral offsets in some countries. “Pledge and review” envisaged no universal international allowance unit, but country objectives defined by harmonised accounting rules, with continued UN mechanisms plus some co-ordination of bilateral offsets.

Figure 3: A spectrum of options for GHG unit accounting showing elements of each option



Source: Modified from Prag *et al.*, 2011.

This paper begins by identifying how the international emissions accounting framework can provide a platform for transparent and credible use of tradable emissions units at the international level. Maintaining clear international visibility of the origin and transaction pathway of units is important for tracking progress towards mitigation targets and pledges by developed and developing countries, as well as the successful operation of mechanisms employing tradable emissions units. The analysis therefore seeks to put forward unit accounting options that balance national flexibility with a sufficient level of international transparency to maintain trust and openness in countries' mitigation efforts.

The six building blocks from Prag *et al* (2011) are presented in the top half of Figure 3 and these form the basis for further discussion in this paper. The first block concerns emissions accounting rules, because clear definition of mitigation pledges, and common accounting rules for emissions sources included therein, are important for providing a platform for use of tradable GHG units. Accounting rules for emissions mitigation pledges are discussed here insofar as they are important for assuring a platform for

unit accounting; suggestions for detailed accounting rules for pledges are not presented. The second building block concerns the continuation of a single international allowance unit similar to AAUs under the Kyoto Protocol. Such a system is not foreseen in the “middle ground” scenario. However, countries may seek to link domestic ETSs which may mean that accounting for ETS allowance units becomes an international issue; this is discussed in section 3. The next three building blocks refer to the governance and implementation of crediting mechanisms. These are combined into the options described in section 4. The final building block considers tracking of transactions using the ITL; this maps directly onto the options presented for transaction tracking in section 5.

A vast array of rules and procedures has been built up under the UNFCCC process, many of which are relevant to accounting for GHG units. When these procedures were drawn up in the early days of the UNFCCC, there was not much international experience in using GHG units and market mechanisms. Now, however, a number of national and sub-national mechanisms already exist under their own rules and countries may seek for new international processes to be compatible with those systems. Nevertheless, a number of the procedures and rules already agreed under the UNFCCC process could continue to be relevant for implementing the options described in this paper after 2012. These include items agreed under the FCCC for all Parties (such as reporting and review of emissions inventories) as well as items agreed specifically for the Kyoto Protocol (such as rules for emissions trading, project-based mechanisms and the units tracking system).

Although the post-2012 accounting framework may take shape as a newly implemented system, procedures developed for the KP constitute a rich resource of guidance for how to effectively operate a system of tradable units. Some elements of the KP “rulebook” could therefore be relevant after 2012 even for Parties not taking on commitments under the KP. Such guidance, when made distinct from the compliance aspects of the KP, could be useful for establishing principles for unit accounting after 2012. This would mean that experience and processes from the existing system are used to maximum effect in ensuring a robust GHG unit accounting system under the “middle ground” options described in this paper.

Throughout the paper, the analysis highlights where existing rules, processes and tools developed under the Kyoto Protocol may serve to inform unit accounting under the “middle ground”. Figure 4 summarises this and shows how some elements are unlikely to feature outside of a second commitment period of the Kyoto Protocol; notably the compliance and target setting process, even if Parties do subsequently agree common accounting rules for developed country targets. The paper does not aim to make judgements relating to the level of ambition of individual or aggregate mitigation pledges, or the appropriateness of different climate policy instruments (e.g. market-based vis-à-vis regulatory approaches); it seeks only to consider the implications of such political decisions for GHG unit accounting.

The future GHG unit accounting system will operate in the context of other aspects of the UNFCCC process. In particular, the principles for International Assessment and Review (IAR) of developed country emissions, and International Consultations and Analysis (ICA) of developing country emissions agreed at COP16 are relevant to the issues explored here (UNFCCC, 2011a). For example, the IAR process is expected to cover the use of carbon credits from market mechanisms and therefore elements of the options discussed under sections 4 and 5 may be relevant to that process; fuller discussion can be found in Ellis *et al.* (2011). In addition, these review and verification processes may be important for providing visibility on the platform for GHG units discussed in section 2.

Figure 4: Functional aspects of the Kyoto Protocol and how it could influence GHG unit accounting outside of the KP after 2012

	Existing FCCC and KP processes relevant to units	Potential use outside of KP after 2012
<b>Rules and metrics</b>	Gases, GWPs and sectors covered, incl LULUCF rules	KP guidance, based on UNFCCC Subsidiary Bodies and IPCC guidelines, could be relevant to help clarify country pledges
	Inventory Reporting guidelines	Inventory reporting likely to continue under UNFCCC regardless of KP outcomes
	Calculating Assigned Amount, reporting units	Calculating AA (without compliance aspect) and reporting unit movements to facilitate use of market mechanisms
	Modalities and Procedures for mechanisms (CDM/JI and emissions trading)	Could inform principles and criteria for recognition of units from country-led crediting mechanisms, and potentially internationally-traded ETS units
<b>Tools</b>	International Transaction Log	Could be modified to track new unit types outside of KP, whilst maintaining many existing functionalities
	National GHG unit registries	Unit registries could be designed to UN specifications, including new unit types
	Inventory and National Comms Review process	UNFCCC and KP review processes could inform Intern'l Assessment and Review (IAR) for developed countries
<b>Targets and compliance</b>	Quantified emission limitation or reduction commitments	Unlikely to be used as part of the "middle ground" scenario outside of the potential KP 2 <sup>nd</sup> commitment period
	Compliance Process	

Source: Authors. Shaded boxes indicate issues that are directly relevant to the options described in this paper. Many of the non-shaded boxes are also operational under the FCCC and so already apply to all Parties, depending on their national circumstances and capabilities<sup>5</sup>.

<sup>5</sup> The boxes in the figure are all linked to aspects of the Marrakech Accords of the Kyoto Protocol; references to individual decisions are listed in Annex A to this paper.

## 2. Platform for international GHG unit trading

To date, the only GHG emissions units that have been relevant towards countries' international emissions commitments are those generated by the Kyoto Protocol flexible mechanisms, including international trading of AAUs. The majority of other GHG unit transactions have occurred through domestic or regional emissions trading schemes with caps placed on closely defined sectors<sup>6</sup>. ETSs and the KP mechanisms both operate with detailed rules for emissions accounting and unit trading by covered entities or countries. These rules aim to ensure that trading is transparent and that use of tradable units does not reduce effectiveness of GHG mitigation, e.g. by ensuring that double counting of emission reductions does not occur. Uncertainty over the international policy framework means that there is currently no provision for clear international accountability of GHG units after 2012.

The issue of how to ensure continued use of high-quality tradable emissions units has become intertwined with the wider issues of national accounting for emissions and emissions mitigation targets/pledges. If countries intend to use international exchange of emissions units as a cost-effective means to achieve quantified targets or pledges outside of the Kyoto Protocol (even if some countries continue KP commitments under a new commitment period), clarity on emissions accounting issues is important to be able to ensure that such trading can occur in a robust and rigorous way. The existence of pledges in developing countries, whatever the legal status of such pledges, means that tracking of GHG units is also important for helping those countries to track progress towards their stated goals.

If the KP enters a second (or extended) commitment period including further emissions commitments from some Annex I Parties, the existing mechanisms and accounting rules will mostly continue to be valid for those Parties<sup>7</sup>. Whether or not a second commitment period is agreed, it is likely that other Parties (i.e. Annex I non-KP Parties and some developing countries) will aim to demonstrate achievement of post-2012 targets/pledges by using new market mechanisms, following as-yet-undefined processes or procedures. For example, Japan has taken steps towards certifying projects under a bilateral crediting system with particular developing countries (MOEJ, 2011).

### 2.1 Tradable units and the nature of pledges and targets

A number of countries have put forward quantified emissions pledges or targets. Important issues for defining these pledges include characterisation of emissions sources covered, duration of pledge and the use of tradable units both domestically and internationally. In theory, countries could define pledges or targets focusing on domestic emissions only, using the domestic GHG emissions inventory to demonstrate whether the stated goal or target has been met (even if the pledge is measured in terms of reduction in emissions intensity or deviation from business as usual). In practice, most national pledges or targets put forward envisage a role for market-based mechanisms to help achieve pledged emissions reductions in a cost-effective manner. Units flowing into and out of the scope of the emissions pledge could include offset credits (international and domestic) and allowance units from linked emissions trading schemes.

After 2012, the number of different unit types that could become relevant to international GHG accounting, including units from domestic emissions trading systems (ETSs) that link internationally with systems in other countries, will increase. Domestic offset credits from sectors outside the pledge could also be introduced in addition to international offsets.<sup>8</sup> Unit flows may be multi-directional, with countries both

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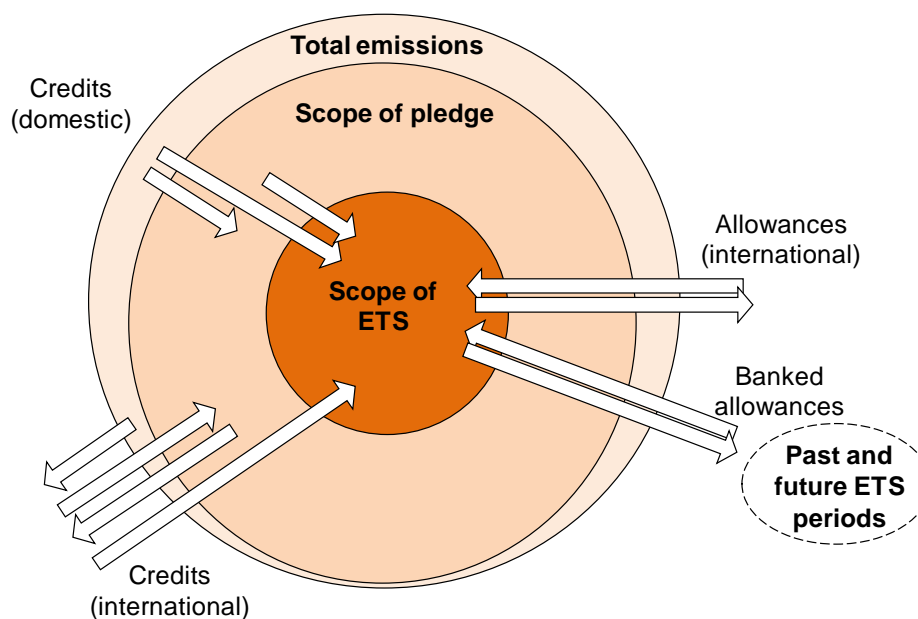
<sup>6</sup> Whilst Emission Trading Schemes are usually mandatory for covered entities, voluntary schemes have included the former Chicago Climate Exchange in the US and the Japan Voluntary Emissions Trading Scheme (J-VETS) in Japan. Other exceptions include voluntary offset standards which, though often international in nature, have to date not been directly connected to national emissions accounting and represent relatively small volumes (Prag *et al*, 2011).

<sup>7</sup> Except where rules refer only to the first Commitment Period.

<sup>8</sup> This is particularly the case for countries with limited pledge coverage (in terms of sectors and gases). Even in Annex I countries with comprehensive economy-wide pledges there are still likely to be some sectors or gases not

issuing and trading credit and ETS units. Figure 5 shows some of the possible unit flows into, out of and within a country with an emissions mitigation pledge or target.

Figure 5: Potential flows of credit units and ETS allowances for a country



Source: Authors

Countries could agree to define their pledges based on quantities of allowed emissions units, with trading of these units being integral to achievement and reporting of the pledge. This is essentially the system used for Annex I Parties in the Kyoto Protocol and can provide a stable, transparent means by which tradable GHG units can be used to contribute towards pledge achievement. Such a system would minimise the risk of double counting of emissions reductions through unit trading.

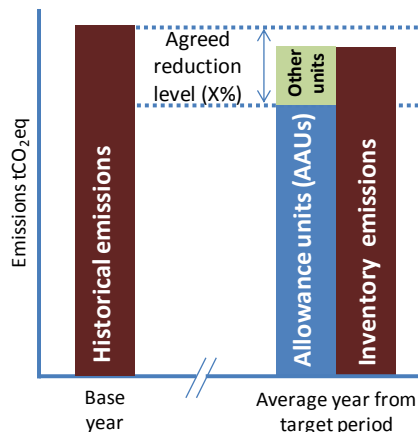
However, many countries have to date described pledges based on reduction or limitation of domestic emissions by a certain date, without specifying conversion to an allowed quantity of emissions units that can be traded. If these countries are to also make use of GHG units as direct contributions towards meeting their pledges (either from ETSs or other market mechanisms), then international flows of GHG units would need to be reported separately to the emissions inventory to enable accurate *ex-post* assessment of net emissions reductions. Accounting in this way would mean that flows of GHG units still remain integral to the net achievement of mitigation pledges. Figure 6 shows the difference between a pledge or target defined by a quantity of tradable units (as for emission commitments under the KP), and a pledge based on domestic emissions with *ex-post* accounting of emissions units. Even if some countries do not agree that *ex-post* accounting of unit flows is integral to the net achievement of their pledge, a robust system for tracking international unit transactions would provide a minimum level of transparency of unit movements. For example, if a country's pledge is based on its national CO<sub>2</sub> inventory but it continues to generate offset credits (e.g. through the CDM), and developed countries' pledges can be met using those GHG units, then the sum of the pledges does not equal total abatement (see Prag *et al*, 2011). However as long as unit flows are tracked, the level of overlap of pledges and therefore aggregate abatement can still be determined *ex-post*.

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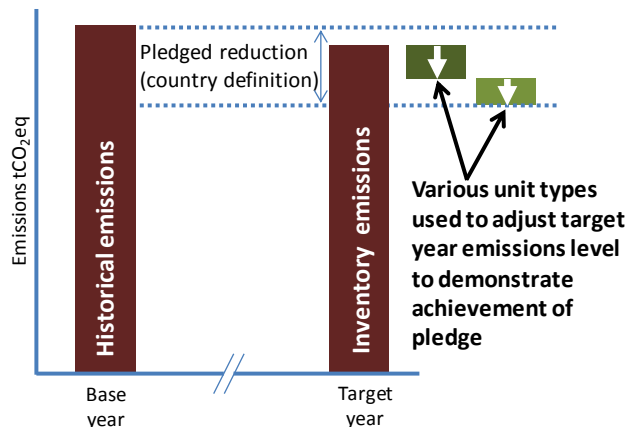
covered by the pledge. For example if pledges emulate current Kyoto Protocol coverage, they would not include nitrogen trifluoride (as the proposed California ETS does), nor would there be a requirement to account for soil-based carbon.

Figure 6: Contrasting a target defined by allowance units with a pledge based on inventory and *ex-post* unit accounting

**1. Allowance-based system (e.g. Kyoto Protocol):** demonstrating compliance by submitting allowance units plus/minus purchased unit types



**2. Pledge-based system:** various types of purchased units used to readjust inventory emissions in target year



Source: Authors

For GHG unit flows to be robustly accounted for in a pledge based system, clarity on both the origin of the units and definition of the pledge is important. It would therefore be simplest if pledges are outlined in terms of tCO<sub>2</sub>-eq over a fixed timeframe,<sup>9</sup> even if they are not subsequently converted to a defined quantity of allowance units. If there is no overall quantitative goal, adding or subtracting individual traded units becomes less meaningful.

The timing and duration of pledges is also a relevant factor. If there were to be a significant gap between the end of one pledge period (for example the KP's first commitment period) and the beginning of the next, there would need to be additional decisions on how to account for (and assure quality of) credit or ETS units generated during the gap period. Avoiding gaps in commitments simplifies the accounting, as well as supporting environmental integrity of pledges and targets. Furthermore, a pledge or target defined for a single year only might not be comparable to a pledge defined as an emissions trajectory over a number of years, in terms of the quantity of emission reduction units required to achieve the pledge. For example, if a target is expressed as an emissions reduction for the year 2020 only (against a base year), then a government might acquire reduction credits issued in 2013-2019 in order to reduce the net final reported emissions for the year 2020. In contrast, a country with a target defined as a trajectory over a number of years, for example 2013-2020, may be obliged to acquire GHG units to demonstrate a final net emissions position *for each year within that period*. The total number of units acquired would be greater in the latter example, all other things being equal. To reduce this sort of complication, it could be useful to align the duration of country pledges with domestic policy timeframes (for example, starting the pledge period before or simultaneously to a domestic ETS).

If countries wish to use internationally-traded GHG units to directly contribute towards achievement of mitigation pledges, then an important question is whether pledges of participating countries need to be defined in the same format (e.g. same duration, absolute versus relative targets), or whether pledges of a different nature can be incorporated into a common accounting framework. For ETS, Ellis and Tirpak (2006) found that schemes based on relative and absolute caps or different compliance periods could be combined. However, the way that this would relate to national pledges is yet to be investigated. The

<sup>9</sup> This is not the same as requiring an absolute target: in the case of relative pledges, the total emissions could be updated based on changing GDP data. Rather, for emissions units (which are quantity based elements) to meaningfully contribute towards a target, at least part of the target must be quantified clearly.

coverage of ETSs is generally limited to a subset of emissions covered by the country's overall target or pledge, and is thus unlikely to cover all sectors, gases and geographic regions.<sup>10</sup> Furthermore, all national pledges will have partial coverage of economy-wide GHG emissions, as is already the case with the Kyoto Protocol (which has very wide but not complete coverage of gases and sectors), and pledges may also have different duration, so managing such complications will be important.

## 2.2 Existing guidance relevant to accounting for units within pledges

Whilst the KP is generally prescriptive on emissions sources and gases to be included within emissions commitments for Annex I Parties, it does provide some flexibility for these Parties to specify particular sources that are included in their emissions commitment. For example, KP procedures for how to account for LULUCF allow for flexibility on a country-by-country basis<sup>11</sup>. A similar concept could potentially be used in future to allow countries structured flexibility over which sectors or sources they choose to include or exclude from emissions pledges, with the aim of allowing clear and transparent international exchange of emissions units related to those sectors or sources. Guidelines similar to the structure of KP Article 3.4 which allows for countries to select land-use activities for inclusion, could be relevant, even for other sectors (UNFCCC, 2005a).<sup>12</sup> Furthermore, existing guidelines for systems to measure emissions sources and removals contain principles that could serve under a new agreement, with all countries encouraged to apply the guidelines (depending on national circumstances), even though the original guidelines were established under the KP (UNFCCC, 2005a).<sup>13</sup> The issue of how to review and compare information from developed country Parties is likely to form a key part of the nascent international assessment and review (IAR) process, regardless of the role of tradable units, as discussed in Ellis *et al.* (2011).

## 3. Accounting for domestic emissions trading system units

A number of Annex I and non-Annex I countries have either already established domestic ETSs or are planning to do so. This section considers cases where allowance units from these schemes might also be relevant to international GHG unit accounting and to the demonstration of achievement of pledges or targets in developed and developing countries.

National, sub-national or regional ETSs have usually been initiated as domestic instruments whereby trades occur only within the country (or regional) boundary. In this way they serve to stimulate emissions abatement within the country (or region) in order to reduce domestic emissions. The trading units are not used directly as a contribution to meeting the country's international pledge and the units are not usually relevant from an international unit accounting perspective.<sup>14</sup> Over time, domestic ETSs could link, allowing trading of units between the entities covered under different ETSs in different jurisdictions<sup>15</sup>. Indeed, a key motivation for using a trading system is the ability to link schemes and trade GHG units internationally to further lower abatement costs. In this case, the question arises as to how these

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<sup>10</sup> For example, the EU ETS covers around 40% of emissions in participating countries, whereas the proposed California emissions trading system, as a sub-national mechanism in only one US state, would cover a small proportion (around 6%) of all US national emissions.

<sup>11</sup> Although under KP Art 3.3 countries must include areas that have undergone afforestation or deforestation since 1990, they have relative freedom under Art 3.4 over whether and how to account for emissions from a range of other land-use related activities.

<sup>12</sup> Guidance is provided in CMP.1 Decisions 16 and 17 and their annexes.

<sup>13</sup> Decision 19/CMP.1.

<sup>14</sup> An exception has been the EU ETS which, until the end of 2011, has created allowance units directly from KP AAUs, thereby trades of its units have also transfers of units accounted for under the KP.

<sup>15</sup> For example Norway has adopted the provisions of the EU ETS, and the EU ETS is in negotiations to link with Switzerland.



international flows of units might be recognised as eligible units to directly count towards demonstration of country-level pledges. Box 1 illustrates this using an example.

**Box 1. Does a country need to measure unit flows from a sub-national ETS when assessing performance against the national pledge?**

There may be examples of sub-national ETSs involving international unit trading during the pledge period. For example, if the Western Climate Initiative (WCI) links California with Canadian provinces, the United States and Canadian governments would need to consider how to account for units from this scheme within their national pledges.

One option would be to ignore units from this trading scheme when reporting the national pledge – meaning that units associated with it would not be recognised as counting directly toward achievement of the pledge. However this would miss the benefits of actions undertaken by companies to offset their excess emissions, either by importing credits or purchasing emissions units internationally. These excess emissions would therefore need to be covered again at the national level to meet the pledge, by further mitigation actions or purchase of credits. As long as both the importing and exporting countries take the same approach, there would be no need to account for these unit flows at the international level.<sup>16</sup> Alternatively, the trading scheme could be brought within the national pledge and associated unit flows linked to the pledge.

Note that the significance of this issue could be different for the two countries involved, so they may have different views on whether to integrate these unit flows into national pledges. In the WCI example, a larger proportion of Canadian than US emissions may be covered. The significance could also depend on the size of the net international unit flows, and whether these flows are predominantly in one direction. It would clearly be desirable for countries allowing trading of units to have mutual agreement on how traded units will be accounted at national level, otherwise there could be overlap of pledges and total emissions reductions would not be the sum of the two pledges. As long as unit flows are tracked and reported, such discrepancies could be calculated ex-post, but it would lessen the collective ambition, and could give rise to criticisms of “double counting”.

If a country does wish international ETS unit flows to be recognised directly toward achievement of its pledge, a simple option would be for units traded by ETS participants in the linked ETSs to be added or subtracted from inventory emissions when reporting the national pledge position. Again, as long as countries hosting linked schemes take the same approach to their accounting, there would not be any double-counting of emission reductions. Under this approach the parameters of the ETSs themselves are of no concern for international accounting: what matters from an international accounting perspective is simply that pledges take unit flows into account. This simple accounting approach is relevant for countries with quantified pledges or targets, and is described in more detail in Annex B of this paper.

After 2012, countries’ emissions pledges may take a number of different forms, with different scope, levels of quantification and legal character. Some countries may be participating in a second commitment period of the Kyoto Protocol with their target converted to a stock of common allowance units (AAUs), some may have clear quantified economy-wide pledges outside of the KP, while others may adopt pledges based on relative metrics or focused only on particular areas of their economies. If countries with different types of pledge seek to link domestic ETSs, this international linking will transfer emissions units between countries and potentially between these different types of pledge. This raises a number of complex issues about how to accurately account for these flows of units and how to ensure that units recognised towards

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<sup>16</sup> It may however still be useful to track these unit flows, as this would facilitate bringing these trading schemes within the pledge accounting if countries wish to do so at a later date.

pledge attainment are of adequate quality, while importantly not placing barriers to development and linking of ETSs.

If countries seek to use internationally-traded or banked ETS units as a direct contribution to pledge achievement without these units having been fully accounted for under quantified national pledges in the country of origin, unit quality would depend on the design of the ETS itself. It is possible for baselines and caps in emissions trading systems to be set in such a way that surplus allowances would represent over-allocation rather than genuine emissions reductions. Regulatory authorities managing ETSs may be reluctant to link directly with other schemes unless they were confident in the comparability of the other schemes' caps, which could reduce the likelihood of over-allocated units being internationally traded and counted toward pledges. However, to ensure international confidence in environmental integrity, some assurance of ETS unit quality for internationally-traded units used toward pledges may nonetheless be important.

Further work would be required to develop pragmatic options that facilitate the development and linking of ETS schemes across countries with differences in how their mitigation pledges are defined and quantified, while still providing international assurance of traded unit quality. A key question is what, if any, role the UNFCCC (or a UNFCCC-accredited body) could or should play in this regard. Issues for consideration include:

- Whether sufficient international confidence in unit quality could be provided by a commitment to transparent reporting alone<sup>17</sup>, or whether further measures may be required such as independent information provision.
- Whether an independent body may be better placed than the UNFCCC to provide such independent information on ETSS, should this be required.
- Whether there are benefits to requiring approval (UNFCCC or independent body) for internationally-traded units to be recognised toward pledges, or whether such a process would create too significant a barrier to the establishment and linking of ETSS.<sup>18</sup>
- How the creation of domestic offset or credit units as part of ETS schemes relates to international pledge accounting, as these units could arise from sectors not covered by national pledges.<sup>19</sup>

Domestic ETSS pose one further pledge accounting challenge, as scheme design often allows for the banking of units over time. If an ETS was in operation before the period covered by a national pledge, there will be ETS units in circulation during the pledge period that represent emission reductions from earlier years. This is similar to the use of offset or credit units generated before the pledge period, as was the case with prompt-start CDM credits issued before the KP commitment period started in 2008. This raises the question of whether an international agreement should contain qualification processes for banked units to meet an appropriate quality standard.

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<sup>17</sup> This would be similar to the option CRD.C outlined in section 4 of this paper for crediting mechanisms

<sup>18</sup> Such a process could be similar to that explored for crediting mechanisms as CRD.B in this paper. There would be no constraints on a country's ability to establish an ETS domestically, or to link it internationally with other ETS schemes. The only issue for unit accounting is under what circumstances any internationally traded units would be recognised as contributing to achievement of the purchasing country's pledge.

<sup>19</sup> Australia's domestic offset scheme for land-based industries maintains a separation between those projects that follow Kyoto Protocol rules and others. Only the Kyoto-based offsets are to be allowed for use in the Australian trading scheme, avoiding concerns about how to assure quality of offsets from outside the national pledge.

Where the domestic ETS scheme was operating under a quantified national pledge (such as a Kyoto cap) when the units were generated, these banked ETS units represent emissions previously “authorised” so their subsequent use may be less contentious. However if an ETS was not previously under a national pledge when the banked units arose, or if there was a gap between pledge periods (e.g. between the end of the Kyoto Protocol and the beginning of a subsequent pledge period), the quality of these ETS units is no longer assured by reference to a national-level cap or pledge. In this case there may need to be alternative measures to provide assurance of unit quality. Again, further work would be required to develop pragmatic options for how to assure the quality of banked ETS units that countries wish to use directly as a contribution to achieving a pledge or commitment.

The analysis in this section highlights the complexities of accounting for ETS units from linked schemes. As different ETSs develop and proceed with international linking, further analysis of the issues raised will be required.

#### **4. Governance of international crediting mechanisms**

As at present, developed countries may seek to use emissions reductions occurring in another country, outside of an ETS cap, to count towards achievement of post-2012 mitigation targets. Some advanced developing countries may also seek to acquire credits from other countries, or domestically, to reduce the cost of achieving a national pledge. This may involve new mechanisms in addition to the KP project-based mechanisms (CDM and JI).

Carbon finance, in the form of financial flows for credits, has played a relatively small role in the wider climate finance landscape to date (Buchner et al, 2011). Many commentators now talk of scaling-up market mechanisms to increase the financial flows achievable through crediting mechanisms (eg OECD/IEA, 2010). This relies both on the presence of a strong demand for credits – and therefore ambitious national mitigation pledges and ETS caps – and on the creation of market mechanisms and related institutional structures capable of delivering large volumes of credits. Given the uncertainty of future demand for credits, this analysis considers continued project- or activity-based crediting as well as “scaled up” mechanisms operating at a wider sector or sub-sector level.

In the “middle-ground” scenario (see Figure 3 above) the CDM could continue to operate, regulated by UNFCCC bodies, regardless of whether the Kyoto Protocol enters a second commitment period. It is also possible that new crediting mechanisms (e.g. scaled-up mechanisms operating at the sector level with baselines set below business-as-usual) could be developed and regulated by international bodies within the UNFCCC framework. Although this did not form part of the “middle ground” scenario in Prag *et al.* (2011), it is considered here in comparison with two more decentralised possibilities.

The decentralised options consider how Parties might agree on a level of international co-ordination of bi-lateral or other new crediting market mechanisms introduced by Parties. The emphasis on flexibility for country circumstance means that the UNFCCC bodies would be unlikely to hold the same regulatory authority over such mechanisms as the CDM Executive Board (EB) currently does for CDM. This paper uses the term “new country-led mechanisms” to refer to either bi-lateral or pluri-lateral new crediting mechanisms operated outside of the direct control of the UNFCCC framework. The latest submissions by Parties on proposals for establishment of market-based mechanisms reveal that most Parties consider a need for some level of UNFCCC oversight of such new mechanisms. Several of the submissions point to the need for UNFCCC eligibility criteria or guidelines to ensure transparency (UNFCCC, 2011b).

The CDM, as the most prominent example of a centrally-regulated international GHG crediting mechanism, provides a useful model to explore how market mechanisms can be exposed to different levels of international co-ordination. The CDM is established by Article 12 of the KP, which sets out the purpose of the CDM, its regulatory structure, its funding arrangements and the principles of what may qualify as a unit of emissions reduction under the mechanism. The latter is described as follows:

*Emission reductions resulting from each project activity shall be certified by operational entities to be designated by the [CMP], on the basis of:*

- (a) Voluntary participation approved by each Party involved;*
- (b) Real, measurable, and long-term benefits related to the mitigation of climate change; and*
- (c) Reductions in emissions that are additional to any that would occur in the absence of the certified project activity (UNFCCC, 1998)*

These principles are further elaborated in the modalities and procedures of the CDM (UNFCCC, 2005b) and in extensive further guidance compiled by the Executive Board during its stewardship of the mechanism since 2001. Together these form the basis for the extensive rules-based regulation that governs the creation of CERs to be used by Parties to meet commitments under the Kyoto Protocol. For example, the Modalities and Procedures define the conditions under which Parties with a commitment under Annex B of the Kyoto Protocol may participate in transfers of units.<sup>20</sup> (UNFCCC, 2005b). Building on some of these conditions, as well as overarching principles for the operation of mechanisms and use of GHG units<sup>21</sup> could provide a useful basis for Parties to agree on use of mechanisms operated by national Governments outside of, or in parallel to, the KP framework.

In addition to CDM, other offset protocols have developed similar rules-based approaches to certifying credits. Despite these rules-based approaches, existing offset protocols have been shown to differ in their environmental outcomes (see Box 2).

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<sup>20</sup> These conditions include being a Party to the Protocol, calculating an Assigned Amount according to KP rules, having a recognised system for estimating emissions and sinks, having a unit registry according to KP specifications, submitting inventory reports and information on net transfers of units. See Decision 3/CMP.1

<sup>21</sup> As described in Decision 2/CMP.1

## Box 2. Comparing existing offset programmes

Independent analysis has shown that the same GHG reduction project would earn significantly different volumes of credits depending on the crediting protocol applied (Lazarus et al, 2010). Variation was found in volumes of credits generated from similar sample projects credited under CDM and four US GHG crediting programmes.<sup>22</sup> For two landfill methane projects the variation was as much as 20% in terms of the volume of credits generated for a given year. In the case of two sample manure management projects, the variation between protocols was as much as 300%. For one of the sample reforestation projects, differences between crediting protocols resulted in almost double the volume of credits. This highlights the importance of the choice of baseline scenario, and the rules defining that choice, in identifying emission reduction potential.

In addition to baseline methodologies, the study also pointed out other fundamental differences between the offset programmes. Some protocols apply a standardised approach to assessing baselines and additionality, e.g. in the form of performance-based or practice-based standards applicable to multiple projects. CDM however usually applies a project-by-project baseline and additionality assessment using UNFCCC-approved calculation tools. The Climate Action Reserve, now also linked to the proposed California cap-and-trade system (AB32), operates with project protocols that determine eligibility and additionality of projects using standard criteria and quantify GHG emission reductions using standard baseline assumptions, emission factors, and monitoring methods (Climate Action Reserve, 2010). Similarly, all the protocols apply a regulatory eligibility criterion whereby projects must demonstrate that the project activity is not required by regulation. CDM is alone amongst the protocols analysed in allowing projects where the applicable regulation is not systematically enforced (or where the regulation was introduced after the date that CDM rules were adopted). Differences in terms of eligibility of projects started prior to establishment of the protocol are also apparent.

The divergence of standards shows the importance of co-ordination of credit standards to improve comparability and fungibility of different market mechanisms. Another illustration of this can be found by looking at company GHG reporting methods and initiatives. An analysis of the existing leading methodologies finds that in general there are not common minimum standards and that schemes lack both compatibility and technical comparability (EC, 2010).

The Cancun Agreements request the COP to consider new market-based mechanisms that take into account a number of principles (UNFCCC, 2011a). Whilst some of these principles are already enshrined in the goals of the KP mechanisms,<sup>23</sup> other principles listed in the Cancun decision text are not currently considered under the existing mechanisms – such as complementing other means of support for nationally appropriate mitigation actions by developing country Parties, stimulating mitigation across broad segments of the economy, and ensuring a net decrease and/or avoidance of global greenhouse gas emissions. In the two more decentralised options considered here, it would be at countries' discretion whether they design mechanisms explicitly taking into account these principles. Under the more centralised option CRD.A, Parties would agree modalities and procedures based on these principles that UNFCCC bodies would then regulate and enforce. The level of country flexibility under this option would be a matter for negotiation.

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<sup>22</sup> The study looked at aspects such as the methodology for determining project eligibility and for quantifying the emission reductions generated of four protocols: Climate Leaders, CDM, Regional Greenhouse Gas Initiative (RGGI), Chicago Climate Exchange (CCX) and the Climate Action Reserve (CAR).

<sup>23</sup> For example, ensuring voluntary participation of Parties, safeguarding environmental integrity, assisting developed country Parties to meet part of their mitigation targets, and ensuring good governance and regulation. The principles are listed in paragraph 80 of the Cancun Agreements (UNFCCC, 2011a).

## 4.1 Overview of the options

Table 3 provides an overview of the proposed options discussed in this paper.

Table 3: Overview of options for governance of crediting mechanisms

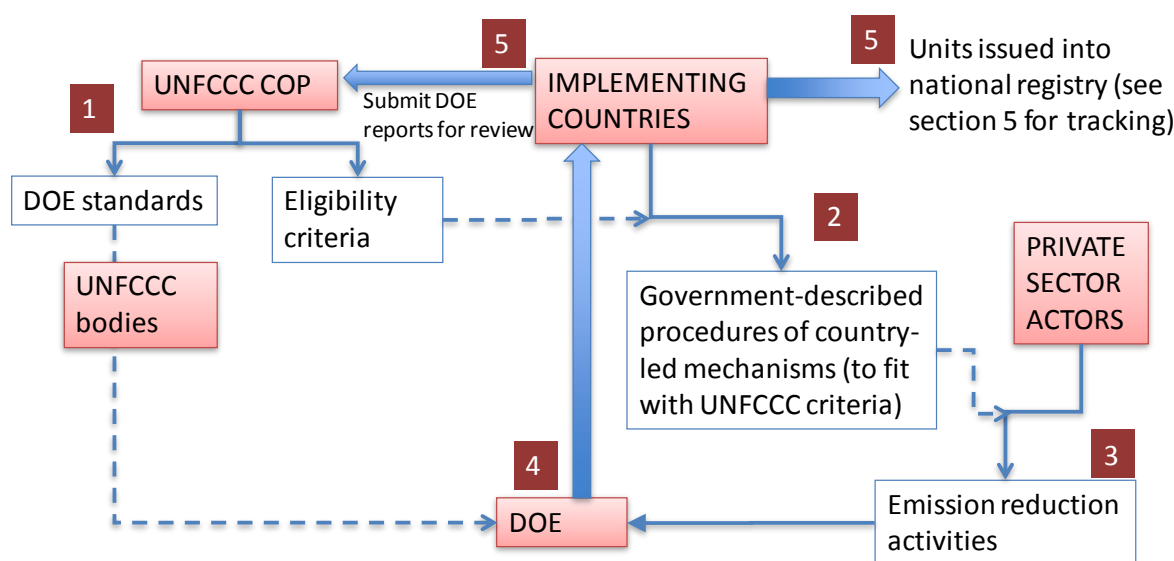
<p><b>Option CRD.A</b>  <u>UNFCCC regulation:</u>            New market mechanism (or mechanisms) introduced through UNFCCC process, with Parties agreeing to modalities and procedures.</p>	<p><b>Option CRD.B</b>  <u>Criteria for unit recognition:</u> UNFCCC agreement on common criteria for international recognition of units from bi-lateral or other country-led crediting mechanisms.</p>	<p><b>Option CRD.C</b>  <u>Transparency approach:</u>            UNFCCC agreement on general principles for crediting mechanisms and minimum requirements on transparency.</p>
<i>Rules and procedures</i>		
<p>Modalities and procedures agreed and operated through UNFCCC process, similar to CDM. However, to observe the principles of the Cancun Agreements to achieve net emission reductions globally, credits would only be awarded for action demonstrated as “beyond business-as-usual”. The decision on what level of host country ambition to build into the baseline may remain a political issue to be negotiated rather than codified. In this case the modalities might describe guidelines for this, rather than detailed rules.</p>	<p>Criteria for international unit recognition could be developed within three areas:            - <u>Project/activity eligibility criteria:</u> could involve an environmental quality test, demonstrated consent of all Parties and the need to use clear methodologies or protocols.            - <u>Methodology principles:</u> could comprise a template for the structure of methodologies and principles for calculating baselines and business-as-usual.            - <u>Monitoring standards:</u> could include standards such as maximum acceptable uncertainty levels and minimum reporting requirements (e.g. data collection frequency).</p>	<p>Principles could be similar to existing KP mechanisms, such as achieving real, measurable, long-term emissions reductions. Countries could be encouraged to base project requirements on international standards, such as ISO14064 (part 2).             Minimum transparency requirements could include: submission to UNFCCC of detailed documentation disclosing how baselines/BAU/project emissions and leakage were calculated, how environmental quality was assured, and verification and monitoring reports specific to the mechanism.</p>
<i>Auditing/Verification</i>		
<p>A system of Designated Operational Entities (DOEs) could continue to be used for verifying emissions reductions under the new mechanisms and the UNFCCC would retain control over the accreditation process for such companies, as for CDM under the KP.</p>	<p>The UNFCCC could retain control over accreditation process of verification agencies, possibly as continuation of DOE system used for CDM. Country-led mechanisms could be required to use DOEs accredited by the UNFCCC for the purpose of verifying emission reductions, in order that units be recognised internationally.</p>	<p>Transparency requirements could stipulate that verification agencies should conform to agreed standards on accreditation of GHG verifiers, e.g. the ISO standards. The International Accreditation Forum could also facilitate coherence between accreditation processes in different countries.</p>
<i>Issuance and information disclosure</i>		
<p>The UNFCCC bodies would continue to oversee issuance out of a central unit registry similar to CDM registry. Details of projects or activities will be made available through a central UNFCCC database, potentially linked to the NAMA registry recording funding requirements.</p>	<p>The issuance of credits from country-led mechanisms would be done under the authority of the participating countries. A central UNFCCC database could record information on volume of offsets or credits generated and verification reports by accredited verifiers.</p>	<p>The issuance of units would be entirely under authority of countries; even if verifiers need to be certified, GHG units themselves would not be certified. Central UNFCCC database containing data and information as per the transparency requirements and verification reports by certified verifiers.</p>
<i>Institutional requirements</i>		
<p>Centrally-organised mechanisms may retain some of the existing KP mechanism bodies, though new UN governance structures may be required as well as changes to national bodies responsible for implementation (such as DNAs)</p>	<p>A permanent but small UNFCCC oversight body may be needed to gather and disclose information on which country-led mechanisms meet agreed UNFCCC criteria for recognition of units.</p>	<p>International institutional requirements under this proposal could be limited to the maintenance of a central database as outlined above, but strong national regulatory bodies would be needed under this option</p>

Option CRD.A represents the most centralised option and is most similar to governance of CDM. Under this option the UNFCCC would agree a set of rules that would define a single mechanism in accordance with the Cancun Agreements. The rules may nevertheless maintain some flexibility for countries to overlay their own procedures for implementation.

Option CRD.B represents a move from a process based on project approval towards a mechanism approval approach. Countries would propose their own crediting mechanisms bilaterally but the UNFCCC process would continue to play an important co-ordination role of such country-led market mechanisms, as depicted in Figure 7. Through the COP, Parties would agree criteria for recognition of units, such that only units issued by mechanisms conforming to the criteria will be recognised as valid units for meeting national pledges put forward under the UNFCCC process. Such criteria would probably focus on the structure and process of the mechanism, rather than on international scrutiny of specific projects or activities. This option aims to ensure a high level of co-ordination between crediting mechanisms, even if procedures themselves are drawn up and implemented by countries or groups of countries. Option CRD.B represents a clear departure from the CDM where the CDM EB, as a body under the UNFCCC, regulates the whole process at the project level.

Option CRD.B represents a bottom-up system where individual country-led mechanisms are drawn closer together by the common criteria agreed for UNFCCC recognition of units. UNFCCC regulation would only entail setting and enforcing criteria for recognising units, and country-led mechanisms would be developed and operated under their own rules. In contrast, option CRD.A represents top-down agreement on one mechanism under the UNFCCC with the possibility of some flexibility in country implementation of that mechanism. The latter is closer to the approach pursued in the latest submission on new mechanisms by the EU (EC, 2011).

Figure 7: Schematic of option CRD.B



1. COP agrees on criteria for UNFCCC recognition of units from country-led mechanisms and agrees that all mechanisms will use UNFCCC-accredited DOEs
2. Countries develop detailed mechanism procedures, influenced by UN criteria for unit recognition
3. Activities are implemented according to country-specific procedures
4. DOEs report to implementing country authority to i) Verify that mechanism meets UNFCCC criteria and ii) Verify ERs according to mechanism details (countries may also choose a validation stage, depending on the type of mechanism)
5. Implementing countries issue reduction units and demonstrate adherence to principles via DOE report

Source: Authors

Under option CRD.C (Figure 8), Parties would agree only general principles for mechanisms and an agreed level of international transparency; UNFCCC involvement would be limited to verifying that the required information has been disclosed. Units issued from projects or programmes that provide the required level of information disclosure would be recognised as eligible for meeting pledges under the UNFCCC process. In contrast to options CRD.A and CRD.B, this option would not establish any direct test on the environmental quality of credits, though information disclosure may allow the quality of credits to be assessed *ex-post* by third parties. Such an approach would not in itself ensure consistency between mechanisms and would be unlikely to lead to fungibility of different units. However, transparency requirements may facilitate market valuation of different credits and improve liquidity in the market to some extent, compared to completely disjointed mechanisms. Participating countries would retain responsibility for the environmental integrity of the units generated by the mechanisms, with the transparency requirement providing an incentive to ensure that real emissions reductions are achieved in order to retain international credibility.

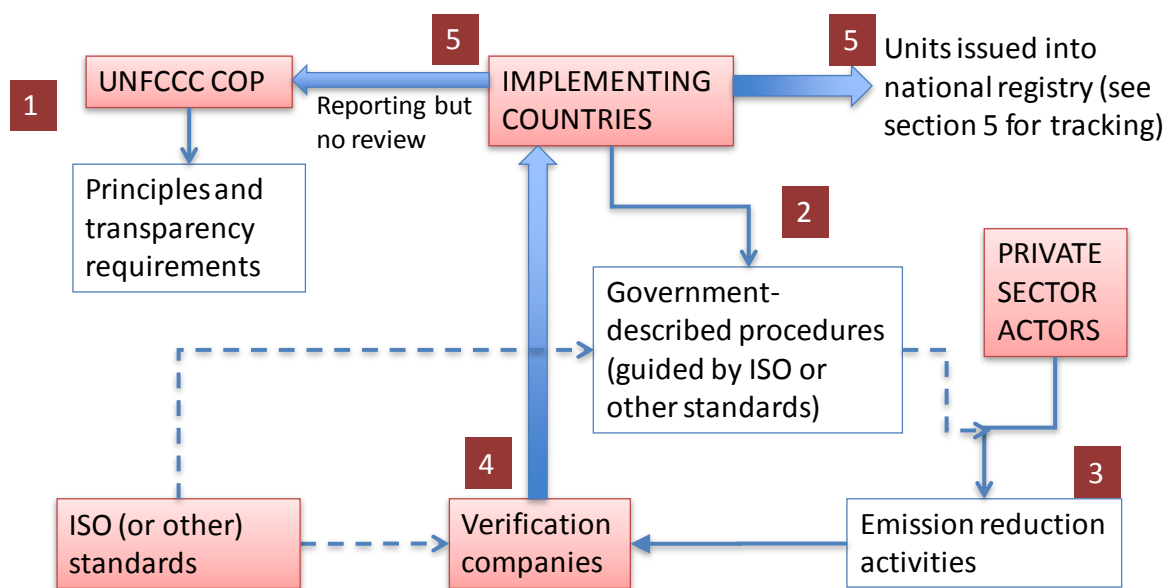
The principles agreed under option CRD.C could encourage countries to develop crediting mechanisms based on international standards such as ISO14064<sup>24</sup>. Use of ISO or other common standards would also open the possibility of building on existing third party crediting standards such as the Verified Carbon Standard (VCS), themselves partly based on ISO standards (VCSA, 2011). Under option CRD.C, the transparency requirement could be one of the items examined during the international assessment and review (IAR) process relating to developed country targets that was established in the Cancun Agreements. In some ways this option mirrors the approach of Track 1 JI projects developed under the KP, where implementing countries have full control over project design and issuance. The analogy with Track 1 JI is, however, limited because JI operates within a capped system (both host and buyer countries have emissions commitments under the KP), thus limiting the environmental liability.

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<sup>24</sup> Part 2 of ISO14064 effectively describes a generic offset project: *Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements*



Figure 8: Schematic of option CRD.C



1. COP agrees on principles for market mechanism and transparency requirements
2. Countries develop detailed mechanism procedures taking into account the UN general principles and possibly other standards such as ISO14064
3. Activities are implemented according to country-specific procedures
4. Countries use verification companies (accredited with ISO or similar standard) to verify ERs according to mechanism details and prepare verification report in line with UN transparency requirements (countries may also choose a validation stage, depending on the type of mechanism)
5. Implementing countries issue reduction units and report activities to UNFCCC process according to transparency principles

Source: Authors

## 4.2 Analysis of the options

### 4.2.1 Rules and procedures

Although **option CRD.A** would involve one or more mechanisms codified by rules agreed at the UNFCCC level, the rules would likely differ from CDM in some aspects. The principles in the Cancun Agreements for new market mechanisms under the UNFCCC state that new mechanisms should take into account broad sectoral coverage and a net global decrease in emissions. The latter requires a different approach to certification than applied under the additionality principle in CDM. In theory, the only activities credited by such a mechanism should be demonstrably more ambitious than business-as-usual, in order that credits issued represent a net global emissions reduction (as opposed to an offset). This could be difficult to fully describe in CDM-style rules, so the issue of ambition might be left to country-level negotiation. This and other challenges for implementing such a mechanism have been discussed elsewhere (e.g. Aasrud *et al.*, 2009). A mechanism designed in this way with central regulation and issuance, could also be expanded to include REDD+ activities, with centralised approval of reference levels and implementation of safeguards (Karousakis and Corfee-Morlot, 2007).

The modalities and procedures agreed under option CRD.A may be less specific than those for the CDM and could leave some flexibility in implementation to the countries participating in the mechanism. Nevertheless, new country-led offset mechanisms would not naturally fit under this option as it would imply adoption of multilateral KP-like rules which would be unlikely to provide the level of flexibility sought by bi-laterally developed mechanisms. However, country-led crediting mechanisms operating under

options CRD.B or CRD.C could function in parallel to a UNFCCC-regulated market mechanism under option CRD.A, if Parties agree to recognise more than one type of mechanism as being eligible to create units that can be used to meet national pledges.

**Option CRD.B** would be based on criteria for recognition of units from country-led mechanisms. Analysis of CDM activities shows that the most contentious areas for regulation of projects have been selecting baselines and proving additionality (measured by the number of projects placed under review, see Annex C of this paper). However, since this option assumes many country-led initiatives rather than a small number of UNFCCC-codified mechanisms, the issue of “net global decrease” would be at the discretion of the implementing countries. Three broad areas are proposed where criteria for unit recognition could be applied to ensure a level of environmental quality: (i) project/activity eligibility criteria, (ii) methodology principles, and (iii) monitoring standards.

**i) Project/activity eligibility criteria** must provide some assurance of environmental quality for emissions units issued from emission reduction activities whilst maintaining sufficient flexibility for countries developing bi- or pluri-lateral crediting mechanisms and remaining attractive to private sector investors. Such criteria could include:

- Implementation of an environmental quality test – a requirement on crediting mechanisms to employ a means for demonstrating the environmental integrity of units issued. Developing a common standard for environmental quality tests may be difficult and details of the test would be designed by the countries implementing each mechanism, with the proviso that the test can be shown to be sufficiently stringent to meet the UNFCCC criteria. The criteria could require that mechanisms demonstrate the following aspects, *inter alia*:
  - A test to show that emissions reductions are real and measurable, which could be demonstrated using means specific to the mechanism, for example a project-level additionality test, a pre-defined positive list of technologies or actions (coupled with monitoring requirements), or a benchmark or standardised baseline approach. Countries may choose to build on experience from non-KP crediting mechanisms.
  - A test for time constraints to prevent old projects or activities being credited under a new scheme; this could require the implementing authority to demonstrate that activities have not been implemented before the introduction of the mechanism. Retrofitting or upgrading of old installations starting after such a date could qualify. A maximum eligibility period prior to the establishment of the mechanism or the bi-lateral agreement between two countries could be defined as a minimum criterion.
  - A regulatory test to give clarity on overlaps between credited activities and host country regulation. This is important because if certain activities are mandated under host country legislation, or if significant subsidies are available, the environmental quality of the mechanism may be called into question. The test could demonstrate that a reduction activity is not already mandated and enforced by local regulation, and clarify the levels of support received through other subsidies or incentives.<sup>25</sup>
- Evidence that relevant emissions-related data is of sufficient quality

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<sup>25</sup> The CDM currently has rules avoiding perverse incentives for introduction of regulation. Any regulation introduced after the adoption of the KP giving comparative advantages to emissions-intensive technologies should be excluded when calculating the baseline scenario (so-called E+ policies). Conversely, any regulation giving comparative advantages to less emissions-intensive technologies introduced since the adoption of the CDM M&P can be excluded from the baseline scenario (so-called E- policies) (EB22, Annex 3).

- Demonstrated voluntary consent from all Parties involved in the mechanism
- Ensuring that emissions reduction projects or activities are based on clear methodologies or protocols that are available to the public

The Environmental Quality Test could also allow countries to demonstrate market mechanisms that move beyond project or programme crediting to crediting whole sectors or sub-sectors against sectoral baselines (Aasrud *et al.*, 2009). This would involve guidance for defining population or sector boundaries, data requirements for sector baselines and safeguards against over-crediting if the sector as a whole is shown *ex-post* to not have achieved the required target emissions level for crediting.

**ii) Methodology principles or guidelines:** If Parties agree that the use of clear methodologies or protocols to describe activities is to be a minimum requirement for credited GHG units to be recognised by the UNFCCC as eligible to help countries meet mitigation objectives, further criteria could be developed around the structure or content of such methodologies. Agreeing guidelines in this way would contribute to comparability of mechanisms in a more fragmented carbon market.

Extensive experience has been gained through the array of CDM methodologies developed to date. It could be feasible to build on this to agree guidelines for methodology development and monitoring, but without centralised approval of individual methodologies. Elements of the CDM procedures could serve as the basis for guidance, such as paragraphs 45-48 outlining how baseline scenarios should be defined in methodologies (UNFCCC, 2005a). For example, paragraph 48 gives project participants flexibility regarding the basic form of the baseline scenario (they may choose to use historical emissions, emissions linked to an economically attractive technology or emissions based on a benchmark of existing good practice in the sector). This could form guidance for methodologies adopted for crediting mechanisms after 2012.

**iii) Monitoring standards:** Agreed monitoring standards could define requirements for accuracy of monitoring equipment or methods for the actual measurement of emissions. Applying materiality thresholds in monitoring standards for new mechanisms would be a way to improve transparency and comparability across mechanisms, whilst maintaining fairly flexible monitoring requirements. Materiality is a common concept within auditing and accounting.<sup>26</sup> In the context of GHG accounting, this could mean a threshold for what omissions or errors are significant enough that they have a *material* impact on the quantity of emissions reductions. Until now this has not been permitted for validation and verification of CDM projects. However, the CDM EB has recently issued a draft standard on the use of the concept of materiality in CDM, following on from similar guidance for JI.<sup>27</sup>

**Option CRD.C** might be a fall-back option if Parties cannot agree on establishing criteria for unit recognition; this option would serve to maintain some international visibility of country-led mechanisms in the absence of any other co-ordination. Option CRD.C would require international agreement on (i) general principles for mechanisms and (ii) minimum disclosure and transparency requirements for country-led mechanisms that seek international recognition. The general principles could again be drawn from text already agreed under the Kyoto Protocol, for example the principles for emissions reduction laid out in Article 12 as quoted in section 4.1 above.

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<sup>26</sup> The International Accounting Standards Board (IASB) defines materiality as follows: “An information is material if its omission or misstatement could influence the economic decisions of users taken on the basis of the financial statements.” (IASB Framework, [www.iasb.org](http://www.iasb.org) )

<sup>27</sup> In the JI standard on materiality the accredited independent entities (AIEs) shall consider materiality in assessment and shall apply the following materiality thresholds: 5% for projects with annual average emission reductions by sources amounting to less than 100,000 tonnes per year and 2% for projects from larger sources.

Transparency requirements could be agreed in the context of wider international agreement on MRV of emissions reduction activities. Details could include an obligation to submit information to the UNFCCC showing how baselines and project emissions were calculated, the estimation of leakage and establishment of project or mechanism boundary and how additionality requirements (if any) or more general environmental integrity criteria were met. There could also be a requirement to submit any verification and monitoring reports. There would not necessarily be any reporting format requirements, only minimum requirements on what aspects of project approval and monitoring should be disclosed. However, it is possible that standard reporting formats for this information could be developed as part of the new reporting guidelines for biennial reports and biennial update reports, and the information reported could be considered as part of the new IAR and ICA verification processes established in the Cancun Agreements (see Ellis *et al.*, 2011). In addition to establishing minimum requirements on what information should be disclosed, agreement on the objectives and principles of disclosure would be useful. Examples of broad principles and objectives would be to provide sufficiently clear information to ensure assessment of environmental integrity of new mechanisms is possible, providing clarity on key aspects of emission reduction calculations and improve the development and enlargement of the carbon market.

#### **4.2.2 Auditing and verification**

Most market mechanisms require a significant body of expertise to verify that emissions reductions are occurring in accordance with the rules of each mechanism, prior to issuance of units or confirming a firm's compliance with ETS requirements. To date, most mechanisms have employed private sector certification companies to fulfill this function, usually accredited by the implementing authority. For domestic mechanisms, such as national trading schemes, this is usually the national government. For the CDM, the EB accredits Designated Operational Entities (DOEs) for this purpose. In both cases, verification agencies are required, even if the verification is only for domestic purposes.

The CDM process uses DOEs for two separate purposes: (i) to validate project credentials prior to implementation, and (ii) to verify emissions reductions once the project is operational. Although the process was designed so that the EB would largely rely on the accredited DOEs for both validation and verification at both stages, the CDM EB can place a project under a review process for further scrutiny. It can be argued that in practice the CDM regularly operates on a double approval system where projects are subject to consecutive scrutiny by both the DOEs and the CDM EB (World Bank, 2010).<sup>28</sup> World Bank analysis suggests that the principle of operating market mechanisms with a strong emphasis on the quality of the work of independent third-party verifiers can function effectively. The options presented here are based on this principle.

Under options CRD.A and CRD.B, the accreditation of independent third party verifiers for new crediting mechanisms would remain under UNFCCC influence. For CRD.B, UNFCCC bodies could retain responsibility for accrediting certification companies that would subsequently be used by implementing country authorities to verify activities under new non-UNFCCC mechanisms. This would require agreement between Parties that only UNFCCC-accredited DOEs or certification companies could be used for verification of activities credited under bi-lateral and other mechanisms.

Under this option, DOEs would evaluate any emissions reduction activity operating under a country-led market mechanism, to verify that the activity adheres to recognition criteria agreed to under COP as well as country-specific qualification requirements. Each mechanism would remain free to define the details of what would be required of projects or activities to be registered within that mechanism. For example,

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<sup>28</sup> This is partly because the complexity of methodologies and the additionality concept has led the CDM EB to question DOE decisions. The World Bank analysis shows that DOEs have on average rejected 7% of CDM projects at the validation stage. For projects that passed DOE validation, only 3.5% have been subsequently rejected by the CDM EB. This suggests that the impact of the second scrutiny by the EB has been somewhat limited and that the final decision of the EB is often in line with the DOE's original opinion, albeit after a substantial delay that can reduce emissions reduction potential and damage a project's financial effectiveness.

mechanisms may or may not have an *ex-ante* validation stage as well as an *ex-post* verification stage. The DOE report would be delivered to the regulator of the implementing country, but part of the report would be aimed at demonstrating adherence with UNFCCC criteria.

Elements of the existing CDM modalities and procedures and the CDM “Validation and Verification Manual” (UNFCCC, 2009) could be further developed to reflect the criteria for unit recognition for country-led mechanisms agreed under the UNFCCC process. Minimum requirements could be developed to promote the quality and consistency in the work of DOEs or other certification companies. Assigning to the UNFCCC the role of accrediting DOEs for country-led mechanisms may be contentious given that DOE capacity is seen as one of the main bottlenecks in the CDM and allowing countries to self-select and approve verifiers may be seen as a way to streamline project approval. However, requiring that the same DOEs be used for different mechanisms, all of which are based on the same criteria for recognition of units, could ease this bottleneck over time as it would allow DOEs to build expertise in a more co-ordinated fashion, compared to requiring multiple competencies for diverse credit standards. Drawing a parallel to the accounting world, it would put the UNFCCC in control of the authorisation process of auditors but only partly the development of the actual accounting rules.

**Under option CRD.C,** Parties could agree that verification bodies would be required to adhere to agreed international standards, such as relevant ISO standards. This would represent a less centralised approach than the UNFCCC accreditation process described in the other options, whilst retaining some level of international comparability. There are two relevant ISO standards focused on the accreditation of GHG certification bodies (see Box 3). In addition, the certification companies could be required to verify compliance with the agreed UNFCCC transparency requirements. The two ISO accreditation standards are currently “programme neutral”, but one possibility would be to extend the ISO standards to also take into account any transparency and disclosure requirements agreed under the UNFCCC. It should be noted that a requirement for ISO-certification of verifiers does not mean that GHG units themselves would be ISO-certified, and accreditation of verifiers and issuance of units will remain entirely under the authority of countries.

In the case of option CRB.B, and in particular CRD.C, ensuring the quality of the verifiers does not *per se* guarantee a solid verification and environmental quality if the criteria against which the verification is done are not strong themselves.

### **Box 3. ISO standards for GHG certification bodies**

The International Organization for Standardization (ISO) has developed several standards for GHG management in recent years as part of the ISO 14000 family of environmental management standards. These include ISO 14065 (“*Greenhouse gases - Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition*”) and ISO 14066 (“*Greenhouse gases - Competence requirements for greenhouse gas validation teams and verification teams*”), which could be used to accredit certification bodies for GHG crediting mechanisms.

ISO 14065 was published in April 2007 and aims to ensure that bodies providing GHG declarations (operating in compliance or voluntary schemes) are competent and have systems in place to ensure impartiality and confidentiality. It includes, *inter alia*, specifications for personnel competencies, information sharing, record keeping, and process requirements relating to planning, validation, verification and issuance. ISO 14066 was published in April 2011 and provides competency requirements and evaluation guidance for teams of GHG auditors. ISO 14065 and ISO 14066 have been designed to be used together as well as in conjunction with other ISO standards in this area, such as ISO 14064 Parts 1-3 for GHG measurement, reporting and verification processes.

The development of an ISO standard begins with identification of the need for a global standard, often by the industry sector concerned, and definition of the potential scope by a technical working group. This is followed by negotiations between countries of the detailed specifications, because a draft standard must be approved by two-thirds of the ISO members involved in its development and 75% of all ISO members who vote on it. The technical working group that developed ISO 14065 had 70 members from 30 different countries, as well as other organisations such as the International Accreditation Forum. The development and publication of this standard took 31 months (Visser and Boehmer, 2007). ISO standards must be purchased for a small fee, for which the user receives a copy of the standard. ISO predicts that the development of professional and personnel standards for GHG management, such as ISO 14065/14066, is one of the emerging areas for the future (ISO, 2010).

#### **4.2.3 Issuance of units**

Under option CRD.A, the UNFCCC would continue to issue units into a central registry, similar to the CDM registry. As such mechanisms would be operating outside of the KP, procedures may need to be adapted to take this into account. Under options CRD.B and CRD.C, the mechanisms considered would be primarily regulated by countries and not by UNFCCC bodies, so issuance of credits would be outside the control of UNFCCC and would be done based on the agreement between the countries involved in the mechanism. Although the UNFCCC will not regulate the issuance of credits under such a scenario, the ability to track the issuance and transactions of any credits remains important (see Section 5).

#### **4.2.4 Information disclosure**

The Cancun Agreements establish a considerable scaling up of the reporting and verification system for developed and developing countries and an increased emphasis is placed on international transparency for emission reduction activities, including additional verification of information on holdings and transactions of carbon credits for developed countries as part of the new IAR process (UNFCCC, 2011a). International involvement in country-led mechanisms could therefore be designed to facilitate sharing of an appropriate level of information about mechanisms.

All three options presented here require a high level of information disclosure from countries and so it would be helpful if the UNFCCC could continue to operate a central database containing information on volumes of credits generated and transacted under different market mechanisms. This could be either based on a central transaction tracking device such as the ITR or on information disclosed by participating country registries, according to how Parties agree to track transactions from country-led mechanisms (see Section 5). Under CRD.A and CRD.B the central database could also contain verification reports submitted that confirm DOE opinion of whether emission reduction activities under country-led mechanisms conform

to agreed UNFCCC criteria for unit recognition. Under CRD.C, the central database would contain data disclosed by countries according to the agreed transparency principles; this could include confirmation that verification is carried out by ISO-certified verification companies, as discussed above.

The financial sector provides an example of how international standards and information disclosure agreements can be used to prevent market fragmentation, and this could be relevant for agreement of standards for crediting mechanisms. Box 4 illustrates how standards have been developed to provide international consistency in market approaches without compromising flexibility. In the case of carbon, markets are to a large extent already widely international and consequently the need for comparability and common offset standards is perhaps more than was the case for international accounting standards in 1973.

#### **Box 4. International accounting standards and disclosure requirements**

The International Accounting Standards Board (IASB) was founded in 2001 to develop and promote the adoption of the International Financial Reporting Standards (IFRS). However, the predecessor of the IASB, the International Accounting Standards Committee, started developing and promoting international accounting standards in 1973. Most of the world's major economies are now already using or in the process of adopting the IFRS. The U.S. Securities and Exchange Commission (SEC) justifies their move towards adopting the IFRS as a result of the increasing integration of the world's capital markets: "An international language of disclosure and transparency is a goal worth pursuing on behalf of investors who seek comparable financial information to make well-informed investment decisions" (SEC, 2008).

The International Financial Reporting Standards (IFRS) are required accounting rules for all listed companies in many of the major economies around the world. A central part of this reporting standard is the mandatory detailed disclosure requirements for all aspects of financial statements. An example of a voluntary, more principle-based, agreement that includes disclosure requirements are the OECD principles for corporate governance. These principles intend to assist governments in their efforts to evaluate and improve the legal, institutional and regulatory framework for corporate governance in their countries. Disclosure and transparency principles are included as part of this voluntary standard outlining the main aspects of corporate governance subject to disclosure as well as principles for quality, auditing and dissemination of information disclosed (OECD, 2004). Although these disclosure and transparency principles are general, and more specific principles or requirements may be required in the case of carbon crediting mechanisms, they provide an example of how such disclosure requirements could be formulated.

#### **4.2.5 Governance and institutional implications**

CRD.A would involve UNFCCC management of all the main functions in the governance of crediting mechanisms, while options CRD.B and CRD.C represent declining levels of UNFCCC influence. For the less centralised options the countries participating in the mechanisms will have to develop their own systems and commit the necessary resources to make the mechanisms operational. With the potential increase in the number and diversity of new mechanisms the need to develop separate systems for many functions such as the verification process, project approval and credit issuance may lead to duplication of efforts and potentially higher overall costs compared to a more centralised approach. On the other hand option CRD.A would require extensive agreement of text under the UNFCCC process and may require new bodies to be set up under the UNFCCC to operate any new mechanism(s).

Given the very diverse methodology and monitoring requirements for different types of emission reduction projects, separate methodology and monitoring standards may have to be developed for different project or sector categories. Agreeing the criteria for recognition of units under option CRD.B could be achieved through the COP requesting SBSTA to elaborate such criteria, building on existing CDM and other UNFCCC documentation as suggested above. The DOE accreditation process for country-led mechanisms could also be done through expansion of the CDM accreditation panel. There would be a large degree of overlap between the DOEs accredited for CDM and for country-led mechanisms, although the accreditation requirements could be different. Once criteria have been agreed, a permanent but small

UNFCCC oversight body may be needed to gather and disclose information on adherence to the criteria by country-led mechanisms. Given the central role of DOEs in verifying adherence to UNFCCC criteria under this proposal, there may not even be a need for such a body as long as DOE verification reports are made available publicly.

While under option CRD.C there may be still some reservations among Parties to disclose sensitive information (e.g. company output and production data for establishing crediting baselines), agreeing on minimum transparency requirements should in principle be feasible. Country-led mechanisms would presumably be developed with the aim of maintaining a strong level of environmental integrity, so a requirement to disclose basic information around this and other aspects of the mechanism should be acceptable and even desirable to maintain credibility in the international community. The degree of detail of these transparency and disclosure requirements could of course be subject to discussion.

It may be more difficult to reach international agreement on the requirement to only use ISO-certified verification agencies as this represents centralisation of an important part of the credit generating process. Agreement would, however, strengthen the integrity of the proposed transparency approach and could therefore signal that countries have strong intent to improve market integration and comparability. Again, SBSTA could be given a mandate by the COP to elaborate minimum transparency requirements. Once the minimum requirements are agreed, institutional requirements under this option could be limited to the maintenance of a central database as outlined above.

### **4.3 Pros and cons of the options**

The options outlined above represent gradations of UNFCCC influence over new crediting mechanisms. Option CRD.A would offer a high level of international co-ordination over which new GHG units enter the international market, but it could prove challenging to agree rules to the required level of detail, especially in the context of the parallel negotiations on the future of the KP and the KP-specific mechanisms.

The other options imply that market mechanisms would be country-led with a lesser degree of UNFCCC involvement. In the case of option CRD.C, it is not clear that a system based only on general principles and transparency requirements would build enough trust between countries to ensure multi-lateral recognition of units for use in achieving international pledges. From the perspective of countries hosting offset projects or credited programmes, facing a range of different mechanisms with differing rules and procedures may increase the barriers and cost of participating in new market mechanisms.

In addition to the pros and cons listed in Table 4, each of the options may be better suited to different types of bi-lateral market mechanism. All three options could function for project-based offset mechanisms with assessment and crediting of individual activities (either at the UNFCCC or country level). CDM provides extensive experience of baseline setting for activities and the three options would serve to provide different levels of assurance of environmental integrity. For new broad-based market mechanisms aiming to reward a whole sector or sub-sector with performance below BAU it may be difficult to define specific criteria or standards, for instance for baseline setting at the sector-level which may be the result of a political or negotiated process. Option CRD.A could perhaps encompass or support the process of setting sector-level baselines below BAU more effectively than option CRD.B which would not involve multilateral decisions to the same extent.

Crediting mechanisms are primarily market mechanisms and so the potential market functioning of each option should be considered. Private sector involvement is in part dependent on the practicality of each crediting mechanism's regulatory procedure, which is not in itself a factor of which of the three options is used. Another important aspect is the degree of fungibility of units, which in turn leads to good liquidity and a healthy trading market. Fungibility is dependent on how units can be used to meet obligations under either domestic trading schemes or international pledges. For the latter, options CRD.A and CRD.B are more likely to provide fungible unit types because of the stronger *ex-ante* assurance that issued credits are in accordance with international recognition requirements.



Table 4: Advantages and disadvantages of options for governance of crediting mechanisms

<b>Option CRD.A:</b> UNFCCC regulation of new mechanisms	<b>Option CRD.B:</b> Criteria for unit recognition	<b>Option CRD.C:</b> Transparency approach
<i>Advantages</i>		
<ul style="list-style-type: none"> <li>• Maintains maximum international control over what qualifies as an international credit unit.</li> <li>• Likely to provide highest level of transparency and unit fungibility internationally.</li> <li>• Likely to make most use of existing UNFCCC institutions and architecture for mechanisms.</li> </ul>	<ul style="list-style-type: none"> <li>• Experience built under CDM, including current work on standardised baselines, can be utilised in developing unit recognition criteria.</li> <li>• Common criteria and UNFCCC accreditation of DOEs could improve fungibility of units. It may also increase simplicity for investors compared to a system with multiple schemes operating to independent standards.</li> <li>• Unit recognition criteria and continuation of some level of UNFCCC oversight facilitate return to an allowance-based system in future.</li> </ul>	<ul style="list-style-type: none"> <li>• Greater flexibility in developing new mechanisms may lead to innovation and new solutions.</li> <li>• Additional resources, compared to centralised UNFCCC resources, could be made available (e.g. for DOE accreditation).</li> <li>• Could be rapid to put into place because development of criteria and accreditation standards is not a prerequisite</li> </ul>
<i>Disadvantages</i>		
<ul style="list-style-type: none"> <li>• New crediting mechanisms in line with the Cancun Agreements could mix political ambition with technical discussions which may take a long time to resolve among Parties.</li> <li>• Existing KP mechanisms have been criticised for being too restrictive and having a burdensome certification process; new UNFCCC regulations for scaled-up mechanisms may result in similar procedural delays.</li> </ul>	<ul style="list-style-type: none"> <li>• UNFCCC operated unit recognition criteria, while less elaborate than CDM procedures, may continue to create unwelcome delays for country-led mechanisms.</li> <li>• Detailed unit recognition criteria could reduce flexibility as well as innovation and sector coverage of country-led mechanisms.</li> <li>• Reaching prompt international agreement on common criteria and UNFCCC accreditation of DOEs may prove difficult.</li> </ul>	<ul style="list-style-type: none"> <li>• Without common standards beyond transparency requirements fungibility of units may be difficult to establish, and it may be hard to establish sufficient trust between countries for recognition of units under UNFCCC.</li> <li>• A proliferation of bi-lateral crediting standards could result in increased market fragmentation, higher transaction costs and lower investor activity .</li> <li>• This proposal would not necessarily make use of existing CDM processes and expertise, and may make it harder to return to a centralised system in future.</li> </ul>

## 5. Tracking of unit transactions

Effective tracking of internationally-traded GHG units is important in order to maintain trust between countries in using market mechanisms to help meet national mitigation targets or pledges. The objective of the existing ITL is “to verify the validity of transactions, including issuance, transfer and acquisition between registries, cancellation and retirement of ERUs, CERs, AAUs and RMUs and the carry-over of ERUs, CERs and AAUs” (UNFCCC, 2002). To achieve this objective, the existing ITL: (i) enables communication between the registries of different countries in order to facilitate transactions of GHG units,

(ii) performs checks on proposed transactions<sup>29</sup> before allowing them to proceed, and (iii) ensures that a central record is kept of transactions that have taken place for reconciliation and reporting purposes. The ITL is currently a tool used only within the Kyoto Protocol. As the international GHG unit trading platform evolves after 2012 and both developed and developing countries start to use unit-based market mechanisms, it is possible that the ITL could continue to serve a wider group of countries, although certain functions may need to be updated. It could also be replaced with a new centralised tool or a network of country registries operating without a central hub.

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<sup>29</sup> At present, the following unit transactions exist: acquisition, transfer, forwarding, internal transfer, issuance, retirement and cancellation.

### Box 5. What does the existing ITL do?

#### Transaction checks

The existing ITL performs both technical and policy-related checks on proposed transactions before allowing them to proceed. The table below summarises the various checks that are performed (based on UNFCCC, 2008). It is important to emphasise that the policy-related checks made by the ITL are merely a translation of the accounting rules that have been agreed by Parties into computer code. Some policy-related checks are likely to be desirable for any future accounting framework (e.g. a check that the units proposed for transaction are held by the initiating registry). Others will depend on decisions taken regarding the governance of crediting mechanisms and accounting of ETS units.

#### Technical and policy-related checks made by the existing ITL

Technical checks	Policy-related checks
<ul style="list-style-type: none"><li>• Check the authenticity of the initiating registry and that a correct version of the data exchange standards is being used</li><li>• Check that over 24 hours has not elapsed since the transaction was initiated</li><li>• Check that both registries are operational</li><li>• Check that the values in the transaction proposal are correctly formatted and within valid ranges</li><li>• Check that the messages in the transaction proposal are in the correct sequence</li></ul>	<ul style="list-style-type: none"><li>• Check that the units proposed for transaction are present in accounts held by the initiating registry</li><li>• Check that the units are not simultaneously involved in another transaction</li><li>• Check that the units have not already been cancelled or retired</li><li>• Check the eligibility of both Parties to participate in the flexibility mechanisms</li><li>• Check that the proposed transaction would not violate the commitment period reserve requirements of either Party</li></ul>

The data exchange standards are a set of technical specifications to “ensure that the registries and the ITL use common procedures and technical specifications for communicating and exchanging data” (UNFCCC, 2008). They are prepared and updated by the UNFCCC Secretariat in consultation with registry developers and Parties.

#### Notifications

The ITL issues automatic policy-related notifications to registries in the following circumstances:

- A Party must cancel units because its LULUCF activities have resulted in a net source of emissions
- A Party must cancel units that it could otherwise carry over to the next commitment period because it is in non-compliance with its commitments under Article 3
- A Party has received approval to carry over units to a subsequent commitment period
- A DOE must cancel units because excess CERs were issued for a CDM project
- A Party has infringed its commitment period reserve
- Various notifications may be issued relating to ICERs and tCERs from LULUCF activities

#### Reconciliation

Once every 24 hours, the list of transactions recorded by the ITL is checked against the holdings of units listed in each registry. In the event that there are discrepancies, the units in question are frozen until the cause of the inconsistency is discerned. The issue is then resolved manually.

Source: UNFCCC, 2008

## 5.1 Overview of the options

This section explores different ways that GHG unit tracking could be achieved under the “middle ground” scenario. Three options are proposed, as outlined in Figure 9 and described in further detail in Table 5.

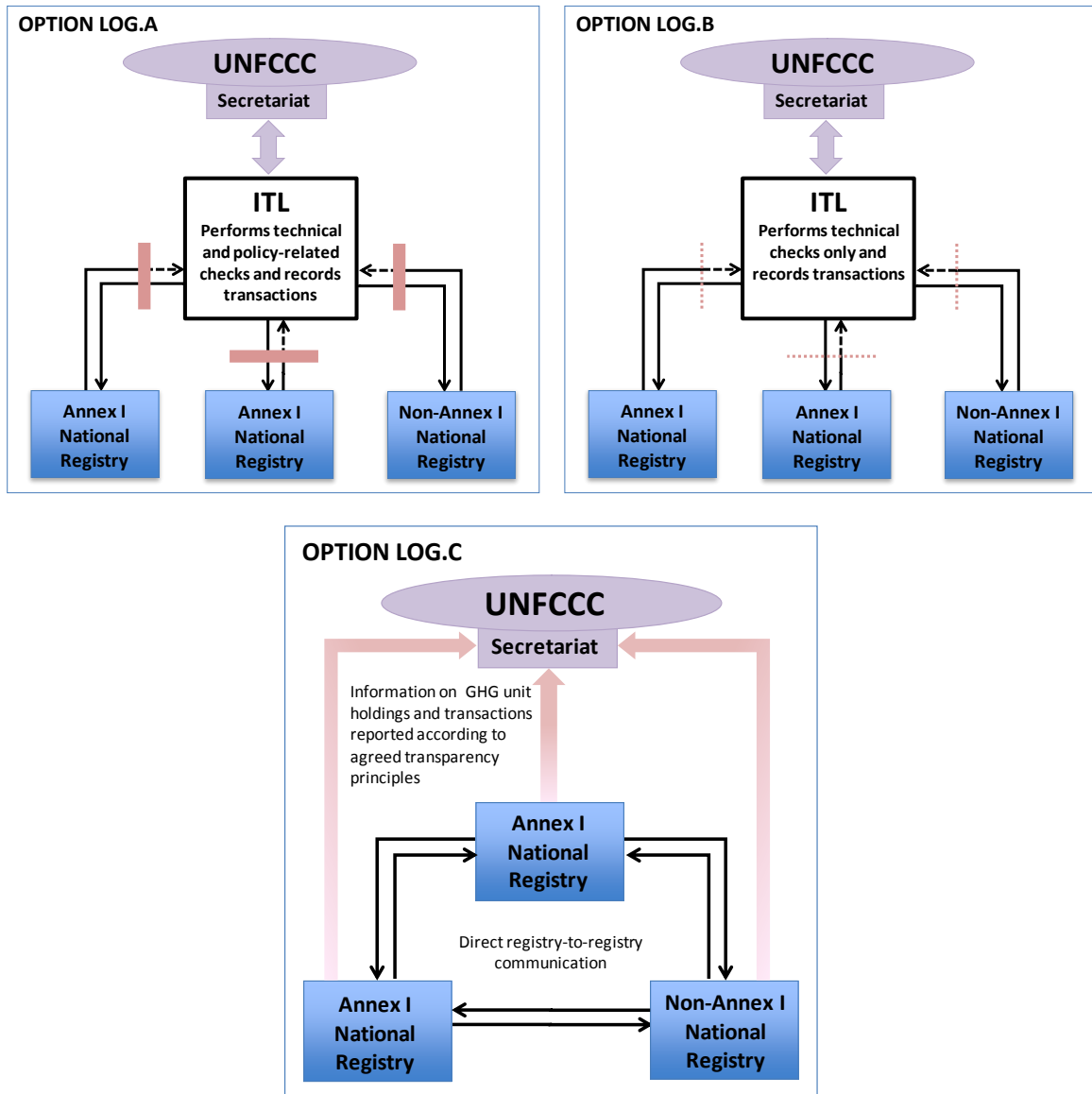
Options LOG.A and LOG.B both feature a central ITL with the ability to facilitate and record GHG unit transactions. Option LOG.A bears the closest resemblance to the existing ITL system. In option LOG.A the objective of the ITL is to verify the validity of transactions; to do this the ITL performs both technical and policy-related checks on proposed transactions before allowing them to proceed. In option LOG.B, the objective is to use the ITL (or other central communication tool; in the rest of this section the term “ITL” is used to mean “ITL or other central communication tool”) to ensure transparency; only technical checks to ensure the smooth operation of the system are conducted by the ITL and any transaction proposed between two compatible registries is allowed to proceed. In option LOG.C the unit registries hosted by participating countries communicate directly and there is no ITL. The objective of this option is to provide the maximum flexibility for Parties to set up bilateral links between registries with minimal UN oversight. In this option, the international reporting and verification system plays a crucial role in ensuring transparency. Option LOG.C represents the largest departure from the system currently operated under the Kyoto Protocol.

The ITL will continue to operate in its current form if some Annex I KP Parties choose to sign up to a second commitment period;<sup>30</sup> the options presented here could therefore exist in parallel for Annex I Parties without commitments under the KP and any non-Annex I Parties wishing to use international GHG units to meet part of their stated mitigation pledges. The principal focus here is on transactions of GHG units issued by crediting mechanisms. However, should Parties decide to link their domestic ETSs it is also possible that countries could use a central tool such as the ITL to facilitate transactions of allowance units issued by ETSs. Alternatively, countries may choose to set up direct links between their national (or regional) ETS transaction logs; for example, in the case of the EU ETS, the EUTL (EU Transaction Log, the new name for the Community Independent Transaction Log). This would resemble the option LOG.C presented here.

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<sup>30</sup> Even if the number of Annex I Parties that decide to participate in a second KP commitment period is small or zero, the ITL will continue to operate until at least the end of 2015 (the end of the true-up period for the first commitment period).

Figure 9: Schematic of options for tracking GHG unit transactions



Source: Authors

Table 5: Overview of options for transaction tracking

Option LOG.A ITL with policy-related and technical checks	Option LOG.B ITL with technical checks only	Option LOG.C Inter-registry communication only
<i>Functions of the ITL</i>		
<ul style="list-style-type: none"> <li>• The ITL continues to operate in similar fashion to its current form, conducting both technical and policy-related checks before transactions complete</li> <li>• Policy-related notifications are issued to registries, as required</li> <li>• The ITL records transactions and executes a daily reconciliation process; annual reports on logged transactions are prepared by the Secretariat</li> </ul>	<ul style="list-style-type: none"> <li>• A central communications tool continues to be used; this conducts technical but not policy-related checks</li> <li>• No policy-related notifications are issued to registries</li> <li>• The ITL records transactions and executes a daily reconciliation process; annual reports on logged transactions are prepared by the Secretariat</li> </ul>	<ul style="list-style-type: none"> <li>• No ITL; all transactions through direct registry-to-registry communication</li> </ul>
<i>Acceptance of units</i>		
<ul style="list-style-type: none"> <li>• The ITL continues to perform policy-related checks on all transactions to prevent infringement of agreed accounting rules or unit recognition criteria; checks performed reflect decisions made by Parties regarding the governance of crediting mechanisms (Section 4)</li> </ul>	<ul style="list-style-type: none"> <li>• Countries submit a one-off or periodic report describing their systems in place to ensure transparency and environmental integrity</li> <li>• Subsequently, there are no policy-related transaction checks; buyer and seller countries are responsible for ensuring unit quality</li> </ul>	<ul style="list-style-type: none"> <li>• Parties choose which other registries they wish to link to; buyer and seller countries are responsible for ensuring unit quality</li> </ul>
<i>Registries, periodic reporting and international verification</i>		
<ul style="list-style-type: none"> <li>• Registry requirements follow UN-defined specification</li> <li>• Information on holdings of units in registries is reported internationally, potentially in biennial reports and biennial update reports; these undergo IAR/ICA</li> </ul>	<ul style="list-style-type: none"> <li>• Registry requirements follow UN-defined specification</li> <li>• Information on holdings of units in registries is reported internationally, potentially in biennial reports and biennial update reports; these undergo IAR/ICA</li> </ul>	<ul style="list-style-type: none"> <li>• Parties set up their own registries; developed and developing countries are encouraged to use common data exchange standards</li> <li>• Information on holdings of units in registries is reported internationally, potentially in biennial reports and biennial update reports; these undergo IAR/ICA</li> </ul>
<i>Administration and funding</i>		
<ul style="list-style-type: none"> <li>• UNFCCC Secretariat continues to administer ITL; RSA Forum continues to serve as advisory board</li> <li>• ITL is funded by users; fees are determined by an agreed methodology</li> <li>• Parties are responsible for maintaining their own registry; developing countries may receive financial or other support for this</li> </ul>	<ul style="list-style-type: none"> <li>• UNFCCC Secretariat continues to administer ITL; RSA Forum continues to serve as advisory board</li> <li>• ITL is funded by users; fees are determined by an agreed methodology</li> <li>• Parties are responsible for maintaining their own registry; developing countries may receive financial or other support for this</li> </ul>	<ul style="list-style-type: none"> <li>• UNFCCC Secretariat provides an advisory service for registry maintenance</li> <li>• Parties are responsible for maintaining their own registry and performing software upgrades; developing countries may receive financial or other support for this</li> </ul>

## 5.2 Analysis of the options

### 5.2.1 Policy-related checks and unit acceptance

In option LOG.A, the ITL could continue to perform policy-related checks of all transactions proposed by the national registries of developed and developing countries choosing to use unit-based mechanisms to help achieve pledges. These policy-related checks would reflect the decisions taken by Parties regarding the governance of crediting mechanisms after 2012 (see Section 4). Some policy-related checks, such as a check that the units proposed for transaction are held by the initiating registry, are likely to be desirable regardless of which governance system for crediting mechanisms is chosen. If Parties choose option CRD.A (the “UNFCCC regulation” approach in Section 4), then the ITL could also check that the transaction proposed does not infringe any internationally agreed rules relating to unit transactions (although the origin and quality of the units themselves would not be checked, since under CRD.A all units would be issued into a central unit registry and so in effect be “pre-approved”). If Parties choose option CRD.B (the “Criteria for unit recognition” approach in Section 4), then the ITL could check at the issuance stage whether the activity or mechanism concerned has demonstrated adherence with internationally-agreed criteria for unit recognition, before allowing the issuance of the units to proceed.

In the latter instance, there are different ways such a check could be managed under option LOG.A. One way could be to grant mechanism-level recognition of units, such that all units issued under a mechanism are “pre-approved” to be transacted via the ITL once that mechanism has been shown to meet agreed criteria for recognition of units under the UNFCCC. Another way could be for the ITL to only allow transactions of units if documentation has been submitted *ex-ante* demonstrating that the underlying emissions reduction activity meets internationally-agreed unit recognition criteria. Units issued from a different project under the same mechanism are not automatically recognised; each activity must be shown to meet the agreed criteria through verification reports. Mechanism-level (unit type) or activity-level checks would provide an additional level of international visibility on the environmental integrity of units and could help to avoid double counting by ensuring that each emissions reduction achieved by a mitigation activity is credited only once (and not multiple times by different crediting standards).

In options LOG.B and LOG.C, no policy-related transaction checks would be conducted and any transaction proposed between compatible registries would be allowed to proceed. In the case of LOG.B it would, however, be possible to conduct a one-off or periodic check that a Party has a commitment to transparency and has implemented means to ensure the environmental integrity of units from its crediting mechanism(s) before allowing the Party to connect to the ITL. A further requirement could be put in place for each Party to periodically renew its connection to the ITL (every five years, for example).

### 5.2.2 Registries and transparency

Under options LOG.A and LOG.B, registries would still be hosted by country governments and designed according to detailed technical specifications developed by the UNFCCC, as under the KP system. Registries would continue to send specific transaction messages to the ITL in a pre-determined order and unique serial numbers would continue to be allocated to units according to a centrally-defined system. Developing countries could be encouraged to establish their own unit registries according to the same specifications for new country-led mechanisms, although it is assumed that the CDM registry would continue to operate and undertake issuance for new CDM projects (in addition, if a new market mechanism is initiated under the CRD.A model, units from that mechanism would also be issued into a central registry). Financial support from developed countries implementing the mechanisms could be required for this purpose.

The existence of a central record of logged transactions also enables reconciliation of the ITL with registries on a regular basis (e.g. daily) to ensure the smooth technical operation of the system. The UNFCCC Secretariat could also prepare annual reports summarising transactions of units between Parties, in addition to reporting by Parties themselves based on data held in national registries.

In option LOG.C, the only information available internationally on unit holdings and transactions would be that provided periodically by Parties themselves (potentially in biennial reports and biennial update reports), based on data held in national registries. These data could provide an input for the two international verification processes established by the Cancun Agreements at COP 16: IAR for developed countries and ICA for developing countries. Although IAR and ICA would be conducted in all of the options presented, these processes would play a particularly important role in ensuring the integrity of the unit accounting system in option LOG.C due to the lack of centrally-recorded data. As the most decentralised of the options, LOG.C would rely on strong national commitments to transparency that could be appraised as part of IAR and ICA. Unit registries could still be established according to UN-defined specifications, to facilitate communication between registries and to allow continued use of existing registries under such a decentralised system. In addition, some Parties may choose to operate their own national or regional log systems, such as the EUTL for the EU ETS, and connect them to registries outside of the country or region. A major challenge would be how to identify unique unit types without an ITL to define serial numbers or other identification features of GHG units. One solution could be that each country-led market mechanism, be it bi- or pluri-lateral, includes provisions for how its unit types will be identified by participating registries. This system could resemble the SWIFT network for international banking transactions.<sup>31</sup>

### **5.2.3 Administration and funding**

Under options LOG.A and LOG.B, the ITL would continue to be administered and funded in a similar way to the existing structures under the KP. The UNFCCC Secretariat would continue to act as ITL administrator, although it is likely that the servers themselves would be operated by private sector contractors. The Registry System Administrator (RSA) Forum could continue to act as an advisory board to the ITL administrator. Registries would continue to operate according to centrally-issued Data Exchange Standards (DES), though these may have to be modified from the existing version under the KP. For funding, Parties could make contributions according to an agreed methodology;<sup>32</sup> minimal new hardware would be required due to the continuation of most of the existing functions. Parties would retain responsibility for funding and maintaining their own registry systems. Developing countries that choose to establish registries in order to participate in new country-led mechanisms may request for financial support from developed country partners or from the international community.

Under LOG.C there would be no ITL to administer and the UNFCCC Secretariat would not be directly involved in unit transaction tracking. The UNFCCC Secretariat may still play a role in unit transactions by providing voluntary technical specifications for registries and co-ordinating IAR and ICA of the transaction disclosure information provided by Parties under this arrangement. Parties would retain responsibility for funding and maintaining their own registry systems and also for ensuring that their registry is capable of communicating directly with other registries and has adequate security system to resist transaction fraud. Developing countries that choose to establish registries in order to participate in new country-led mechanisms, may request financial support from the international community.

## **5.3 Pros and cons of the options**

Having a central ITL reduces the potential for reporting error compared with having a large number of independent information stores with multiple inter-connections. Options LOG.A and LOG.B are therefore more likely to provide effective and robust transaction tracking than option LOG.C.

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<sup>31</sup> SWIFT, the Society for Worldwide Interbank Financial Telecommunications, provides a communication standard to facilitate international financial transactions which, although voluntary, has become the world-wide standard for international bank transfers (see discussion in Prag *et al.*, 2011)

<sup>32</sup> The UNFCCC Secretariat summarised five possible methodologies for collecting ITL fees in 2010 (UNFCCC, 2010).



A key advantage of options LOG.A and LOG.B (both featuring the ITL) is that they would continue to use the hardware, processes and experience that have been built up during the first commitment period of the KP. This would include the existing help desk, data centres, contractors and advisory structures. Option LOG.A, by maintaining the possibility to carry out policy-related transaction checks of certain unit types, probably offers the highest level of environmental quality assurance out of the three options. Another benefit of option LOG.A is that, in the event of a second KP commitment period covering a limited number of Parties, this system could allow Parties using KP mechanisms and Parties using new non-KP mechanisms to be connected to the same central communication tool for tracking and recording GHG unit transactions.

However, the system proposed under option LOG.A may pose a greater administrative burden to new market mechanisms and unit types than the other options due to the policy-related checks involved. It may also have significant resource implications for developing countries because of the stringent requirements to connect to the system. Out of the three options proposed, option LOG.A most closely resembles the existing system under the KP and retains the existing ITL. However, there is no reason why the decision on whether or not to continue to use this technical tool should be coloured by its association with other, more political components of the KP framework.

The system proposed under option LOG.B would retain some level of international co-ordination of country-led market mechanisms whilst being very flexible to new unit types proposed by Parties, and transaction data would be available for international scrutiny without any loss of sovereignty over the use of country-led market mechanisms. Another benefit is that an analogous system already exists: the JI Track 1 process, whereby countries receive a one-off approval to operate their own JI projects (similar to countries connecting to the ITL under this model). A disadvantage of option LOG.B could be a perceived weakening of UNFCCC integrity, stemming from UNFCCC co-ordination and service provision in the absence of direct control over individual units transactions.

The advantage of option LOG.C is that it provides flexibility to countries to implement their own policy measures and market mechanisms, and to choose how and with whom they prefer to exchange units. However, this option has some clear disadvantages. The disparate nature of registries that are not linked through an ITL would make it difficult to accurately follow all transactions occurring internationally and the *ex-post* nature of transaction visibility, whereby countries commit to disclose information on transactions carried out, means that it would be difficult to be sure of the environmental integrity of units transacted in such a system. It could also increase the risk of harmful cyber attacks on the system, due to the likely heterogeneous security standards of national registries and the large number of registry-to-registry connections (as opposed to the central ITL model, whereby each registry is connected only to the ITL). Further, it would be difficult to ensure that units generated and transacted are unique, because without an ITL countries would probably have to establish their own means of identifying units (e.g. serial numbers) bi-laterally. Alternatively, unit types could be transacted without unique identifiers, but this would run a higher risk of double counting through single reduction activities being credited by multiple mechanisms. Option LOG.C would also place an increased burden on host countries to maintain functioning registries with sufficient security capacity to run multiple connections as well as the required information disclosure capability. This, combined with the discontinuation of the existing ITL (unless it continues under a second KP commitment period), would make it more difficult for the international community to return to a centralised system in future, should Parties wish to move in that direction.

Table 6 summarises advantages and disadvantages of the options proposed in this section relating to tracking of GHG unit transactions.

Table 6: Advantages and disadvantages of options for transaction tracking

Option LOG.A ITL with policy-related checks	Option LOG.B ITL without policy-related checks	Option LOG.C Inter-registry communication only
<i>Advantages</i>		
<ul style="list-style-type: none"> <li>• Continued use of existing hardware and processes (including helpdesk, data centres, etc)</li> <li>• Maximum international visibility for quality of units being created and transacted</li> <li>• In case of a 2<sup>nd</sup> KP period, ITL would anyway continue in current form; could potentially link KP and non-KP Party registries if limited number of Parties participate in KP</li> <li>• Lowest risk of double counting</li> </ul>	<ul style="list-style-type: none"> <li>• Provides some international oversight whilst remaining more flexible to country requirements</li> <li>• Some use of existing system (especially in the case that ITL continues to operate under a 2<sup>nd</sup> KP period for some Parties)</li> <li>• Analogy to JI Track 1 for countries achieving one-off UN approval to connect to ITL</li> </ul>	<ul style="list-style-type: none"> <li>• Maximum flexibility for countries to use international market mechanisms according to their own circumstances</li> </ul>
<i>Disadvantages</i>		
<ul style="list-style-type: none"> <li>• May not encourage maximum participation of countries because of top-down approach and stringent requirements for developing countries</li> <li>• Could be inflexible to diverse unit types and market mechanisms</li> <li>• New transaction checks would need to be set up for new market mechanisms, potentially causing additional administrative burden.</li> </ul>	<ul style="list-style-type: none"> <li>• Involvement of UN without control over what passes through ITL might be considered weakening of UN integrity</li> <li>• Difficult to ensure comparability of market mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>• Difficult to ensure transactions are unique (i.e. risk of double counting), both for multiple sales of same unit and for crediting a single action under different mechanisms</li> <li>• Potentially onerous demand on countries to ensure full transparency of transactions and sufficient security</li> <li>• Potential technical difficulties in ensuring communication and transaction disclosure (and environmental quality) without ITL and common unit definition</li> <li>• Continuation of CDM (and CDM Registry) difficult without modification of procedures</li> <li>• Largest departure from current system, so may face delays and technical issues to implement</li> </ul>

## 6. Conclusions

Trading GHG units at the national level is likely to continue after 2012 as a means to achieve emissions abatement at least cost. Tracking these trades is needed to ensure the integrity of the market, and to identify progress that countries are making towards their emissions targets or pledges. After 2012 there is likely to be a greater variety of unit types from new market mechanisms – regardless of whether Parties adopt targets under a second Kyoto Protocol commitment period. The period post-2012 will also see a larger number of countries with emissions targets or pledges than at present, and a variety of forms of such pledges. Given this increasing complexity of GHG accounting, it will be important to maintain a functional platform for international trading of GHG units with clear guidelines and internationally-agreed provisions to ensure transparency and a high level of trust in trading of GHG units.

The future GHG unit accounting framework can usefully build upon existing experience under the FCCC and the KP and capitalise on the lessons learned from existing GHG unit mechanisms, as well as ensuring the cost-effective continuation of existing institutions and systems. For example, provisions for measuring, reporting and verifying information under the FCCC, including the new processes of IAR and ICA referred to in the Cancun Agreements, could help to increase transparency of information on GHG units (Ellis *et al.*, 2011). Some of the principles and guidance developed under the KP could also be useful to all Parties choosing to make use of market mechanisms based on GHG units, in parallel to full use of the KP rules for Annex I KP Parties participating in a second commitment period. For example, Parties could agree to continue to use the ITL, with or without its existing ability to perform policy-related checks on unit transactions, and certification agencies used for market mechanisms could continue to be accredited by the UN (as under the existing DOE system for CDM).

The “middle ground” scenario identified in previous CCXG analysis (Prag *et al.*, 2011) drew on both the KP and country-led systems. This paper has built upon the previous analysis to propose more detailed options for governance of international crediting mechanisms and tracking of GHG unit transactions, both of which are important aspects for maintaining a robust unit-based system. In addition, possible accounting implications of international transfer of GHG allowances from domestic ETSs are considered.

This analysis recognises that with so many unknown variables at present, it is difficult to define how all elements of unit accounting may fit together. All of the options proposed under this “middle ground” scenario could operate in parallel to existing KP processes and mechanisms should some Parties adopt targets under a second KP commitment period, either immediately in 2013 or after a gap. The CDM could also continue to operate whether or not a second commitment period is agreed, and potentially in parallel to new crediting mechanisms.

In some circumstances, units from domestic or regional ETSs may be relevant to international unit accounting. This could be the case if countries seek to use, as a direct contribution towards achieving an emissions pledge, internationally-traded units from linked ETSs or units that have been banked or borrowed from periods outside of the national pledge timeframe. An important decision to be made is whether flows of GHG units from domestic ETSs are directly accounted for within national pledges. If so, then countries in effect take responsibility for the quality of their ETS units through their mitigation pledge. In this case, the integrity of the system depends on international confidence in countries meeting their stated mitigation pledges, and no further international quality assurance of ETS units may be needed. Accounting in this way may provide an extra incentive for governments to choose to link ETSs, as the quality of the linked ETS allowance units are “backed up” by the other country’s quantified national mitigation pledge. However, this accounting would only be feasible if pledges are quantified and defined along similar terms. As such, further work would be required to fully explore the options for accounting of units between ETSs operating under different types of national pledge.

For governance of crediting mechanisms and tracking of unit transactions, options have been proposed which in each case represent different levels of international involvement in the unit accounting

framework. The options for each topic are intended to be independent of each other, i.e. the option “A” of one topic may be implemented with the option “B” of the other topic. Figure 10 summarises the options proposed.

Figure 10: Summary of proposed options for governance of crediting mechanisms and tracking transactions

	<i>Option A</i>	<i>Option B</i>	<i>Option C</i>
<b>Governance of international crediting mechanisms (Section 4)</b>	<b>CRD.A:</b> UNFCCC management of new crediting mechanisms similar to CDM regulatory process	<b>CRD.B:</b> COP agreement on common criteria for recognition of units from crediting mechanisms	<b>CRD.C:</b> Transparency approach, COP agreement on mechanism principles and disclosure requirements
<b>Tracking of unit transactions (Section 5)</b>	<b>LOG.A:</b> Central ITL records unit transactions and conducts both technical and policy-related checks	<b>LOG.B:</b> Central ITL (or other tool) records transactions and conducts technical checks only	<b>LOG.C:</b> No central ITL; inter-registry communication only, transparency ensured by reporting and verification

Source: Authors

In terms of *trading* units, the analysis examines three options for how the UNFCCC could be involved in the governance of international crediting mechanisms (CRD.A, CRD.B and CRD.C). Under the “middle ground”, new crediting mechanisms are likely to be introduced in addition to allowance trading schemes and a continuation of the project-based CDM. Such mechanisms could be designed and regulated within the UNFCCC process (similar to existing CDM), or designed and led by groups of implementing countries. Option CRD.A considers issues for UNFCCC-regulated mechanisms with centralised management and verification. The remaining two options consider how units issued from “country-led” mechanisms might be “recognised” as eligible for achieving pledges put forward under the UNFCCC process. Under option CRD.B, countries would agree on eligibility criteria for unit recognition from “country-led” mechanisms, while option CRD.C would involve agreement on general principles for market mechanisms and minimum transparency requirements; in this case there would be no approval system and all units would be recognised provided relevant information is disclosed. Here a balance needs to be struck between a system that ensures environmental integrity and fungibility of units, and one which allows countries flexibility to implement appropriate activities with minimal administrative burden. Although option CRD.C would provide maximum flexibility for country circumstances, it may prove difficult to build international trust in the environmental quality of units issued under such a system.

Certification agencies could continue to play an important role in crediting mechanism governance. Under option CRD.B, continued UN accreditation of DOEs could facilitate the enforcement of standards. Even under option CRD.C, agreed principles could require that verifiers be certified to international standards, such as the relevant ISO standards.

Effective *tracking* of internationally-traded GHG units is important in order to maintain trust between countries in using market mechanisms to help meet national mitigation targets or goals. Under the KP, tracking is performed by the International Transaction Log (ITL). A key decision is whether or not to retain a central ITL (or other tool) that handles all international transactions of GHG units. There are several advantages to having a central ITL, such as increased international visibility of unit transactions, the possibility to conduct periodic reconciliation exercises and centralised software updates, use of existing hardware and potentially greater system security. The absence of such a central tool would provide greater flexibility for countries but could limit the international visibility of transactions and make it difficult for outside observers to determine whether the units and transactions occurring are unique. In addition, stringent reporting and verification requirements (e.g. as part of IAR and ICA) may be required to ensure transparency.

If a central ITL is retained, it could have the ability to record transactions and conduct both technical and policy-related checks (as at present under the KP – option LOG.A), or record and conduct essential technical checks only (option LOG.B). Under option LOG.A, the policy-related checks conducted would reflect the decisions made by Parties regarding the governance of new crediting mechanisms. Under option LOG.C, there would be no central ITL and transactions would be conducted directly between national registries. The security and robustness of the unit tracking system, as well as the transparency of transactions, should be important considerations for countries when making decisions on this topic.

The future GHG accounting framework is likely to be complex and may include some of the options presented here in different permutations. In each case, the options labelled A, B and C represent differing levels of international involvement in regulating unit-based systems. However, since this analysis is based on the “middle ground” scenario previously identified, all of the options proposed maintain a minimum level of international co-ordination of GHG unit definition, use and tracking.

Some combinations of the options presented in the paper may be more appropriate than others. Table 7 lays out how the UNFCCC process would be involved in three possible governance packages for crediting and tracking. The package with most UNFCCC involvement combines CRD.A with LOG.A, so that units from a UNFCCC-regulated crediting mechanism would be tracked by the ITL, which could be programmed to perform some policy-related checks on unit transactions. The package with moderate UNFCCC involvement combines CRD.B with LOG.A, so that country-led crediting mechanisms based on internationally-agreed criteria for recognition of units would be tracked by the ITL (or similar tool) that has the ability to perform policy-related checks on transactions. In this way the ITL could screen for units from mechanisms that have demonstrated adherence with the criteria for recognition of units. The package with least UNFCCC involvement combines CRD.C with LOG.B. In this way the UNFCCC would have a very limited role in assurance of crediting units – limited to agreement of general principles and transparency requirements – but a central hub would still be used to facilitate communication and transparent exchange of units.

Other combinations may also be possible. For example, crediting mechanisms managed within the UNFCCC process (option CRD.A) or defined by agreed criteria for unit recognition (option CRD.B) could both likely function with tracking of transactions through continued use of a central ITL that does not perform policy-related checks (option LOG.B). Likewise, crediting mechanisms operating only with agreed transparency principles (CRD.C) could also operate without a central ITL (option LOG.C), though this would be challenging to maintain effective transparency and communication, due to the large number of inter-registry connections involved.

The approach proposed for accounting for domestic ETS units could function largely independently of the other two categories. For example, if countries account for ETS units directly within their pledges, they may still adhere to agreed criteria for the recognition of units from crediting mechanisms (option CRD.B). Furthermore, different options could operate in parallel in different countries; for example, different countries could account for ETS units in different ways, or new crediting mechanisms could be introduced under UNFCCC management (option CRD.A) whilst some countries adopt country-led systems recognised under options CRD.B or CRD.C.

Table 7: UNFCCC role in packages for governance of crediting mechanisms and tracking of units

<b>Most UNFCCC involvement</b> (options CRD.A and LOG.A)	<b>Moderate UNFCCC involvement</b> (options CRD.B and LOG.A)	<b>Less UNFCCC involvement, retaining central tracking hub</b> (options CRD.C and LOG.B)
<i>Rules and procedures for crediting mechanisms</i>		
Rules agreed under UNFCCC process; UNFCCC bodies manage rules and procedures.	Limited UNFCCC role (agrees unit recognition criteria).	Very limited UNFCCC role (only agrees general principles and transparency requirements).
<i>Auditing/Verification of credited activities</i>		
Agreement that UNFCCC bodies accredit verifiers.	Agreement that UNFCCC bodies accredit verifiers for country-led mechanisms.	No UNFCCC role.
<i>Project approval and credit issuance</i>		
UNFCCC bodies approve projects/activities and issues credits on the basis of verification.	No UNFCCC role.	No UNFCCC role.
<i>UNFCCC role in recognition of credit units</i>		
Units are scrutinised by UNFCCC at origin, so automatic recognition as helping to meet pledge.	Units only recognised if demonstrated that recognition criteria have been met. Verification could be part of IAR/ICA process.	Units recognised if sufficient information has been disclosed. Verification could be through IAR/ICA process.
<i>UNFCCC role in tracking of unit transactions</i>		
Continuation of UNFCCC-managed ITL (or other tool), which could perform policy-related checks on transactions	Continuation of UNFCCC ITL (or other tool), which could be used to check that units come from recognised activities/mechanisms	Continuation of UNFCCC ITL (or other tool) that performs technical checks only to ensure smooth functioning of system.

The options presented here aim to indicate how Parties to the UNFCCC could agree steps towards maintaining a functioning unit accounting system either outside of, or in parallel to, the KP. The options show how mitigation pledges recorded under the Cancun Agreements could interact with unit-based market mechanisms, such as those that Parties agreed to consider establishing at COP 17 and those detailed in Party submissions on new market mechanisms in 2011. Independently of any decision on the Kyoto Protocol, Parties at COP 17 could take steps to: (i) agree what elements of guidance already existing in the UNFCCC and KP could serve to help countries agree a basis for expressing pledges that facilitates use of GHG units, and (ii) agree a framework for how new unit types might be recognised by the UNFCCC outside of the KP.

Divergent standards for market mechanisms could lead to a fragmented market and subsequent lack of liquidity and investment. Lack of international oversight for internationally-traded GHG units could also lead to weakened trust in the use of mechanisms because of the lack of international assurance of environmental quality. For GHG unit systems to be most effective at stimulating real enhanced emissions abatement through as broad an international market as possible, a balance may be needed between increased national flexibility in design and governance of market mechanisms on one hand, and maintaining some international regulation to avoid severe market fragmentation and to provide international assurance of environmental quality on the other hand.

Even if a number of country-led mechanisms are implemented by groups of countries in the coming years, the ongoing aspects of international oversight of tracking and trading of GHG units proposed in this paper could form the basis for a return to a more centralised, allowance-based system in future, should Parties agree to move in this direction.

## ANNEX A: Categorisation of the Kyoto Protocol rules as defined in the Marrakech Accords

Category	CMP Decision	Title
Emissions Inventory / coverage	16/CMP.1	Land use, land-use change and forestry
Emissions Inventory / coverage	17/CMP.1	Good practice guidance for land use, land-use change and forestry activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol
Emissions Inventory / coverage	19/CMP.1	Guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol
Emissions Inventory / coverage	20/CMP.1	Good practice guidance and adjustments under Article 5, paragraph 2, of the Kyoto Protocol
Emissions Inventory / coverage	21/CMP.1	Issues relating to adjustments under Article 5, paragraph 2, of the Kyoto Protocol
Inventory reporting	15/CMP.1	Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol
Assigned Amount and unit reporting	13/CMP.1	Modalities for the accounting of assigned amounts under Article 7, paragraph 4, of the Kyoto Protocol
Assigned Amount and unit reporting	14/CMP.1	Standard electronic format for reporting Kyoto Protocol units
CDM/JI M&P	10/CMP.1	Implementation of Article 6 of the Kyoto Protocol
CDM/JI M&P	2/CMP.1	Principles, nature and scope of the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol
CDM/JI M&P	3/CMP.1	Modalities and procedures for a clean development mechanism as defined in Article 12 of the Kyoto Protocol
CDM/JI M&P	4/CMP.1	Guidance relating to the clean development mechanism
CDM/JI M&P	5/CMP.1	Modalities and procedures for afforestation and reforestation project activities under the clean development mechanism in the first commitment period of the Kyoto Protocol
CDM/JI M&P	6/CMP.1	Simplified modalities and procedures for small-scale afforestation and reforestation project activities under the clean development mechanism in the first commitment period of the Kyoto Protocol and measures to facilitate their implementation
CDM/JI M&P	7/CMP.1	Further guidance relating to the clean development mechanism
CDM/JI M&P	8/CMP.1	Implications of the establishment of new hydrochlorofluorocarbon-22 (HCFC-22) facilities seeking to obtain certified emission reductions for the destruction of hydrofluorocarbon-23 (HFC-23)
CDM/JI M&P	9/CMP.1	Guidelines for the implementation of Article 6 of the Kyoto Protocol
IET M&P	11/CMP.1	Modalities, rules and guidelines for emissions trading under Article 17 of the Kyoto Protocol
ITL	12/CMP.1	Guidance relating to registry systems under Article 7, paragraph 4, of the Kyoto Protocol
Review	22/CMP.1	Guidelines for review under Article 8 of the Kyoto Protocol
Review	23/CMP.1	Terms of service for lead reviewers
Review	24/CMP.1	Issues relating to the implementation of Article 8 of the Kyoto Protocol – 1
Review	25/CMP.1	Issues relating to the implementation of Article 8 of the Kyoto Protocol – 2

Review	26/CMP.1	Review processes during the period 2006–2007 for Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol
QELRO	1/CMP.1	Consideration of commitments for subsequent periods for Parties included in Annex I to the Convention under Article 3, paragraph 9, of the Kyoto Protocol
Compliance	18/CMP.1	Criteria for cases of failure to submit information relating to estimates of greenhouse gas emissions by sources and removals by sinks from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol
Compliance	27/CMP.1	Procedures and mechanisms relating to compliance under the Kyoto Protocol



## **ANNEX B: Accounting for internationally traded ETS unit flows in pledges**

If a country wishes international ETS unit flows to be recognised directly toward achievement of its pledge, the simplest and most transparent option would be for units imported or exported by ETS participants to be added or subtracted from inventory emissions when reporting the national pledge position. As long as countries hosting linked schemes take the same approach to their accounting, there would not be any double-counting of emission reductions. Note that under this approach there is no international concern about the parameters of the ETSs themselves: what matters from an international accounting perspective is simply that pledges take unit flows into account.

This approach would function best if participating countries:

- specify their pledges as a fixed quantity of emissions over a timeframe, based on agreed accounting principles<sup>33</sup> as described in Section 2. This does not necessarily require a commitment to a specific emissions pathway;
- agree to sufficiently rigorous MRV processes for emissions to provide international confidence that countries' progress towards pledge achievement can be assessed (for example through the IAR and ICA processes);
- agree that when demonstrating achievement of national mitigation pledges, international flows of units between ETSs would be taken into account: units sold by ETS participants into ETSs in other countries would in effect increase the net emissions position of the country (therefore increasing distance from achieving a pledge), while ETS units imported by trading scheme participants would count directly towards pledge attainment;
- agree to also account against their pledge for ETS units carried forward from previous pledge periods, and those banked for future use at the end of the period.

Importantly, this framework does not constrain decisions around establishing or linking individual ETSs. Countries would remain free to determine which (if any) other ETSs to allow their scheme to link to or accept units from, so would retain the ability to impose additional quality restrictions if desired. Rather, this framework describes how units traded between linked schemes would be recognised toward pledges. Note that this could also be implemented on a bilateral basis rather than as part of a multi-lateral agreement; buyer and seller countries could agree to account for ETS units traded between the two countries against their pledges.

An advantage of this approach is that traded units can be recognised toward pledges without any need for scrutiny or approval of the ETSs or the ETS units themselves. This is because the ETS allowance units issued domestically are in effect “backed” by the pledged emissions level: the risk that ETS baselines are set too high falls entirely on the host government. If there are too many units issued to the ETS sectors, then the government may need to stimulate additional abatement in other parts of the economy or to acquire additional units on the international market to meet its pledge. Countries allowing import of ETS units are therefore assured of ETS unit quality with regard to compliance.

This mechanism may appear reminiscent of the Kyoto Protocol accounting system, but there are some clear differences. The system described here would be used for tracking, not for compliance: this is simply a framework for assisting countries to track how inflow and outflow of units contributes to delivery of pledged emissions reductions. The pledge emissions level is not an emissions “cap”: countries specify their own pledges, and the decision to comply with these rests with each country. There would also be no units

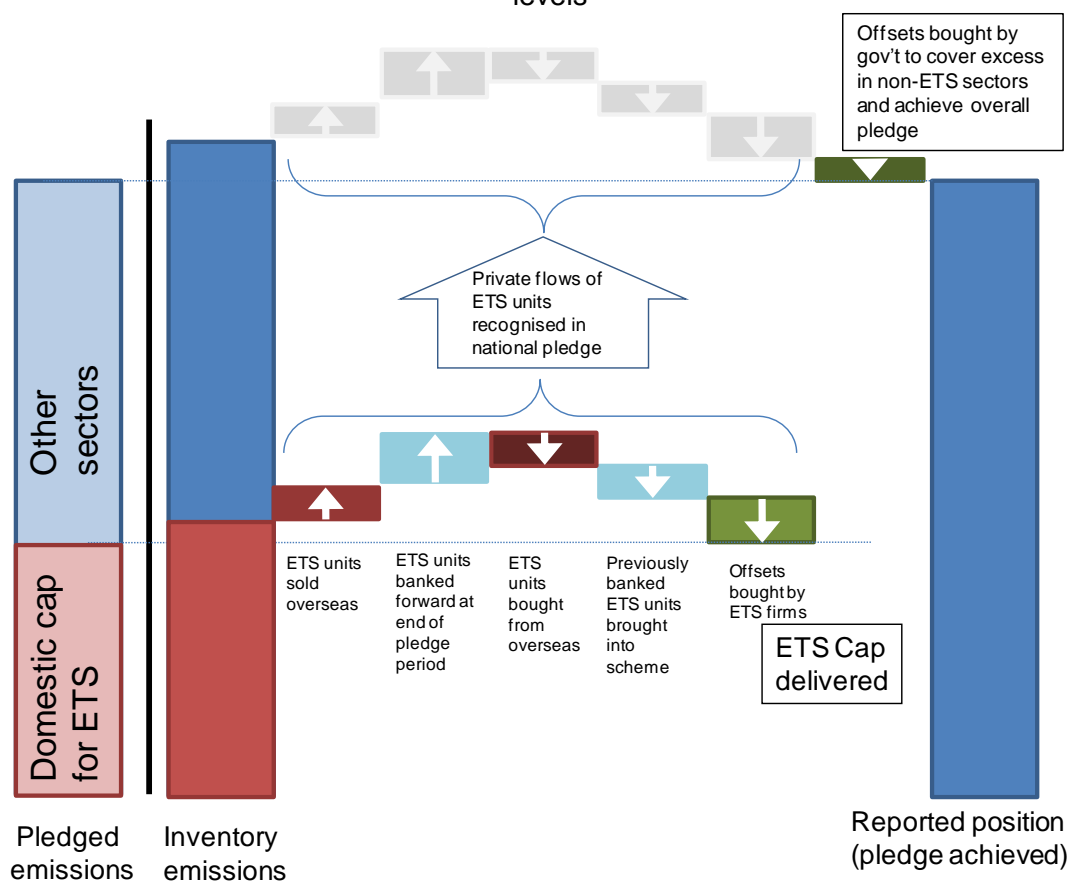
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<sup>33</sup> As noted in Section 2.1, this does not rule out pledges based on emissions intensity of GDP or measured as reductions against a BAU pathway, as long as these can be translated into quantified targets

issued directly under authority of the UN or any central agency: countries make their own decision whether or not to integrate flows of domestic ETS units into their own pledges.

Figure 11 shows how traded and banked ETS units, as well as offset credits, could be accounted for when progress towards a national pledge is reported. In this example, inventory emissions in sectors covered by the domestic ETS are above the domestic cap, but international flows of ETS units, imported credits, and the use of banked units mean that the domestic ETS cap is delivered. When accounting for the pledge at the national level, the country recognises these private unit flows as contributing toward the national pledge (as measured by a domestic tracking device). Any shortfall still remaining after the ETS has been accounted for would need to be made up by government purchase of GHG units, as this shortfall represents excess emissions in the non-ETS sectors of the economy.

Figure 11 : Accounting for ETS unit flows (trading / banking) within overall pledged emissions levels

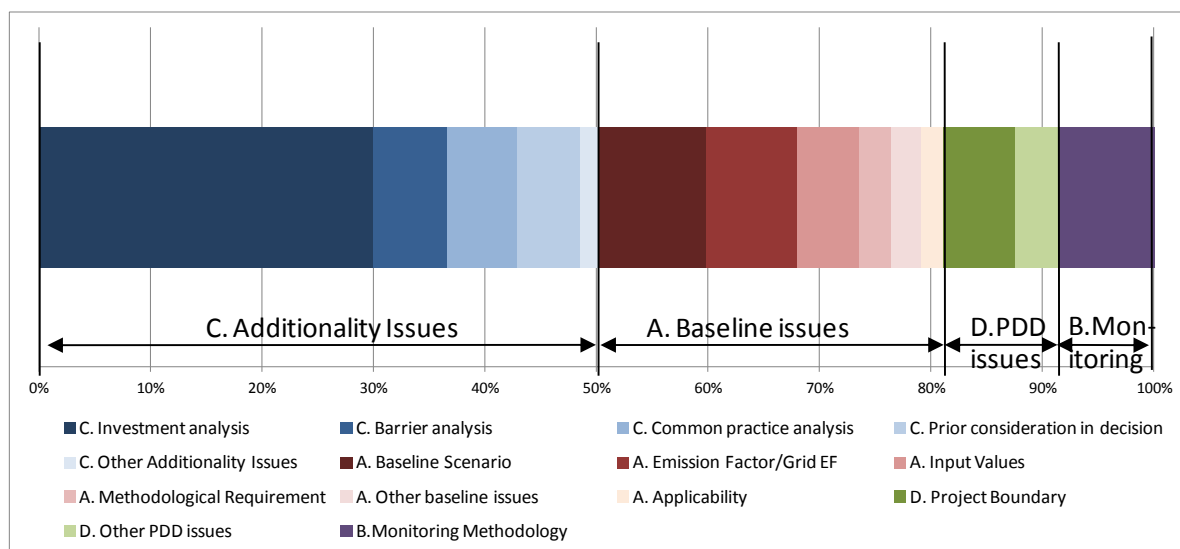


Source: Authors

To fully mirror the “backing” of units undertaken in the Kyoto Protocol, a variant on this option could also be considered in which countries also agree to demonstrate how ETS units are linked to the pledge – that is, when ETS units are issued there would be a corresponding portion of emissions set aside under the pledge. This may further increase buyer confidence in these units, but is not strictly necessary from an accounting perspective: taking into account units traded and banked, as hitherto described, would allow for robust accounting and reporting.

## ANNEX C: The CDM Review and Rejected Project Database

If the CDM EB has concerns about the quality of a CDM project or its documentation, the EB can place a project under further review after the project has been validated by a certification agency. The reasons for reviews are publicly available and have been compiled into a comprehensive database (IGES, 2011). The chart below is based on data for all CDM projects put under review up to March 2011.



Source: Authors, based on data from IGES, 2011 (categories from the IGES database)

Additionality concerns account for more than half of all reasons given for placing projects under review, followed by baseline issues and problems with detailed Project Design Document (PDD) content. Concerns with monitoring issues caused fewer requests for review, but note that these data cover issues raised at the project registration stage; if data for reasons for reviews requested at the credit issuance stage are analysed, monitoring issues become the most important category.

Within the additionality category, by far the most common reason for requesting review is doubt over the robustness of investment analysis carried out to demonstrate that the project is not financially viable without carbon credit revenue. The next two most important categories are barrier analysis and common practice analysis, both of which are alternative ways of reinforcing a project's dependence on carbon credit revenue. The final category, prior consideration of CDM, is more related to timing. Reviews called on this category are often due to doubts that the project was initiated before considering CDM; i.e. that the project might have been initiated before CDM support was considered.

For baseline issues, the most common causes of concern are selection of the baseline scenario (analysis of what was most likely to occur in the absence of the project) and the choice of emissions factors. There are many individual reasons for questioning the baseline scenario, but a large proportion are in fact also relevant to proving additionality; in many cases questions focus on how the project activity has been ruled out as a viable baseline scenario. This means that in effect concerns over additionality form an even greater proportion. PDD issues reported mostly concern definition of the project boundary. However, the majority of cases (c.140/190) are concerning temporal boundaries, i.e. the date at which the project has been considered to start. This is distinct from the "prior consideration" additionality factor above, and mostly concerns projects that may try to earn more credits by claiming a start date earlier than that allowed by the CDM rules.

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## Glossary

AAU	Assigned Amount Unit
AB32	California Global Warming Solutions Act of 2006
AGF	UN Secretary General High-level Advisory Group on Finance
AI	Developed countries listed in Annex I of the UNFCCC
Annex B	Annex to the Kyoto Protocol listing countries with binding commitments
Annex I	Annex to the UNFCCC listing developed countries
AWG-KP	Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol
AWG-LCA	Ad Hoc Working Group on Long-term Cooperative Action under the UNFCCC
BAU	Business As Usual
CAR	Climate Action Reserve
CCX	Chicago Climate Exchange
CCXG	OECD/IEA Climate Change Expert Group
CDM	Clean Development Mechanism
CER	Certified Emission Reduction from CDM (also ICER - long-term CER, tCER - temporary CER)
CFI	Carbon Financial Instrument
CITL	Community Independent Transaction Log (for EU ETS)
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
COP	Conference of the Parties to the UNFCCC
CP	Commitment Period (of the Kyoto Protocol)
CRT	Climate Registry Tonnes
EB	Executive Board (of the CDM)
EC	European Commission
ERT	Expert Review Team
ERU	Emission Reduction Unit (from JI projects)
EU ETS	European Union Emissions Trading System
EUA	EU Allowance Unit
EUTL	European Union Transaction Log (new name for CITL from 2012)
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GS	Gold Standard
HFC	Hydro fluorocarbon
ICA	International Consultation and Analysis
IET	International Emissions Trading
IETA	International Emissions Trading Association

ISO	International Organization for Standardization
ITL	International Transaction Log
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
KP	Kyoto Protocol
LDC	Least Developed Country
LULUCF	Land Use, Land Use Change and Forestry
MRV	Measurable, Reportable and Verifiable
MW	Mega-watt (1 MW = 10 <sup>6</sup> J s <sup>-1</sup> )
N <sub>2</sub> O	Nitrous Oxide
NAI	Developing countries that are not listed in Annex I of the UNFCCC
NAMA	Nationally Appropriate Mitigation Action
NAP	National Allocation Plan (for EU ETS allocation)
NC	National Communication
NIR	National Inventory Report
NZU	New Zealand Unit
PAT	Perform, Achieve and Trade (India)
PoA	Programme of Activities (under the CDM)
QELRO	Quantified Emission Limitation or Reduction Objective
REDD	Reducing Emissions from Deforestation and Forest Degradation
REDD+	REDD projects including measures for conservation, sustainable management of forests and enhancement of forest carbon stocks
RGGI	Regional Greenhouse Gas Initiative (ETS in the north-eastern US states)
RMU	Removal Unit
RSA	Registry Systems Administrators
SBSTA	Subsidiary Body for Scientific and Technological Advice
SEF	Standard Electronic Format
SWIFT	Society for Worldwide Interbank Financial Telecommunications
TREM	Transaction Reporting Exchange Mechanism
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCU	Verified Carbon Unit (from VCS)
VER	Verified Emissions Reduction
WCI	Western Climate Initiative

[www.oecd.org/env/cc/ccxg.htm](http://www.oecd.org/env/cc/ccxg.htm)

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