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Lessons Learned from Linking Emissions Trading Systems:

General Principles and Applications

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EXECUTIVE SUMMARY

In support of the Partnership for Market Readiness work on helping the emergence of Credible, Consistent, and Compatible market-based infrastructure across countries, this report reviews the lessons learned from linking greenhouse gas emissions trading systems.

Two emissions trading systems (ETS) are linked if a participant in one system can use a compliance instrument (allowance or credit) issued by the administrator of either system for compliance. This report focuses on links that enable participants of both ETS to use compliance instruments from either system (bilateral links). The linked systems can adopt common compliance instruments. Or each system can retain its own compliance instruments and accept those from either ETS for compliance, possibly subject to restrictions.

Establishing a bilateral link between two ETS will cause the pre-link prices of the compliance instruments to converge. When a small system is linked with a large system, the price will tend to converge to the pre-link price in the large ETS. When two ETS of similar size are linked, the price will fall between their pre-link prices. A bilateral link will increase the compliance instrument price in one system and lower it in the other system from the pre-link levels. Restrictions on the use of compliance instruments from the linked ETS can limit price convergence.

A bilateral link offers three potential benefits. First, it can make an ETS a viable policy option for a jurisdiction where an independent ETS would be infeasible for technical or cost reasons. Second, a bilateral link can reduce the total cost of achieving the combined emissions caps of the linked ETS. Third, a bilateral link can enhance the operation of the market for the compliance instrument(s).

A bilateral link also involves some risks. First, a bilateral link changes the distribution of costs in each system. The sellers in the ETS with the lower pre-link price and the buyers in the ETS with the higher pre-link price benefit from the price convergence while other participants are made worse off. Second, a bilateral link, by changing the prices of the compliance instruments, can affect the competitiveness of firms that produce emissions-intensive goods or that rely on emissions-intensive inputs. Third, a bilateral link creates an incentive for each system to make smaller cap reductions over time. Fourth, a bilateral link to a system that issues credits for offsets that are not fully “additional” can increase total emissions. Finally, each administrator loses some control over the operation of its ETS as participants in both systems adjust their behavior to benefit from the least cost design features of each system.

Establishment of a bilateral link is a voluntary decision on the part of each of the participating ETS. A decision to link requires:

- A political decision by each jurisdiction that the benefits exceed the risks and that the resulting changes to the balance of environmental benefits and distribution of costs will be acceptable;
- Compatibility and consistency of the design features of the ETS to protect the environmental integrity of the linked systems and manage impacts on the distribution of costs within each system. This may require changes to the design of one or both systems;

- Arrangements to maintain the compatibility and consistency of the design features of the linked ETS over time in the face of economic, technological and other developments; and
- A legal agreement to implement the link.

The political decision to link is influenced by the perceived environmental stringency of the partner ETS, relative compliance instrument prices and resulting cash flows, potential competitiveness impacts, possible legal issues, loss of control, and implications for international treaty compliance.

Relatively few differences in the design features of an ETS present an insurmountable barrier to a bilateral link. Some design differences remain in most linked systems. This means a bilateral link will be easier for systems with similar designs.

To maintain the compatibility and consistency of linked ETS over time requires, inter alia, a process for agreeing on revisions to the regulations of the linked systems, a mechanism to provide assurance of the environmental effectiveness of each of the linked systems, and a procedure for terminating the linking agreement.

The two ETS being linked operate in different national or subnational jurisdictions. This affects the nature of the linking agreement. A binding international agreement, such as a treaty, is an option for national, but perhaps not for subnational, jurisdictions. Alternatively, the two jurisdictions can adopt reciprocal legislation in their respective jurisdictions supported by a non-binding agreement that outlines the commitments of the parties.

Experience suggests that harmonization of designs is desirable even if not technically essential for a link. In the EU ETS, aspects such as the distribution of allowances and operation of the registry were initially left to member countries, but have since been centralized. The EU ETS also demonstrates that linking allows smaller countries, such as Cyprus, Iceland, Lichtenstein, and Malta to participate where it would otherwise not be feasible to use emissions trading as a policy option. The California-Québec link also suggests that linking is easier if the system designs are similar.

Implementing a link before a system is operational is easier because individual participants generally do not know how they will be affected by the link. The linking agreement commits the parties to collaborate on the harmonization and integration of regulatory provisions of their systems including trade of compliance instruments, joint auctions, a common registry and a common auction platform. Environmental stringency was an important political consideration for the linking decision.

Although it is not expected to be implemented, the proposed Australia-EU link was interesting for the limit on the use of EUAs by Australian sources and the phased approach to implementing the link overall. Modification of the Australian price stabilization mechanism had been announced and issues for further negotiation had been identified, but the extent of the design harmonization that would have been agreed is not known.

Specific guidance on ETS design features to facilitate bilateral links is not possible. The design features must be assessed in terms of their compatibility and consistency with those of a potential partner. The changes needed can only be identified through careful comparison of the features of the two ETS to be linked.

The strategy for implementing a bilateral link differs for an ETS that is still being designed and an ETS that is already operational.

When an ETS is at the design stage, as is the case for the ETS being developed by Implementing Country Participants of the PMR, the options are to:

- **Cooperate with other systems at a similar stage of development to cultivate a common design.** The trust and mutual understanding established during the design process and the similarity of the final designs will facilitate a bilateral link.
- **Identify a desirable partner ETS and then develop a design compatible with that system.** A high degree of harmonization will facilitate a link if the potential partner ETS is agreeable.
- **Work with other systems on technical design features such as monitoring, reporting and verification (MRV) provisions, the registry, auction design, and non-compliance penalties.** Harmonization of such features will facilitate linking with other systems.

When two operational ETS decide to establish a bilateral link, it is likely that some features of one or both systems will need to be modified to make them consistent and compatible. Implementation of these changes could be a condition for entry into force of the link. A political commitment by both jurisdictions to link helps drive the negotiations on modification of the design features. A bilateral link of two operational ETS can be implemented gradually. It can be preceded by mutual unilateral links, possibly at different times. A bilateral link with constraints on the use of imported compliance instruments can be implemented with an agreement to relax the constraints over time. A substantial price difference can be narrowed by implementing a common floor price that rises over time. When the floor price approaches the price in the higher price system, the bilateral link can be implemented.

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1. BACKGROUND

The Partnership for Market Readiness (PMR) is working towards defining common approaches to support the emergence of Credible, Consistent and Compatible market-based infrastructure across countries (the "3Cs"). The PMR provides an opportunity for countries to work together to build common frameworks, including monitoring, reporting and verification (MRV), registry and data management systems, which are credible, consistent and compatible. Such work aims to facilitate the recognition of the various emerging domestic market-based mechanisms and the fungibility of the carbon assets they generate to forge a common framework to prepare the integrated carbon market of the future.

In support of work on the 3Cs, this report reviews the lessons learned from linking emissions trading systems (ETS). Section 2 presents the types of links an ETS can establish and discusses the potential benefits and risks of linking. The requirements for a bilateral link between two ETS are summarized in Section 3. How to implement a bilateral link is discussed in Section 4.

2. TYPES OF LINKS AND BENEFITS AND RISKS OF LINKING

This section categorizes ways in which emissions trading systems (ETS) can link and then outlines the main benefits and risks of linking. An ETS establishes an aggregate emissions cap for a defined set of participants. These participants must monitor and report their actual emissions and submit compliance instruments equal to their actual emissions at the end of each compliance period.[1] The compliance instruments can be allowances issued by the ETS administrator or offset credits generated outside of the cap and accepted by the ETS administrator. Compliance instruments can be traded.

An offset system, such as the Clean Development Mechanism (CDM) or Joint Implementation (JI), issues credits for emission reductions or removals achieved by eligible actions in accordance with approved protocols. The protocols set out monitoring, reporting and verification requirements as well as the emission reduction/removal calculation. The participants in an offset system do not have an obligation to remit compliance instruments to cover their actual emissions, so the buyers for the credits issued by an offset system are outside the system.

An ETS can have an offset component. The ETS administrator approves protocols for emission reductions or removals not covered by the emissions cap and issues credits for the verified reductions/removals achieved. These credits can be used by ETS participants for compliance.

In addition to its own compliance instruments, an ETS administrator may allow participants to use allowances and/or credits from another ETS or offset system. That establishes a link as discussed in the next section.

2.1 Types of Links

Two ETS are linked if a participant in one system can use a compliance instrument issued by the administrator of either system for compliance. In other words, the compliance instruments of the two systems are equivalent for compliance use (Mehling and Haites, 2009). It is useful to distinguish:

- A **unilateral link** – one ETS accepts the compliance instruments of another ETS for compliance purposes, but NOT vice versa. System A accepts compliance instruments issued by system B, but system B does not accept compliance instruments issued by system A. A unilateral link often can be implemented without the explicit cooperation of the two systems being linked. Any link to an offset system is a unilateral link for the system that accepts the credits because the offset system participants never need compliance units from another system.
- A **bilateral link** – each ETS accepts the compliance instruments of the other ETS for compliance purposes. System C accepts the compliance instruments issued by system D AND system D accepts

[1] Allowances are issued by an ETS administrator free of charge or by auction. They permit the owner to emit a specified quantity – usually 1 metric ton (1 tonne) of CO_2 equivalent (1 tCO_2-eq) – of greenhouse gases. Offset credits are issued for emission reductions or removals at sources/sinks outside the scope of an ETS. Each system has a different name for its allowances and/or credits – EU allowances (EUAs) for the EU ETS and certified emission reductions (CERs) for the CDM, for example. The term "compliance instrument" covers all allowances and credits that can be used by participants for compliance.

the compliance instruments issued by system C. A bilateral link needs the agreement of both ETS.[2] In August 2012 Australia and the EU announced plans to establish a bilateral link with continued use of their respective compliance instruments. The new Australian government – elected in September 2013 – intends to repeal the legislation that established the ETS, so the link will likely never be implemented.

Another way to implement a bilateral link is to adopt a common compliance instrument, in which case the systems can be considered to be integrated. The EU ETS has a single compliance instrument – the EU allowance (EUA) – that is used in all 31 participating countries.[3] Similarly, the Regional Greenhouse Gas Initiative (RGGI) has a single compliance instrument that is used by all nine member states. Norway had its own ETS from 2005 to 2007 but it has used EUAs since joining the EU ETS in January 2008. In these integrated systems restrictions on the use of compliance instruments from the linked systems are not possible because they have a common compliance instrument.

- **Indirect link –** an ETS that has a unilateral or bilateral link to another ETS that has a unilateral or bilateral link to a third ETS has an **indirect link** to the third ETS. If system A has a unilateral link to system B and system B has a unilateral link to system C, system A is indirectly linked to system C even if it does not accept compliance instruments from system C.

The focus of this report is on the establishment of a bilateral link. Material is drawn from the substantial body of literature relating to this topic. Lessons from practical experience are drawn primarily from the California-Québec link, which became operational in January 2014, and the announced Australia-EU link. Although the Australia-EU link is unlikely to be implemented, work done to prepare for the link provides useful lessons. Information on these links is summarized in Appendix A.

2.2 Price Impacts of Bilateral Linking

Establishing a bilateral link between two ETS will cause the prices of the two compliance instruments to converge.[4] The compliance instruments of linked systems will have a common price determined by the integrated marginal abatement cost curve for the two systems.[5] A larger system typically has a "flatter" marginal abatement cost curve – abatement costs rise gradually as the aggregate level of abatement increases because there are more sources and a wider diversity of potential abatement actions. A smaller system usually has a "steeper" marginal abatement cost curve – fewer sources with fewer potential abatement actions mean that costs rise quickly as the aggregate level of abatement increases.

When a small system is linked with a large system, the integrated marginal abatement cost curve will be similar to the curve of the large system and the price will tend to converge to the pre-linking price in the large system. When two systems of similar size are linked, the price will fall between the pre-linking

[2] If more than two systems have bilateral links with each other it becomes a multilateral link. Analytically, a multilateral link is equivalent to two or more, possibly identical, bilateral links.

3 Aircraft operators may also use European Union Aviation Allowance (EUAA) to comply with the EU ETS.

[4] If the systems are integrated and have a single compliance instrument there will be a single price for that instrument.

[5] The price could also be affected by design features of either system. One system, for example, might have a "price cap" (safety valve) at which price the administrator issues additional compliance instruments. Such a feature would affect the integrated marginal abatement cost curve.

prices of the two systems. A bilateral link will increase the price in one system and lower the price in the other system from the pre-link levels.[6]

To the extent that qualitative and/or quantitative restrictions constrain the quantity of units imported for compliance use, the compliance instruments of the two systems will continue the have different prices.[7]

2.3 Potential Benefits of Bilateral Linking

A bilateral link offers three potential benefits. First, it can make an ETS a viable policy option for a jurisdiction where an independent ETS would be infeasible for technical or cost reasons. The jurisdiction may have too few sources to create a competitive market for the compliance instrument. Or the costs of developing and operating the ETS infrastructure – the system design, a registry, an auction process, market oversight, etc. – may be too high given the number of participants. An independent ETS may not have been viable for several of the smaller countries that participate in the EU ETS, such as Cyprus, Iceland, Lichtenstein, and Malta.

Second, a bilateral link can reduce the total cost of achieving the combined emissions caps of the two ETS because the participants of both systems now face the same marginal compliance cost (the compliance instrument price). Compliance costs for participants in the ETS with the higher pre-link price are reduced by more than the increased costs for participants in the ETS with the lower pre-link price. The reduction in the total compliance cost will lower emissions leakage (increased emissions outside the linked ETS).

Third, a bilateral link increases the size of the market for the compliance instrument(s), which can enhance its operation in several of the following ways (Jaffe and Stavins, 2008; Falchsland et al., 2009):

- More liquidity – there will be more buyers and sellers of the compliance instruments than for either system alone.
- Less market power for large participants – in a small ETS, a few large participants may have market power (the ability to influence the compliance instrument price through their purchases or sales). A bilateral link increases the number of participants, which reduces the market power of large sources.
- Availability of more financial instruments – the larger market for compliance instruments is more likely to support financial instruments, such as options and futures contracts. Such financial instruments can help participants reduce the financial risks associated with procurement of compliance instruments.
- Easier negotiation of trades. The larger compliance instrument market created by a bilateral link is more likely to have a narrower bid-ask price spread, which makes negotiation of the sale price easier.[8]

[6] The increase or decrease may be small for a large system when it links with a much smaller system.

[7] The constraints and the associated price differences create "economic rents," which raises questions about the distribution of these rents. See Vasa, 2010.

[8] A "bid" is a price offered by a buyer while an "ask" is a price sought be a seller.

- Lower transaction costs. A larger market is more likely to support electronic trading platforms for the compliance instruments and related financial instruments thus reducing transaction costs.[9]

With a bilateral link at least one system will import units. However, restrictions on the quantity of imported compliance instruments that may be used for compliance can limit price convergence and the benefits realized. The proposed Australia-EU link included a quantitative restriction on the use of imported compliance instruments by Australian entities.

A recent OECD paper (Lantzi et al., 2013) models the economic competitiveness and emissions leakage impacts when mitigation policy involves multiple ETS with different coverage and stringency. The potential of direct and offset-based linking of ETS as well as border carbon adjustments (BCAs) to address these impacts is investigated.[10] Linking of ETS can address some, but not all, of the competitiveness and leakage issues. Combining both direct and offset-based linking without the use of BCAs is most effective in reducing the losses of global welfare and output of emission-intensive, trade-exposed sectors.

2.4 Potential Risks of Bilateral Linking

A bilateral link entails some risks (Jaffe and Stavins, 2008; Flachsland et al., 2009). A bilateral link changes the distribution of costs in each system (Mehling and Haites, 2009). The sellers in the system with the lower pre-link price and the buyers in the system with the higher pre-link price benefit from the price convergence, while the sellers in the system with the higher pre-link price and buyers in the system with the lower pre-link price are worse off (Ranson and Stavins, 2013). Factors such as the pre-link price difference, the relative sizes of the linked systems and restrictions on the use of imported compliance instruments affect the magnitudes of the gains and losses.

By changing compliance instrument prices, linking changes the production costs of firms that produce emissions-intensive goods or that rely on emissions-intensive inputs, which can affect the competitiveness of such firms. The net effect depends on the price changes in the linked systems, the pre-link output levels of such firms in each system and elsewhere, and each system's provisions to mitigate adverse impacts on emissions-intensive, trade-exposed industries such as free allocations of compliance instruments.

A link to an offset system or an ETS that issues offset credits could lead to higher total emissions if the credits issued are not fully "additional" (Jaffe and Stavins, 2008). If the credits issued exceed the emission reductions achieved, use of the credits for compliance permits higher aggregate emissions.

Researchers suggest that a bilateral link can create an incentive for each system to make smaller cap reductions over time. Smaller cap reductions reduce the quantity of compliance instruments imported or increases the quantity exported. Holtsmark and Sommervoll (2008) argue that this effect is stronger for a smaller ETS. A smaller system would adopt a less ambitious cap because it benefits from exporting more (importing fewer) compliance instruments while benefitting less from the aggregate emission

[9] Without electronic trading platforms buyers and sellers must find each other directly or with the assistance of brokers which entails higher transaction costs.

[10] A border carbon adjustment is a levy imposed on imports from a jurisdiction with no or less stringent greenhouse gas mitigation policies by a country with a greenhouse gas mitigation policy such as an ETS.

reductions. Over time the combined emissions of the linked ETS are higher than if they are not linked. International agreements or other independent processes for setting future emission reduction targets can mitigate these effects.

Each administrator loses some control over the operation of its ETS. Participants in both systems adjust their behavior to benefit from the least cost design features of each system, such as price caps (safety valves), banking and borrowing, including those of indirectly linked systems. Participants will make larger reductions in the system with the lower pre-link compliance instrument price and smaller reductions in the system with the higher pre-link price.

In summary, changes to the design of any of the systems and consequent adjustments by participants can affect the environmental integrity of the linked systems. The effects on each ETS depend on the relative sizes of the linked systems and restrictions on compliance instrument imports. The effects also may be tempered by trade in emissions intensive products.

3. REQUIREMENTS FOR BILATERAL LINKING

It is convenient to group the requirements for bilateral linking into political, technical and legal considerations. These are discussed in turn.

3.1 Background

The design of an ETS reflects a complex balance between the environmental benefits and the distribution of costs. The environmental benefits are reflected in the emissions sources covered, the emissions cap, the offset credits issued by the ETS administrator, the imported units allowed, and design features, such as a safety valve, that allow emissions in excess of the cap under specified circumstances.[11] The distribution of costs is determined by the free distribution of compliance instruments, the emission reductions and removals that can earn offset credits from the ETS administrator and other cost containment features.

The balance of environmental benefits and distribution of costs and hence, the design features, differ for each ETS. Each ETS also reflects the institutional structure, economic circumstances, culture and traditions and other characteristics of the implementing jurisdiction. Each jurisdiction has its own legislative process for implementing and amending the ETS. The economic structure and vulnerability to external competition is unique to each jurisdiction. And each jurisdiction has its own currency and language(s).

A bilateral link changes the balance of environmental benefits and distribution of costs for each of the participating systems because it changes the compliance instrument price and, probably, some design features. The smaller the difference between the compliance instrument prices and the greater the similarity of the ETS designs, the smaller the impact of a bilateral link on each system.

Box 1: Essential Requirements of a Bilateral Link

Establishment of a bilateral link is a voluntary decision on the part of each of the participating ETS. A decision to link requires:

- A political decision by each jurisdiction that the benefits exceed the risks and that the resulting changes to the balance of environmental benefits and distribution of costs will be acceptable.
- Compatibility and consistency of the design features of the ETS to protect the environmental integrity of the linked systems and manage impacts on the distribution of costs within each system. This may require changes to the design of one or both systems.
- Arrangements to maintain the compatibility and consistency of the design features of the linked ETS over time in the face of economic, technological, and other developments. These arrangements should be part of the legal agreement to implement the link.
- A legal agreement to implement the link.

[11] An ETS administrator may issue offset credits for verified reductions or removals not covered by the emissions cap in accordance with approved protocols. A safety valve allows the administrator to issue sufficient additional compliance instruments to cover actual emissions during a compliance period if the compliance instrument price reaches a specified level.

To-date, bilateral links between ETS are rare, perhaps due to the limited number of systems or the low probability of finding two jurisdictions where, at the same time, the political leaders appreciate the benefits of a bilateral link. The Western Climate Initiative began with eleven states and provinces that planned to implement linked ETS with a common design. Of those eleven jurisdictions, to-date only California and Québec have implemented a link (Klinsky, 2013). Successful experience may increase the number of bilateral links as more ETS are established.

3.2 Political Considerations that Affect the Establishment of a Bilateral Link

The jurisdiction responsible for each ETS must conclude that establishing a bilateral link is desirable. That is a political decision influenced by the following considerations (Mace, et al., 2008; Ranson and Stavins, 2013):

- Perceived environmental stringency – credibility – the nature of the cap, the schedule of cap reductions, longer-term emissions reduction targets, the offsets allowed, and other design features could lead to higher total emissions if the ETS are linked.
- Perceived benefits of linking – expected cost savings, enhanced price stability, greater market liquidity and other expected benefits of linking.
- Domestic action – linking increases or reduces domestic action with effects on economic activity and ancillary environmental benefits.
- Relative prices of the compliance instruments – a much lower compliance instrument price is perceived to be an indicator of a less stringent cap and leads to large financial flows to the ETS with the lower price.
- Distributional effects – which participants in each system benefit from linking.
- Competitiveness impacts – linking may raise compliance costs for emissions-intensive firms in one system and lower them for competing firms in the other system.
- Loss of control – a link requires that the designs of the two ETS be compatible, which limits design choices for the administrators of each system.
- Legal issues – the legal nature of the linking agreement and potential liability issues due to linking.
- International treaty compliance – a country with a national emissions limitation commitment under the Kyoto Protocol likely will insist that imported units be valid for Kyoto compliance. That likely would preclude a bilateral link between an ETS in a Kyoto party and an ETS in a non-Kyoto party.

Other considerations, such as domestic opposition to emissions trading and a jurisdiction's international political strategy, may also influence linking decisions (Ranson and Stavins, 2013).

Box 2: California's Statutory Criteria for an ETS with which it is Considering a Link

California has a process for approving an ETS with which it is considering a link. The governor must find that the ETS meets the following criteria (California Air Resources Board, 2013d; California, Office of the Governor, 2013):

- The linked system's requirement for greenhouse gas reductions, including, but not limited to, requirements for offsets are equivalent to or stricter than California's.
- California retains the ability to enforce emission compliance obligations against entities located inside or outside California.
- The proposed link provides for equivalent or stricter enforcement of program requirements and applicable laws by California or the linking jurisdiction.
- The proposed linkage and any related participation of the State of California shall not impose any significant liability on the state or any state agency for any failure associated with the linkage.

The first three criteria focus on credibility by seeking to ensure that the bilateral link will not weaken environmental integrity. The fourth seeks to ensure that the bilateral link will not create significant legal liabilities for California.

Assessing the environmental stringency of an ETS is difficult because it is affected by many of the system's design features including the nature and level of the cap, types of offsets allowed, quantity of offsets and imported units allowed, banking, borrowing, price stability mechanisms, enforcement, and non-compliance penalties (California Air Resources Board, 2013d). The emissions cap will be a key element of such an assessment since it is the most visible indicator of environmental stringency. The perceived stringency of a cap is likely to be assessed, not necessarily accurately, based on:

- The type of cap. An intensity cap is often perceived to be less stringent than an absolute cap although this may not be correct if the economic growth rate for the system with the intensity cap is substantially higher.[12]
- Long-term targets. Comparing a 20% reduction from 2005 by 2020 with a 15% reduction from 2010 by 2020 is challenging due to the different base years, but more significantly, the expected economic growth in each jurisdiction. And targets can be changed.
- The rate of decline of the cap. Higher economic growth may make a 2% annual cap reduction more stringent than a 3% annual reduction in a jurisdiction with slower economic growth.

Compliance instrument price differences, or differences in marginal compliance costs, are another indicator of perceived stringency (Zetterberg, 2012; Ranson and Stavins, 2013). The system with the lower compliance instrument price is often perceived as having a less stringent cap. Linking systems with large differences in the pre-link compliance instrument prices will lead to substantial financial flows to participants in the system with the lower price. The large financial flows may be a political concern in themselves, but they may also be perceived as an inappropriate reward for the less stringent cap.

[12] For an economy whose emissions are growing at 4%/year, an intensity reduction of 3%/year is a more stringent target than a 2%/year absolute reduction for an economy whose emissions are growing at 1%/year.

Offset credits, as noted in California's criteria, are another politically sensitive aspect of perceived stringency (Zetterberg, 2012). Offset credits are perceived to vary in quality due to permanence, additionality, and other factors. Differences in the perceived quality of offset credits do not preclude a bilateral link, but they are an important political consideration. Domestic offsets often are an important part of the political bargain underlying implementation of the ETS, so adjustments to the eligible offsets as part of a bilateral link may be difficult. Australia and the EU had not agreed on how to deal with credits for changes in land-use practices and carbon sequestration under Australia's Carbon Farming Initiative. The EU ETS currently does not accept units generated by such activities.

3.3 Design Factors that Affect the Establishment of a Bilateral Link

An ETS has many design features including, but not limited to, type of cap; stringency of the cap; emissions covered (gases, sectors, threshold, point of regulation); allowance distribution (free or auction, rules for free allocations, auction design, new entrants and closures); offset programs (eligible measures, geographic scope, restrictions on compliance use, use of imported units); cost containment features (price floor, price cap or safety valve, banking, borrowing); monitoring, reporting and verification (MRV) rules; enforcement (stringency and non-compliance penalties); registries; market oversight; and public disclosure of information. ETS designs differ; indeed virtually every ETS has unique design features.

To ensure that aggregate emissions cannot rise and the combined market functions effectively after establishing a bilateral link, the design features of the linked systems must be compatible and consistent. Some features need to be harmonized for political reasons. For example, different coverage of, or allowance allocations to, emissions-intensive firms could deter a bilateral link by ETS jurisdictions that are significant trading partners due to political concerns about the impact on competitiveness.[13] Other features need to be harmonized to protect environmental integrity or operation of the market. For example, the price rise due to a bilateral link could trigger a safety valve in one ETS thus increasing total emissions.[14] But the designs need not be identical.

Assessment of the design features that should be harmonized to establish a bilateral link between two ETS requires a detailed analysis of each system (and all systems to which they are linked). Design features acceptable for some links are not acceptable for others. California and Québec, for example, both have a price floor and a price containment reserve that acts as a soft ceiling. Australia has a price floor and price cap while the EU ETS has neither. The Australia-EU linking announcement states that Australia will not implement its price floor and will base the price cap on the price of EU allowances.

[13] Competitiveness impacts likely would be a bigger concern for an EU – Switzerland link than for an EU – Australia or the California - Quebec link. The distribution of compliance instruments to refineries differs between California and Quebec, but their refineries do not compete in the same market so the different treatment does not raise competitiveness issues.

[14] A safety valve authorizes the system administrator to issue enough additional compliance instruments to cover actual emissions if the compliance instrument price reaches a specified level. Such a feature in the system with the lower pre-link price could be triggered by the price increase due to a bilateral link with a system with a higher pre-link price.

Mace et al. (2008) and Goers et al. (2012) assess the feasibility of bilateral links between the EU ETS and several operational and proposed ETS.[15] Burtraw et al. (2013) assesses the feasibility of a bilateral link between the Regional Greenhouse Gas Initiative (RGGI) and the California ETS.[16] Tuerk et al. (2009) consider possible links between proposed systems in Australia, Japan, New Zealand and the United States.[17] These studies do not agree fully on which design features need to be harmonized to support a bilateral link. That is not surprising. Since the studies consider potential links between different ETS the features that need to be harmonized and those that are already compatible will differ.[18] The studies also define the design features differently and group them into different categories – two for Tuerk et al., three for Burtraw et al., and four for Mace et al. and Goers et al.

Box 3 classifies the design features based on those studies recognizing that there may be exceptions in specific cases.[19] Specific guidance on design features to facilitate bilateral links is not possible. The design features must be assessed in terms of their compatibility and consistency with those of a potential partner. Then one or both ETS may need to modify some features to ensure compatibility and consistency. The changes needed can only be identified through careful comparison of the features of the two ETS to be linked. California and Québec staff conducted line-by-line comparisons of the respective program regulations in order to harmonize them in every respect needed to ensure the environmental integrity and compatibility of the systems (California Air Resources Board, 2013d).

It is important to remember that a bilateral link with no restriction on the use of imported units allows participants to use the more generous provision of either system if it is advantageous to do so. For example, a borrowing provision in one ETS and not in the other allows all participants to sell current period units and use the borrowing provision if that is profitable. If either system is linked with other systems the most generous provisions across all of the linked systems can be used.

A bilateral link can include quantity restrictions on compliance use of compliance instruments imported from the linked system. Quantity restrictions on imports can limit any unanticipated adverse effects due to differences in design features. On the other hand, quantity restrictions also limit the potential benefits of a bilateral link and can lead to different prices for the compliance instruments of the linked systems. Australia proposed to limit use of international instruments to 50% of each participant's compliance obligation with a sub-limit of 12.5% for CERs, ERUs, and RMUs.

[15] Mace et al. (2008) divides features that need not be harmonized between those for which comparable stringency is needed and those for which harmonization is desirable but not strictly necessary. Goers et al. (2012) classifies features on the basis of whether harmonization is "essential", "politically required", "desirable", or "not essential".

[16] Burtraw et al. (2013) rates the political importance of each design feature as "Yes", "No" or "Maybe".

[17] See also Haites and Mullins (2001), Baron and Bygrave (2002), Haites (2003), Ellis and Tirpak (2006), Sterk et al. (2006), Schüle and Sterk (2008), Bramley et al. (2009) and German Emissions Trading Authority (2013).

[18] Mace et al. (2008) and Goers et al. consider potential links with the EU ETS while Burtraw et al. (2013) considers a potential link between RGGI and California and Tuerk et al. (2009) considers proposed systems in Australia, Japan, New Zealand, and the United States.

[19] For example, differences in sectoral coverage could become a political concern if they are perceived to create competitive distortions.

Box 3: Classification of the Harmonization of Design Features Needed for a Bilateral Link

Design features that need to be harmonized to address political concerns

- Type of cap (absolute or intensity)
- Stringency of the cap
- Offset crediting provisions
- Commitment periods
- Stringency of enforcement

Design features that need to be harmonized to protect environmental integrity or market operation

- Cost containment provisions
- No ex-post issuance of allowances (except for new entrants)

Design features that can differ but for which harmonization is desirable

- Compliance instrument tracking - registries
- Allocation methods (free allocation rules and auction design)
- Sources and gases covered (gases, sectors, emissions threshold, point of regulation)
- Compliance periods
- Rules governing new entrants and closures
- Monitoring, reporting, and verification rules
- Non-compliance penalties (provided that they are sufficiently stringent in each ETS)
- Market oversight
- Public disclosure of information

Source: Based on Mace et al. (2008), Tuerk et al. (2009), Goers et al. (2012) and Burtraw et al. (2013)

Note: The studies do not agree fully on which design features need to be harmonized to support a bilateral link. They define the design features differently and consider potential links between different ETS. For a proposed link between two ETS a specific design feature may fall into a different category.

Several aspects of the implementation of the EU ETS differed across participating countries, although these differences have been reduced over time. During phases I (2005-2007) and II (2008-2012) each country prepared a national allocation plan for the distribution of allowances; the quantity allocated free to each participant, the quantity to be auctioned (within limits), and the allocation to new entrants.[20] In Phase III an increasing share of the allowances will be auctioned and the allocation of free allowances is subject to common rules.

Initially each country operated its own registry. The Community International Transaction Log (CITL) linked the country registries to process domestic and international transfers of compliance units. In response to a theft of allowances from several national registries in January 2011, the European Commission suspended all EU Member States' registries and quickly implemented additional, harmonized security measures to restore the integrity of the ETS market infrastructure (Merrill Brown,

[20] The national allocation plans were subject to review by the European Commission. During Phase II Norway sold a larger share of its allowances than existing EU ETS members.

et al., 2012). A new registry regulation, adopted in November 2011, improved regulatory oversight and market security and consolidated all national registries into a single Union Registry.

Switzerland has changed the design of its ETS from January 2013 to match that of the EU ETS in anticipation of linking (Siegwart, 2013). To match the EU ETS, refineries are now included, but the total number of participants fell from about 400 to about 50 with annual emissions over 10,000 tCO_2/year.[21] Participation had been "voluntary" based on a strong financial incentive, but is now mandatory for the 50 remaining participants. The annual cap adjustments and allowance allocations will match those of the EU ETS. The non-compliance penalties differ, in part, due to different currencies.

The California and Québec systems differ in terms of the scope of the coverage and penalties. Some sources of HFCs, PFCs and SF_6 covered by the Québec system are regulated outside the ETS in California. Non-compliance penalties are higher in Québec than in California. Although the minimum price is established in the same way in both California and Québec, the currency is different. Prior to each auction Québec's minimum price will be converted from Canadian to U.S. dollars using the current exchange rate, then the higher of the two minimum prices will be used as the minimum price for the auction.

Australia and the EU had identified the following issues to be addressed by the linking agreement:

- Measurement, reporting, and verification arrangements;
- The types, quantities and other relevant aspects of third-party units that can be accepted into either system;
- The role of land-based domestic offsets;
- Implications, if any, for supporting the competitiveness of European and Australian industries in particular sectors exposed to a risk of carbon leakage; and
- Comparable market oversight.

The differences in the designs that would have remained is not known.

In summary, relatively few differences in the design features of an ETS present an insurmountable barrier to a bilateral link. Some design differences remain even in integrated systems. Specific guidance on design features to facilitate bilateral links is not possible because compatibility and consistency of design features must be assessed relative to those of a potential partner. This means a bilateral link will be easier for systems with similar designs.

3.4 Sustaining a Bilateral Link over Time

If a bilateral link is established, the compatibility and consistency of the linked systems must be maintained over time in the face of technological, economic, political, administrative and other changes (Haites and Wang, 2009). Each of the ETS is governed by legislation and/or regulations implemented by the host jurisdiction. Changes to an ETS -- such as extension of the cap, changing the distribution of allowances, or changing the floor price -- require amendments to the relevant legislation and/or regulations. The processes for amending legislation and regulations will differ by jurisdiction; for example, they may require public consultation in one jurisdiction but not in the other.

[21] Emissions by the smaller sources are still subject to an existing CO_2 levy.

To maintain the compatibility and consistency of the systems, linked ETS typically negotiate a linking agreement that, inter alia, covers:

- A process for agreeing on revisions to the regulations of the linked systems, such as a committee of the senior administrators of the linked systems;
- A mechanism to provide assurance of the environmental effectiveness of each of the linked systems, such as exchanges of enforcement staff and joint evaluation of offset protocols and/or projects; and
- A procedure for terminating the linking agreement.

The linking agreement does not replace either jurisdiction's processes for amending legislation or regulations. Rather it specifies mechanisms and processes to help the administrators of the linked ETS agree on changes to their systems and coordinate their implementation to maintain compatibility and consistency in the face of unforeseen future developments.

The elements of the California-Québec linking agreement are listed in Box 4. Mace et al. (2008) includes a similar list of elements for a mutual recognition agreement.

Box 4: Elements of the California-Québec Linking Agreement

The California-Québec agreement incorporates the following elements (California Air Resources Board, 2013c):

- Harmonization and integration process
  - consultation process
  - regulatory harmonization
  - offset protocols
  - mutual recognition of compliance instruments
  - trade of compliance instruments
  - joint auctions
  - common program registry and auction platforms
- Operation of the agreement
  - supervision and enforcement
  - coordinated administrative and technical support
  - consultation committee
- Miscellaneous provisions
  - jurisdiction
  - confidentiality of information
  - public announcement
- Final provisions
  - withdrawal procedure
  - amendments and third parties
  - resolution of differences
  - communications
  - coming into force and duration of the agreement

3.5 The Legal Form of the Bilateral Linking Agreement

The two ETS being linked operate in different national or subnational jurisdictions. The bilateral linking agreement can take the form of a binding international agreement, such as a treaty, or mutual recognition of compliance instruments by the domestic law of the participating jurisdictions (Mace et al., 2008). Subnational jurisdictions are governed by the regime, such as a national constitution, that defines their status and legal personality and could be constrained from entering into a binding agreement with each other or with foreign jurisdictions (Zetterberg, 2012). A bilateral link also could be implemented without an explicit agreement between the ETS administrators.

The term 'treaty' is used for any agreement between two or more countries or international organizations that creates legally binding rights and obligations for the parties and that is governed by international law in relation to its validity, application, interpretation, and enforceability (Mehling and Haites, 2009). A treaty must be formally approved by each party using its own procedures. Once entered as a treaty, the linking agreement is binding on the regulator in each jurisdiction and it can only be amended or terminated through procedures allowed for by the treaty. Default in the implementation of the agreement can lead to sanctions and remedies specified in the treaty or through international law.

Two jurisdictions that do not have the capacity, or do not wish, to enter into a legally-binding agreement, can provide mutual recognition of each other's emissions trading system can adopt reciprocal legislation in their respective jurisdictions. These reciprocal commitments can be supported by a non-binding agreement that outlines the commitments, but the commitments are implemented and enforced through each jurisdiction's separate domestic legislation. The California-Québec agreement falls into this category.

Two ETS can implement mutual unilateral links rather than a bilateral link (Mehling and Haites, 2009). Each jurisdiction's unilateral link specifies the external units it will accept for compliance use and the registry arrangements that allow the administrator to accept the imported units for compliance purposes. Implementation of the unilateral links can be preceded by informal negotiations on the issues that need to be addressed for a bilateral link, but there is no formal agreement between the systems. Compliance instrument transactions involving participants in different systems are then private contracts governed by private international law.

A determination of possible options for a bilateral agreement can only be made on a case by case basis.

4. IMPLEMENTING A BILATERAL LINK

4.1 Requirements for a Bilateral Link

A bilateral link requires a joint political decision by jurisdictions whose systems are to be linked. The credibility of the partner ETS usually is a key consideration in that decision. Then the design features of the two ETS must be sufficiently compatible and consistent to protect the environmental integrity of the linked systems and manage impacts on the distribution of costs within each system. Finally, an agreement is needed to implement the link and establish mechanisms to maintain the compatibility and consistency of the systems over time.

The political decision to link is influenced by the perceived environmental stringency of the partner ETS, relative compliance instrument prices and resulting cash flows, potential competitiveness impacts, possible legal issues, loss of control, and implications for international treaty compliance. The perceived environmental stringency of a partner ETS is likely to be assessed, not necessarily accurately, on the basis of its emissions cap (type of cap, rate of decline of the cap and long-term emission reduction targets), relative compliance instrument price (a lower price is interpreted as an indication of a less stringent cap), and differences in the perceived quality of offset credits, if any.

The design features of the linked systems must be compatible and consistent to ensure that aggregate emissions cannot rise and the combined market functions effectively after establishing a bilateral link. The designs need not be identical, but greater similarity makes linking easier. Specific guidance on design features to facilitate bilateral links is not possible. The design features must be assessed in terms of their compatibility and consistency with those of a potential partner. The changes needed can only be identified through careful comparison of the features of the two ETS to be linked.

An agreement is needed to implement a bilateral link. The formality of the agreement can range from a treaty to an informal agreement to establish mutual unilateral links. The agreement should include mechanisms for maintaining the compatibility and consistency of the systems in the face of technological, economic, political, administrative and other developments as well as provisions for withdrawal or dissolution.

4.2 Lessons Learned from the Bilateral Linking Experience

The integration of Norway into the EU ETS, the California-Québec link, the announced link between Australia and the EU, and the planned link between the Swiss ETS and the EU ETS yield several lessons on how to establish a bilateral link.

The EU ETS initially delegated decisions of the distribution of allowances – allocation of free allowances to participants and the quantity auctioned – to its member countries, within limits. Each country also operated its own registry. Over time these functions have been centralized such that they are consistent across countries. Minor differences, such as the level and currency of non-compliance penalties, exist. This experience suggests that harmonization of designs is desirable even if not technically essential for a link.

The EU ETS experience also demonstrates that a bilateral link can make an ETS a viable policy option for a jurisdiction where an independent ETS would be infeasible for technical or cost reasons.

The California-Québec link indicates, as the literature and the EU ETS experience suggest, that linking is easier if the system designs are similar and that environmental stringency is an important consideration for the linking decision. The California-Québec agreement commits the parties to collaborate on the harmonization and integration of regulatory provisions of their systems including trade of compliance instruments, joint auctions, a common registry and a common auction platform. Although the caps have been established through 2020, other aspects of environmental effectiveness, including offset protocols and enforcement, are covered by the agreement. The harmonization and integration work in these areas will be guided by a Consultation Committee. Finally, the agreement contains provisions for withdrawal.

The Australia-EU bilateral link was not as advanced; issues to be addressed by the agreement were identified but details of the extent of the design harmonization and the mechanism(s) for sustaining compatibility are not available. The compromise on price stabilization is interesting; the Australian ETS had both a price floor and a price cap while the EU ETS has only limited capacity to respond to "high" prices.[22] Australia agreed to drop the price floor and to base the price cap on the price of EUAs. Australia established a 12.5% sublimit on use of CERs, ERUs, and RMUs within an overall limit of 50% on the use of international instruments. It is not known whether there would be a limit on the quantity of Australian allowances used by EU installations, possibly integrated with the limit on the use of CERs and ERUs. The phased approach to the bilateral link, beginning with a unilateral Australian link with the EU ETS is interesting.

4.3 Designing an ETS to Facilitate Bilateral Linking

When an ETS is at the design stage, as is the case for the ETS being developed by some of the Implementing Country Participants of the PMR, it can cooperate with other nascent systems at a similar stage to develop a common design. The decision to link can wait until the design is complete. This is the Western Climate Initiative model that led to the California and Québec link. The trust and mutual understanding established during the ETS development process and the similarity of the final designs facilitate a bilateral link.

A second option for a system that is still being designed is to identify a desirable potential partner and then develop a design compatible with that system. A high degree of harmonization would facilitate a bilateral link if the potential partner ETS is agreeable. Some design features can differ from those of the potential partner. In those cases, clearly understanding the reasons for the difference will help identify possible compromises during the linking negotiations.

A third option for a system that is still being designed is to work with other systems on various design features. The best candidates for cooperation are technical, rather than politically sensitive, features

[22] Article 29a of the ETS Directive allows specified measures to increase the supply of allowances available to the market if, for more than six consecutive months, the allowance price is more than three times the average price of allowances during the two preceding years.

such as monitoring, reporting, and verification (MRV) provisions, the registry, auction design, non-compliance penalties and possibly market oversight.[23] Such cooperation can involve both operational systems and systems still at the design stage because many of these provisions need to be updated regularly.[24] The International Carbon Action Partnership provides a forum for such cooperation.[25]

4.4 Bilateral Linking for Operational ETS

Where two operational ETS decide to establish a bilateral link, as in the case of Australia and the EU, it is likely that some features of one or both systems will need to be modified to make them consistent and compatible. The changes to be implemented by each ETS are a matter for negotiation. Australia's suspension of its price floor and modification of its price cap are an example. EU treatment of Australian credits for changes in land-use practices and carbon sequestration had yet to be negotiated. A political commitment by both jurisdictions to link helps drive the negotiations on modification of the design features.

A bilateral link of two operational ETS can be implemented gradually in any of the following ways:

- Systems potentially interested in linking can independently work toward agreed common design features. Burtraw et al. (2013) call this "linking by degrees". During this period the systems are not linked.
- Each system can establish a unilateral link with one or more instruments, such as CERs. If those instruments are used for compliance in both systems, they are indirectly linked. That indirect link could serve as the starting point for negotiation of a bilateral link.
- A bilateral link can be preceded by mutual unilateral links, possibly at different times. Australia was to establish a unilateral link with the EU ETS in July 2015 with the full bilateral link to come into effect in July 2018.
- If a substantial difference in compliance instrument prices is a barrier to a bilateral link, the two systems could agree to a common floor price that rises over time. The floor price would be set so that it affects only the compliance instrument price in the lower price system initially. Once the floor price approaches the price in the higher price system, the bilateral link could be implemented.
- A bilateral link can include a constraint on the quantity of imported units that can be used for compliance as Australia proposed. A bilateral link could be implemented with such a constraint for either or both systems. Then the constraints could be gradually relaxed.

[23] Each jurisdiction will have institutions responsible for oversight of financial institutions and markets. The main requirement is to confirm that the institutions in each jurisdiction will be able to regulate participants in the compliance instrument market effectively.

[24] For instance, MRV provisions need to be updated as new monitoring and communication technologies are developed and registries need to be updated as the software is upgraded.

[25] See www.icapcarbonaction.com

APPENDIX A

INFORMATION ON BILATERAL LINKS

This appendix provides information on the California-Québec link that becomes operational in January 2014 and the announced Australia-EU link (that may now not be implemented).

A.1 The California-Québec Link

California and Québec both launched an emissions trading system in 2012 (Sopher and Mansell, 2013, California; Sopher and Mansell, 2013, Québec; Québec, no date). The two systems are virtually identical in design. Each system has three compliance periods: 2013-2014, 2015-2017 and 2018-2020. Each system has a cap that declines annually after taking into account increased coverage of emissions sources in 2015. From 2015 each system will cover about 85% of the jurisdiction's greenhouse gas emissions. Québec has a more stringent goal; 20% below 1990 levels by 2020 compared with 1990 emissions by 2020 for California. The California system will be much larger; a cap of 334.2 million tCO_2e in 2020 compared with 54.7 million tCO_2e for Québec.[26] The California system will cover about 600 facilities while Québec system will cover 110 facilities (California Air Resources Board, 2013d).

Both provide some free distribution of compliance instruments and quarterly auctions of the balance. Both systems include various cost containment and flexibility provisions, including banking, holding limits, a true-up compliance period, a price floor, a price containment reserve and offset credits. Further harmonization may be needed for some of these provisions. Some eligible offsets are the same – e.g., ozone depleting substance (ODS) destruction – but others are unique – e.g., urban forests for California. The systems will use a common allowance. Compliance use of offset credits is limited to 8% of a company's compliance obligation for each compliance period.

Each system has its own process for approving a link with another system. California has a process for approving an ETS with which it is considering a link. The governor must find that the ETS meets the following requirements (California Air Resources Board, 2013a; California Air Resources Board, 2013d; California, Office of the Governor, 2013):

- The linked system's requirement for greenhouse gas reductions, including, but not limited to, requirements for offsets are equivalent to or stricter than California's.
- California retains the ability to enforce AB 32 against entities located inside or outside California.[27]
- The proposed link provides for enforcement of applicable laws by California or the linking jurisdiction of program requirements that are equivalent to or stricter than California's.
- The proposed linkage and any related participation of the State of California shall not impose any significant liability on the state or any state agency for any failure associated with the linkage.

California and Québec have signed an agreement to link their systems (California Air Resources Board, 2013c). The agreement, which came into effect in January 2014, commits the parties to collaborate on the harmonization and integration of their emissions trading systems. Harmonization efforts will cover regulatory provisions, offset protocols, mutual recognition of compliance instruments, trade of

[26] Both are in metric tonnes of CO_2 equivalent.

[27] AB 32 (Assembly Bill 32), also known as the Global Warming Solutions Act of 2006, set California's emissions reduction target and authorized the creation of an emissions trading system to help achieve the target.

compliance instruments, joint auctions, a common program registry and auction platform, supervision and enforcement, and administrative support. The work will be guided by a Consultation Committee.

Differences will remain after the systems are linked. Emissions of hydrofluorocarbons (HFCs), sulphur hexafluoride (SF_6) and perfluorocarbons (PFCs) by some sources are covered by the ETS in Québec and by separate regulations in California. Non-compliance penalties are different in Québec and California.

Each jurisdiction will develop and propose its own amendments. Québec and California will coordinate their respective amendments to maintain the compatibility and consistency of the linked ETS. Amendments require the approval of each party in accordance with its own process. A link with another ETS also requires the approval of each party in accordance with its own process. A party can withdraw from the agreement by giving at least 12 months' written notice.

A.2 The Announced Australia-EU ETS Link

In July 2012 Australia implemented a greenhouse gas emissions trading system covering about 60% its emissions (Jotzo, 2012: Sopher and Mansell, 2013, Australia). Although the system began operation, in September 2013 the new Australian Prime Minister reaffirmed his campaign promise to repeal the Clean Energy Future legislation, thus terminating the Australian ETS and the announced link with the EU ETS.

From mid-2012 to mid-2015, the system was to operate as a carbon tax with a government determined price of A\$23/tCO_2e rising to A\$25.40/tCO_2e for 2014-15. Emissions trading was to start in July 2015, but the price was to be kept within a defined range for a further three years, with a floor price starting at A\$15/tCO_2e and a ceiling price starting at A\$20/tCO_2e above the expected international price. The emissions cap was to be set five years in advance on the advice of an independent body. After the start of trading, compliance instruments were to be distributed free to emissions-intensive, trade-exposed entities with the balance sold at auction, unlimited banking and limited borrowing were to be allowed, and domestic agriculture and land-use management projects could generate offset credits. Participants in the Australian ETS would be allowed to use international compliance instruments for up to half of their emissions after July 2015.

In August 2012 the Australian government and the European Commission announced their intention to link the Australian ETS and the EU ETS (European Commission and Australian Government, 2013a). The link was to be implemented in two stages; from July 2015 to July 2018 Australian firms were to be able to use EUAs for compliance. After harmonization of a number of design features, European installations were to be able to use Australian allowances for compliance after July 1 2018. At that time the Australian and EU allowances would have been fully interchangeable. Both the Australian ETS and the EU ETS would also be linked with the CDM and JI.

To facilitate the link, the Australian government announced that the price floor would not be implemented and that within the 50% limit on the use of international instruments, a sub-limit of 12.5% would apply to the use of CERs, ERUs and RMUs. To implement the link, registry arrangements were to be agreed upon by mid-2013 and an agreement governing the bilateral link was to be

negotiated by mid-2015.[28] The agreement was to cover, inter alia, the following issues (European Commission and Australian Government, 2013a):

- Measurement, reporting, and verification arrangements;
- The types, quantities, and other relevant aspects of third-party units that can be accepted into either system;
- The role of land-based domestic offsets;
- Implications, if any, for supporting the competitiveness of European and Australian industries in particular sectors exposed to a risk of carbon leakage; and
- Comparable market oversight.

Australia also agreed to set its price ceiling with reference to the expected 2015-16 price of EUAs.

[28] European Commission and Australian Government (2013b) outlines the proposed interim registry arrangements.

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http://www.thepmr.org
pmrsecretariat@worldbankgroup.org