

■ synthesis article

# Facilitating linkage of climate policies through the Paris outcome

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The Durban Platform for Enhanced Action negotiations are likely to lead to a Paris outcome that embodies a hybrid climate policy architecture, combining top-down elements, such as for monitoring, reporting, and verification, with bottom-up elements, including 'Intended Nationally Determined Contributions' from participating countries, detailing plans to reduce emissions, based on national circumstances. For such a system to be cost-effective – and thus more likely to embody greater ambition – a key feature will be linkages among regional, national, and sub-national climate policies. By linkage, we mean formal recognition by a mitigation programme in one jurisdiction of emission reductions undertaken in another jurisdiction for the purposes of complying with the first jurisdiction's requirements. The Paris outcome could play at least four different roles with respect to linkage of heterogeneous policy instruments. First, it could discourage linkage, either by not allowing countries to count international transfers toward their mitigation contributions, or by limiting the number or types of transferred units that can be counted for compliance purposes. Second, it could be silent on the topic of linkage, creating legal and regulatory uncertainty about whether international transfers are allowed. Third, it could expressly authorize linkage but not provide any further details about how linkage should occur, leaving it to future United Nations Framework Convention on Climate Change negotiating sessions to work out the details or to national governments to develop bilateral or multilateral linkage arrangements. Finally, the Paris outcome could establish institutional arrangements and rules that facilitate and promote linkage. We examine how a future international policy architecture could help facilitate the growth and operation of a robust system of international linkages. Several design elements merit serious consideration for inclusion in the Paris outcome, either in the core agreement or by establishing a process for subsequent international elaboration. At the same time, including detailed linkage rules in the core agreement is not desirable because this could make it difficult for rules to evolve in light of experience.

## Policy relevance

These findings have implications for the efficient and effective design of an international climate policy architecture by detailing the role that linkage can play in supporting heterogeneous climate policies at the regional, national, and sub-national levels.

*Keywords:* climate policy architecture; international climate policy; linkage; market mechanisms

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## 1. Introduction

In the Durban Platform for Enhanced Action, adopted by the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) in 2011, the parties agreed to

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develop a ‘protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties’, for adoption at COP 21 in December 2015, in Paris (UNFCCC, 2012). It is likely that the Paris outcome will reflect a hybrid climate policy architecture – one that combines top-down elements, such as for monitoring, reporting, and verification (MRV), with bottom-up elements, including ‘Intended Nationally Determined Contributions’ (INDCs), detailing what a country intends to do to reduce emissions, based on domestic political feasibility and other factors (Bodansky & Diringer, 2014). This outcome will be embodied in a core agreement, which will be legally binding, as well as ancillary instruments such as annexes, national schedules, and/or COP decisions.

The ability to link regional, national, and sub-national climate policies will be essential to enhancing the cost-effectiveness of such a system – and thus the likelihood of achieving significant global emissions reductions. By ‘linkage’, we mean formal recognition by a GHG mitigation programme in one jurisdiction (a regional, national, or sub-national government) of emission reductions undertaken in another jurisdiction for the purposes of complying with the first jurisdiction’s requirements.

This article analyses theoretical issues related to linkage among heterogeneous climate policy instruments and then applies this analysis to the Paris outcome with specific recommendations for how the outcome could facilitate the growth and operation of a robust system of international linkages of regional, national, and sub-national policies, and discusses how inappropriate or excessive rules could obstruct effective, bottom-up linkage.

## **2. Understanding linkage**

Separate and distinct policy instruments in different political jurisdictions may be linked together, essentially through mutual recognition and crediting for compliance. Linkage could occur between cap-and-trade and tax systems, between either of those systems and non-market regulatory systems, or among non-market regulatory systems.<sup>1,2</sup>

### **2.1. Advantages of linkage**

Linkage offers a variety of economic and political advantages. These advantages have been key motivating forces behind linkages that have already been established or are being planned. In particular, linkage facilitates cost-effectiveness, the achievement of the lowest-cost emissions reductions across the set of linked systems, and minimizes both the costs for individual countries (costs net of financial transfers) as well as the overall cost of meeting the collective cap.<sup>3</sup> It also reduces leakage to the extent that it contributes to price harmonization across carbon pricing systems. It can also reduce price volatility and market power (Bodansky, Hoedl, Metcalf, & Stavins, 2014), although it should be noted that the linking of markets also creates the potential for importing price volatility from other systems (Flachsland, Marschinski, & Edenhofer, 2009).

Linkage also allows a country to demonstrate global leadership, as some jurisdictions may see political benefits from supporting global action on climate change. For example, the European Commission has indicated that linking the European Union Emissions Trading System (EU ETS) with other cap-and-trade systems ‘offers several potential benefits, including . . . supporting global cooperation on climate change’ (European Commission, 2014). The prospect of linkage may allow nations to exert greater diplomatic influence on unlinked, free-riding nations, encouraging them to take action on

climate change. It can also contribute to a sense of ‘momentum’ that provides support for domestic climate policies. Also, linkage may provide regulatory stability, because it may be more difficult to introduce changes in an emission-reduction scheme when those changes require coordination with other countries with linked systems.<sup>4</sup>

It is possible that linkage and the set of harmonized rules and procedures that accompany it may provide cover for politically difficult decisions. Monitoring and verification procedures that are opposed by particular interest groups, for example, can be justified on the grounds that these procedures are needed to realize the benefits that accrue from linking with other jurisdictions.

Linking heterogeneous systems can create political flexibility to pursue the domestic policy instrument that is most feasible politically, while retaining the option to link with other types of system. This may enable greater participation in linkage despite diverse political tastes (Metcalf & Weisbach, 2012). Finally, well-designed linkage systems may pave the way for other forms of cooperation among nations.

## 2.2. Challenges of linkage

The advantages of linkage are real, but linkage also brings with it a number of challenges. Some of these challenges are economic, while others are political. First, linkage ties the environmental effectiveness of the entire linked system to the environmental integrity of individual members, making critical the role of MRV requirements (Ranson & Stavins, 2015). If one jurisdiction in a linked pair or large set of linked jurisdictions lacks the capacity or motivation to track emissions and emission allowances accurately (and/or the capacity or motivation to measure and verify offset credits), these loopholes will be exploited throughout the system, damaging the cost-effectiveness of the full set of linked policies.

Linkage itself can undermine environmental integrity. For example, linkage can result in double counting if transfers between countries are not properly accounted for and if, as a result, the same emissions reduction is counted towards compliance in more than one national system. Strategic behaviour could also produce adverse economic consequences in a set of linked systems in which a country with low ambition has incentives to loosen its domestic cap so that the resultant linked emissions price is more closely aligned with the country’s private benefits from emissions abatement (Helm, 2003).<sup>5</sup>

While linkage has the potential to improve aggregate cost-effectiveness across linked jurisdictions, it can also have significant distributional implications between and within jurisdictions (Ranson & Stavins, 2015). Firms that were allowance buyers (firms with high abatement costs) in the jurisdiction with the higher pre-link allowance price will be better off as a result of the allowance price changes brought about by linking, as will allowance sellers (firms with low abatement costs) in the jurisdiction with the lower pre-link allowance price. Conversely, allowance sellers in the jurisdiction with the higher pre-link allowance price and allowance buyers in the jurisdiction with the lower pre-link allowance price will be hurt by the allowance price change that results from the link. For the jurisdiction that faces higher prices post-linkage, this means greater transfers from buyers to sellers (Newell, Pizer, & Raimi, 2013).<sup>6</sup>

In some cases, the desire to ensure a minimum level of domestic mitigation may be motivated by the expectation that domestic mitigation provides co-benefits unrelated to climate change, such as a reduction of localized air pollutants (Flachsland et al., 2009). Linkage that reduces abatement in the local system may forfeit such politically important co-benefits. It is also possible, however, that the

ability to link to other systems (and so enjoy the opportunity to achieve emission reductions at lower cost) may provide political support for greater ambition in mitigation goals.

Finally, linkage presents the political challenge of ceding some degree of national (or other jurisdictional) autonomy. Before two jurisdictions link, they may need to agree on how to reconcile design features they have separately established for their respective systems (Ranson & Stavins, 2013). As those design features may represent a compromise between competing stakeholder interests within a country, any changes could pose political hurdles.

### 2.3. Lessons learned from linkage to date

Experience to date with explicit and implicit linkages of carbon policies across jurisdictions yields some potentially useful lessons (Ranson & Stavins, 2015). First, an increasing number of regions, nations, and sub-national jurisdictions have demonstrated their preference for linkage. Despite evident challenges, the current bottom-up trend of bilateral and multilateral linkages has demonstrated significant progress in the context of a potential future hybrid climate agreement. Second, linking carbon markets has proved ‘powerful and effective’, although the risk of linkage includes the reality that problems in one market can be transferred to other linked systems (World Bank, 2014).

Third, although there was demonstrable value to firms in Annex I countries from their use of Clean Development Mechanism (CDM) offsets for the purposes of cost mitigation, a functioning international market for such offsets does not appear likely to continue under the current political landscape, particularly given the changes in the EU ETS. Fourth, the International Transaction Log, part of the Kyoto Protocol process, played an important role by tracking traded units (Marcu, 2014). Fifth, linkages are not permanent, and are subject to national or sub-national political swings (as occurred in Australia), causing uncertainty for regulated firms (Ranson & Stavins, 2015).<sup>7</sup>

Finally, the benefits and attraction of linkage are likely to evolve over time. In the short run, the benefits may be more political (developing a sense of momentum and climate leadership) and administrative (learning by sharing, reducing duplicative administrative costs, and coordinating rules and procedures) than economic (this point is also stressed by Burtraw, Palmer, Munnings, Weber, & Woerman, 2013). Also in the short run, full price harmonization is unlikely, given restrictions on the magnitude of allowance flows observed in current linkage schemes (Ranson & Stavins, 2015). In the absence of full price harmonization, some efficiency-enhancing transactions will not take place. In the long run, however, as carbon markets mature and nations adopt more ambitious mitigation targets, especially in light of the 2 °C limit on warming that member states endorsed in the 2010 Cancun Agreements, it is reasonable to expect some loosening of constraints on linkage flows, contributing to enhanced price harmonization and increased cost effectiveness of carbon policy.

### 3. Linkage under a future international policy architecture

Specific elements of a future international policy architecture under the Paris outcome could help facilitate the growth and operation of a robust system of international linkages between regional, national, and sub-national policies. On the other hand, other potential elements of the Paris outcome could impede effective, bottom-up linkage.

### 3.1. Elements that would inhibit effective linkage

One design element that would have the effect of inhibiting international linkage would be overly prescriptive or restrictive rules on allowable trading across linked systems. A clear example would be a requirement (or even a preference) for domestic actions to achieve national commitments. Such a 'supplementarity principle' can render cross-border linkage difficult or impossible, and thereby drive up compliance costs, decrease international ambition, and reduce the feasibility of reaching an agreement.

For example, several provisions of the Kyoto Protocol suggest that internal emissions abatement should take precedence over compliance through the Protocol's flexibility mechanisms (International Emissions Trading, Joint Implementation, and the CDM),<sup>8</sup> but the precise meaning of this principle of supplementarity has been debated since the adoption of the Protocol. Also, limits on the use of foreign offsets for compliance are common in existing regional, national, and sub-national cap-and-trade systems.

A second (and related) issue is the confusion that can arise from competing and conflicting objectives and rules between the UNFCCC and regional or national trading systems. An example is the controversy over CDM credits issued for projects that target industrial gases such as HFC-23 and nitrous oxide (N<sub>2</sub>O) from adipic acid production. Responding to concerns that access to CDM credits was creating perverse incentives to continue or even increase production of these gases, the EU ETS disallowed the use of CDM credits from industrial gas projects for the purposes of ETS compliance after 2012 (European Commission, 2011). The CDM Executive Board, however, continued to issue credits for these projects (albeit with greater restrictions on their use). The controversy sowed confusion and damaged perceptions of carbon trading in general (Marcu, 2014).

The potential for conflicting rules relates to a broader issue about how national or regional carbon mitigation systems become recognized as valid for the purposes of implementing the Paris outcome. Marcu (2014) notes two possible approaches (approval and transparency) by which reductions under domestic systems might become eligible for counting in the UNFCCC context. The first approach would require explicit COP approval of domestic systems, while the second would involve the development of model rules through COP negotiations. Domestic systems would then demonstrate how they conform to internationally agreed templates. The latter approach could be combined with a peer review process but would not require explicit COP approval.<sup>9</sup>

A third area of potential concern stems from a lack of clarity (or confusion) over objectives. For example, adding a 'sustainable development condition' to CDM projects can create confusion in markets (Marcu 2014). This in turn undermines trading across systems, an essential role of linkage.

Finally, rules that restrict which countries can link (for example, allowing linkage only among Annex I countries), or that make it difficult for countries to join the category of countries that can link, would inhibit effective linkage.

### 3.2. Elements that could facilitate effective linkage

If linkage is to play a significant role in a hybrid international policy architecture, then several categories of design elements merit consideration for inclusion in the Paris outcome, either directly or by establishing a process for subsequent international negotiations. These elements include the following: the definition of compliance units; registries and tracking; monitoring, verification, and reporting

of individual trades; interaction with cost-containment instruments; and oversight and monitoring of the market in aggregate.

Effective linkage requires common definitions of key terms, particularly with respect to the units that can be used for compliance purposes. This will be especially important for links between heterogeneous systems, such as between a carbon tax and a cap-and-trade system. A model rule for linkage could be particularly helpful in this area.<sup>10</sup>

Registries and tracking are necessary with linked systems, whether the links bring together a homogeneous or heterogeneous set of policies.<sup>11</sup> Indeed, a key role for the top-down part of a hybrid architecture that allows for international linkage of national policy instruments will be tracking, reporting, and recording allowance unit transactions. A centralized institution could maintain the accounts of parties that hold allowances, record transfers of allowances between account holders, and annually reconcile allowances and verified emissions. This is particularly important because of the likely omission of Assigned Amount Units from the post-2020 regime (Marcu, 2014). Some form of international compliance unit would contribute to more effective and efficient registry operation and would help avoid double-counting problems.

International compliance units would make the functioning of an international transaction log more straightforward and reduce the administrative burden of reconciling international registries with national registries (Marcu, 2014).<sup>12</sup> There is also a possible role for the UNFCCC to provide centralized registry services for countries that lack the capacity to develop national registries on their own (Marcu 2014). Finally, there may be economies of scale in regionalizing registries for certain developing countries under the auspices of the UNFCCC or some other multilateral institution (for example, the World Bank or a regional development bank).

More broadly, any system, with or without linkage, will require monitoring, verification, and reporting of emissions. Likewise, compliance and enforcement mechanisms are of generic need in any effective policy architecture.

The interaction of linked systems with cost-containment elements (banking, borrowing, offsets, and price-stabilization mechanisms), in the case of cap-and-trade systems, raises particular issues in the context of linkage, because in some cases these mechanisms automatically propagate from one linked system to another.

Common rules for approving and measuring offsets may be important, and – more broadly – a tiered system of offset categories could be helpful, with jurisdictions choosing their own ‘exchange rates’ for each category.

Finally, market oversight and monitoring, together with various safeguards against market manipulation such as by large holders of allowances who may be able to exercise market power, may increase confidence in the system. However, national and international institutions may already exist, or need only relatively minor additional capacity, to provide these functions.

## **4. From the conceptual to the concrete: international law and linkage**

### **4.1. Possible functions of the UNFCCC regime with respect to linkage**

The Paris outcome could play at least four different roles with respect to linkage of heterogeneous policy instruments. First, it could discourage linkage, either by not allowing countries to count

international transfers toward their mitigation contributions, or by limiting the number or types of transferred units that can be counted for compliance purposes. Second, it could be silent on the topic of linkage, creating legal and regulatory uncertainty about whether international transfers are allowed. Third, it could expressly authorize linkage but not provide any further details about how linkage should occur, leaving it up to future UNFCCC negotiating sessions to work out the details or to national governments to develop bilateral or multilateral linkage arrangements. Finally, the Paris outcome could establish institutional arrangements and rules that facilitate and promote linkage.

In pursuing this last role – namely, facilitating and promoting linkage – the UNFCCC regime could serve three related functions. First, it could provide an international infrastructure for linkage – for example, an international system for MRV, an international transaction log to register transfers between national systems and prevent double counting, and an international compliance mechanism. Second, it could play a regulatory function, for example by establishing minimum standards to ensure that linkage arrangements do not undermine the environmental integrity of international and domestic climate change efforts or by requiring international certification for linkage arrangements that will be used for international compliance. Third, the UNFCCC could also play a coordinating function, providing harmonized or model rules for national trading systems and/or international linkages in order to reduce the transaction costs of linkage.

## 4.2. Key variables

Rules relating to linkage could be formulated in many different ways in the Paris outcome. They could be mandatory or optional; uniform or harmonized; and formalized in a legally binding, hard-law instrument, such as a treaty, or in a non-binding instrument, such as a COP decision, model rule, or guidance document.

International trade and finance instruments provide illustrations of these different options, as well as insights into how GHG linkage could be governed. Presently, a wide range of different types of agreements and organizations govern international trade and finance. An analysis of these approaches shows how different governance functions relating to linkage can be legally implemented, demonstrates that different governance approaches are preferred for different objectives, and suggests that some types of legal instrument are better suited to implementing a particular governance function.

### 4.2.1. Mandatory vs. optional

Rules for multilateral linkage in the Paris outcome could be mandatory or optional. International instruments relating to finance and trade provide illustrations of these options. The General Agreement on Tariffs and Trade (GATT), for example, sets mandatory rules limiting barriers to trade such as quotas. By contrast, the Convention on the International Sale of Goods (CISG) sets default rules, which parties are free to depart from in negotiating sales contracts. The Organisation for Economic Co-operation and Development (OECD) Model Tax Convention (OECDMTC) is even less directive than the CISG, in that it merely serves as a template that nations can choose to use as a starting point for bilateral negotiations.

In general, mandatory rules are appropriate to address ‘cooperation’ problems, where each nation has an incentive to cooperate only if it has an assurance that other nations will reciprocate. In contrast,

optional rules – such as the CISG or OECD/MTC rules – are useful in addressing ‘coordination’ problems, where harmonized rules help to lower transaction costs.

The Paris outcome could include a mixture of mandatory and optional elements. For example, it could commit parties undertaking linkage to a system of international tracking and review, but leave issues related to market coverage, cost containment, and treatment of new emitters and emitter closures to be addressed through informal coordination among national regulators or through the development of a model rule or guidelines by the COP, the Subsidiary Body for Implementation (SBI), or a non-UNFCCC institution.

#### **4.2.2. Uniform vs. harmonized**

Multilateral linkage rules could provide for greater or less uniformity among national policies or linkage arrangements. Some international instruments specify highly detailed rules, which produce uniform results. The Kyoto Protocol and Marrakesh Accords, for example, prescribe precise rules to track and account for transfers of compliance units between parties. Other instruments prescribe more general standards, which harmonize national approaches (i.e. ensure some level of similarity), but give parties flexibility to take into account their particular circumstances. The Intergovernmental Panel on Climate Change (IPCC) inventory guidelines, for example, provide methodologies for estimating GHG emissions, but allow nations to choose among different tiers so that officials can use methods appropriate for their resources and can focus on those emissions that are most significant to their national totals (IPCC, 2006).

Uniformity and harmonization each have their advantages. Uniformity reduces transaction costs and creates greater policy certainty, while harmonization allows nations to take into account their particular circumstances and values, and therefore tends to be easier to achieve. Moreover, harmonization leaves some room for nations to experiment and may thus promote more dynamic systems that have a greater capacity to evolve over time.

From the perspective of market participants, international carbon trading would be easiest if every nation adopted the same linkage rules, so that trade between any two countries occurred in exactly the same way. However, this level of uniformity is unlikely to be achieved in the near term (if ever), and is unnecessary for linkage to be widely adopted. While some elements of linkage may require uniform rules, most can be addressed by harmonized rules – in other words, rules that are similar but not identical. For example, uniform rules may be needed to define the units of trade and to track units to avoid double counting internationally (Tuerk, Michael, Christian, & Wolfgang, 2009). However, procedures for MRV and crediting may require only broad adherence to minimum standards, to ensure that emission reductions actually occur, while leaving countries free to adopt more stringent rules that limit the use of emissions credits.

Importantly, some issues relevant to linkage can be addressed through local, non-harmonized rules. For example, national cap-and-trade systems could adopt different allocation methods and yet still be effectively linked. Insisting on uniform rules for all elements of linkage in the Paris outcome would thus be unnecessary and counter-productive. It would not yield more linkage activity, and it would delay the adoption of international legal instruments to facilitate linkage. A mixture of more and less uniform rules, providing for a spectrum of harmonization, is best for facilitating linkage.



### 4.2.3. Hard vs. soft

Multilateral linkage rules could be contained in international instruments that are either ‘hard’ or ‘soft’ (Shelton, 2003). Treaties such as the UNFCCC, the Kyoto Protocol, the GATT, and the CISG represent hard law, and are legally binding as a matter of international law. By contrast, political agreements, guidelines, model rules, recommendations, and standards serve a prescriptive function but are not legal instruments – hence they represent soft law. It appears likely that the Paris outcome will include both hard and soft law elements, including a core agreement that is legally binding, as well as schedules and COP decisions that may have a ‘softer’ character.

Because hard law instruments provide a stronger signal of commitment than soft law instruments and are potentially applicable directly in domestic courts, they are useful for addressing issues where reciprocity or domestic enforcement is important (Tuerk et al., 2009). Hard law instruments provide greater certainty, but are generally more difficult to negotiate and revise. For example, the World Trade Organisation (WTO) Uruguay Round agreements took eight years to negotiate, and the Doha Round of revisions to the WTO is still under way after thirteen years.

By contrast, soft law instruments are typically easier to adopt and amend, thus making them useful for addressing issues in their early phases, when there may not be sufficient political will to adopt a treaty or when it may be necessary to revise the rules on a regular basis in response to new information and circumstances. The Basel Capital Accords, for example, were quickly revised in response to the 2008 financial crisis, with Basel III being adopted in 2010.

A number of soft law standards have already been adopted to harmonize national climate mitigation systems, outside of the UNFCCC. For example, the International Organization for Standardization (ISO) has promulgated standards for monitoring and reporting GHG emissions and emissions reductions at the organization and project level (ISO, 2009a, 2009b, 2013a). ISO standards also exist for validating or verifying GHG reduction claims (ISO, 2009c, 2011, 2013b).

A mixture of hard and soft law instruments might be best suited to facilitate linkage. Key elements might be contained in a hard law instrument that is comparatively difficult to amend. A provision in a hard law instrument that mitigation-unit transfers can count towards a party’s emission-reduction contribution would facilitate widescale linkage. A hard law instrument might also include model rules defining the units to be used for linkage, a requirement that parties allow international tracking of units in order to engage in linkage, and an articulation of general principles related to environmental integrity, such as a prohibition on double counting.

Other elements of linkage, however, could potentially be addressed in soft law instruments or through informal coordination among national regulators. Either of these approaches would allow for greater flexibility to make changes in the future. For example, minimum standards for national and international MRV, registries, and crediting mechanisms might be set forth in soft law instruments. Although soft law instruments are not legally binding, compliance with minimal standards could be assured by making compliance a condition of linkage by the linking jurisdictions, just as national governments have required compliance with the Financial Action Task Force (FATF) and Basel Committee standards as a condition for granting access to their domestic financial markets.

### 4.2.4. Relationships among variables

Mandatoriness, uniformity, and legal form are independent variables; they need not co-vary. The capital adequacy requirements in the Basel Accords are phrased in mandatory rather than optional

terms, even though the various Basel Accords are soft law instruments. Similarly, ISO standards may be very precise, even though they are not legally binding. Conversely, the CISG is a legal agreement, and hence qualifies as hard law, even though it sets forth non-mandatory, default rules from which parties may deviate.

Nevertheless, mandatoriness, uniformity, and legal form are related in that they all tend to increase the capacity of a rule to constrain behaviour. Thus, rules that address systemic risks or collective action problems are ideally formulated in precise, mandatory, and legally binding terms, all else being equal. By contrast, rules intended to address coordination problems may be optional and soft.

#### **4.3. Elements of a 2015 Paris outcome**

The broad contours of the Paris outcome are beginning to come into focus and it is possible to make some preliminary observations about how linkage issues might be addressed. The Paris outcome is likely to include, at its core, a legal instrument (the core agreement) that establishes parties' basic commitments as well as the regime's institutional arrangements. Given the difficulties of negotiating a legal document in the relatively little time remaining before the Paris COP, as well as the difficulty, for some countries, of ratifying an elaborate agreement, the core agreement is likely to be comparatively brief, addressing only essential issues and doing so in a minimalist manner. More detailed rules addressing issues such as linkage are likely to be put forward in COP decisions. These could be adopted concurrently with the core agreement, as part of the Paris outcome, or, more likely, the core agreement could authorize the COP to adopt rules on linkage at subsequent sessions.

If the Paris outcome leaves the development of rules on linkage to future COP decisions, a key question will be whether these rules must be adopted before linkage can occur. If so, opponents of linkage would have tremendous leverage, because COP decisions require consensus. Alternatively, the Paris outcome could allow parties to move forward with linkage while simply authorizing the COP to adopt additional rules regarding linkage at a future date.

##### **4.3.1. Authorization of linkage**

The Paris outcome may not need to authorize linkage between parties, because linkage is already authorized by Article 4.2(a) of the UNFCCC (1992). Nevertheless, an explicit statement that parties may transfer portions of their INDCs to other parties and that parties can use transferred units from other jurisdictions to achieve their INDCs would be helpful in providing certainty both to governments and private market participants. In addition, if it were deemed desirable to allow linkage between parties and non-parties to the core agreement, the core agreement should explicitly authorize such linkage.<sup>13</sup> Similarly, the core agreement might authorize the use of CDM credits by parties in achieving their INDCs, thereby providing a common crediting platform.

##### **4.3.2. Minimum standards to ensure environmental integrity**

Rules aimed at ensuring environmental integrity could, in theory, be contained in the core agreement itself or in subsequent COP decisions. However, it is unlikely that detailed rules for linkage can be developed in time for inclusion in the core agreement. Nor would including such detailed rules in the core agreement be desirable. Given the difficulties of amending a legally binding instrument, including

linkage rules in the core agreement would make it difficult for these rules to evolve in light of experience.

For this reason, minimum standards to ensure environmental integrity should be elaborated in COP decisions or by another means, instead of the core agreement – this would include, for example, establishing the requirements for national and international MRV, registries, and crediting mechanisms (Hood, Briner, & Rocha, 2014; Tuerk et al., 2009). In this case, the function of the core agreement with respect to linkage might be confined to articulating general principles related to environmental integrity, while also authorizing the COP, or another organization, to develop more detailed rules. Minimum standards would not require uniformity among national systems or linkage agreements. MRV and crediting procedures only need to be credible, not identical, in order for linkage to occur and be sustained (Tuerk et al., 2009). Parties could have some flexibility in designing their national systems for MRV and crediting, as long as their systems satisfied the minimum requirements of the core agreement.

As noted earlier, most minimum standards for trade and financial linkages have been developed through soft law instruments, because these instruments are typically easier to negotiate and adopt and can also be revised more easily, allowing them to evolve over time in response to changing needs and circumstances (Brunner, 2011). Rules for multilateral linkage could also be developed outside the UNFCCC process by institutions that bring together national regulators, market participants, and private experts. The ISO is one possibility (Metcalf & Weisbach, 2012), as is the World Bank's Partnership for Market Readiness, but a new, informal institution addressing mitigation linkage is another alternative.

Whatever minimum standards are adopted for multilateral linkage, oversight of compliance would be important to ensure the integrity both of the core agreement (to the extent transfers are permitted for international compliance purposes) and of the linked national systems (to the extent transfers count towards domestic compliance). Oversight functions could be performed by a UNFCCC institution such as the expert review groups that currently review Annex I inventories, by national authorities in linked systems, or by an outside body.

#### 4.3.3. Default/model rules

Many elements of GHG linkage could be addressed through default or model rules, from which states are free to deviate at their discretion. For example, a model rule might define key terms, including the compliance units (for example, metric tons of CO<sub>2</sub> equivalent). Rules that may benefit from this approach are typically concerned with the details of linking two regulatory systems. For example, two nations interested in linking their GHG cap-and-trade systems would have to consider rules regarding market coverage, cost containment, banking and borrowing, compliance periods, allocation methods, and the treatment of new emitters and emitter closures (Metcalf & Weisbach 2012; Tuerk et al., 2009). Additional rules would be desirable for linking heterogeneous systems. For example, efforts to link a tax system and a cap-and-trade system must consider the treatment of emission tax payment credits (Metcalf & Weisbach, 2012).

Developing uniform rules to address all of these issues is unrealistic. Current and planned regulatory systems for GHG mitigation vary significantly in size, design, characteristics, and scope. They are tailored to achieve domestic policy objectives and reflect domestic circumstances and the domestic

evolution of climate policy (Tuerk et al., 2009). Thus, rules for linking disparate systems would probably need to be too different to support a uniform or even minimum-standard approach.

Despite the need for local flexibility, a degree of harmonization could be achieved through default rules that facilitate linkage by providing a common framework for jurisdictions to use when developing their own bilateral or plurilateral linkage agreements. In other words, jurisdictions would not need to develop bilateral agreements from scratch; they could choose to adopt some or all of the default rules and thereby shorten the time needed to develop linkage agreements. In addition, the existence of default rules may encourage efforts to harmonize disparate systems over time. As nations reform and update their linkage agreements, they may choose to match the default rules more closely. Over the long term, such harmonization would reduce transaction costs for market participants by reducing the number of different rules that must be learned.<sup>14</sup>

Default rules for GHG linkage could be developed by the COP or by an outside institution, and could be adopted via a hard law multilateral convention or a soft law approach. The hard law approach would deliver maximal certainty and probably has the greatest chance of eventually creating *de facto* uniform rules. However, a hard law approach also has several disadvantages. Negotiations may be difficult if not impossible given the disparities between existing and planned systems. Furthermore, because linked carbon markets are a relatively recent phenomenon, rules that appear optimal today may not be optimal in the future. A model law approach would provide flexibility and allow default rules to evolve through an iterative process, just as model tax treaties have evolved over time.<sup>15</sup> Once linked carbon markets are mature – perhaps decades in the future – a multilateral convention might be appropriate to encourage the default rules to evolve into uniform rules that would reduce transaction costs.

## 5. Conclusion

The upcoming Paris Conference of the Parties (COP) is a critical next step in the ongoing international process to reduce global GHG emissions. Whether the Paris outcome will be sufficiently ambitious to put the world on a path towards limiting global average warming to 2 °C, as agreed in Cancun, remains to be seen. In general, greater ambition is more easily realized when costs are low. Market-based mechanisms are an important element in the portfolio of potential actions that can lead to cost-effective solutions. Linkage – between and among market and non-market systems for reducing GHG emissions – is another key element. This article's contribution is to catalogue and assess a variety of ways in which the Paris outcome, and more generally the ongoing negotiations, can facilitate and advance linked systems.

The minimum requirement for the Paris agreement is to do no harm, which silence would accomplish, but if linkage is to play a significant role in a hybrid international policy architecture, then several categories of design elements merit serious consideration for inclusion in the Paris outcome, either directly or by establishing a process for subsequent international negotiations. In general, effective linkage requires common definitions of key terms, including particularly the units to be used for compliance purposes. This will be particularly important for links between heterogeneous systems, and it is an area where a model rule could be particularly helpful.

Second, linkage requires registries and tracking mechanisms, whether the systems being linked are homogeneous or heterogeneous. Indeed, a key role for the top-down part of a hybrid architecture that

allows for international linkage of national policy instruments will be the tracking, reporting, and recording of allowance unit transactions. International compliance units would make the functioning of an international transaction log more straightforward and reduce the administrative burden of reconciling international registries with national registries. Minimum standards for approving and measuring offsets may be important. Furthermore, market oversight and monitoring may increase confidence in the system, although in some cases, national and international institutions that can provide oversight already exist and may need only relatively minor additional capacity to assume these functions.

Including detailed linkage rules in the core agreement is not desirable as this could make it difficult for rules to evolve in light of experience. Instead, minimum standards to ensure environmental integrity should be elaborated in COP decisions, or by other means; for example, the COP could establish minimum requirements for national monitoring, reporting, and verification (MRV), registries, and crediting mechanisms. In terms of linkage, the function of the core agreement might be confined to articulating general principles relating to environmental integrity, while also authorizing the COP or another organization to develop more detailed rules. Whatever minimum standards are adopted, oversight of compliance will be important to ensure the integrity both of the Paris outcome and of linked national systems.

Many elements of GHG linkage can be addressed through default or model rules from which nations are free to deviate at their discretion. Rules that may benefit from this approach are typically concerned with the details of linking two regulatory systems. For example, nations interested in linking their cap-and-trade systems would have to consider rules for market coverage, cost containment, banking and borrowing, compliance periods, allocation methods, and the treatment of new emitters and emitter closures. Additional rules may be needed for linking of heterogeneous systems.

Developing uniform rules to address all of these issues is unrealistic. Instead, a degree of harmonization could be achieved through default rules that facilitate linkage by providing a common framework for nations to use when developing their own linkage agreements. Although there is no need for the core agreement itself to elaborate harmonized linkage rules, it might authorize the COP to develop default linkage rules that nations can use in negotiating bilateral linkage agreements.

Ultimately, the most valuable outcome of Paris regarding linkage might simply be the inclusion in the core agreement of an explicit statement that parties may transfer portions of their INDCs to other parties and that these transferred units may be used by the transferees to implement their INDCs. From a legal perspective, such a statement would help provide certainty both to governments and private market participants. Such a minimalist approach will allow diverse forms of linkage to arise, among what will inevitably be highly heterogeneous INDCs, thereby advancing the dual objectives of cost-effectiveness and environmental integrity in the international climate policy regime.

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## Notes

1. Linkage is defined and examined in considerable detail in Jaffe, Ranson, and Stavins (2009), Metcalf and Weisbach (2012), and Ranson and Stavins (2013, 2015). We refer the reader to those articles for details on linkage design. Here, we briefly highlight some of the significant benefits and costs of linkage, again referring the reader to the articles above for a more extensive discussion of the issues.
2. Linkage in the context of cap-and-trade systems generally involves allowance and financial transfers among private parties facilitated by the linkage rules. This might occur in more heterogeneous linked systems as discussed in Metcalf and Weisbach (2012), but also might entail systems in which jurisdictions trade emission reduction obligations and alter their tax or regulatory rules to reflect the adjusted INDCs.
3. Although this is an economic merit of linkage, for political reasons price equalization may not be a near-term goal (Ranson & Stavins, 2015), as we discuss later.
4. The flip side of regulatory stability is policy inflexibility; altering rules in linked systems requires coordination among all formally linked systems.
5. In a closely related game-theoretic analysis, Holtsmark and Sommervoll (2012) examine the incentives that nations face when they set their national emissions reduction targets under a bottom-up pledge-and-review system. They find that if countries anticipate that international emissions trading will be implemented, they have incentives to establish less ambitious reduction targets than if trading were not anticipated.
6. Within-jurisdiction distributional issues also abound, as discussed by Somanathan (2010) and Ranson and Stavins (2015).
7. In most cases, however, systems were delinked before linkage came into effect. New Jersey's exit from the Regional Greenhouse Gas Initiative (RGGI) was a notable exception.
8. Article 6.1 of the Kyoto Protocol states that 'The acquisition of emission reduction units [through trading] shall be supplemental to domestic actions for the purposes of meeting commitments under Article 3.' Likewise, Article 17 states that 'Any such trading shall be supplemental to domestic actions for the purpose of meeting quantified emission limitation and reduction commitments under that article.' Article 12.3.b states that 'Parties included in Annex I may use the certified emission reductions accruing from such project activities [under the Clean Development Mechanism] to contribute to compliance with part of their quantified emission limitation and reduction commitments under Article 3...' (UNFCCC, 1998).
9. Variations on these two approaches could build on the flexibility mechanisms described in Bodansky and Diringer (2014). These include offering alternatives under which different states may operate to comply with overarching rules, offering default and opt-out clauses, offering opt-in procedures, providing contextual standards to provide flexibility where needed, and using guidelines that serve to set expectations (but not requirements) for behaviour and mechanism design.
10. In regard to market coverage, even a (homogeneous) set of national cap-and-trade systems will differ in many design elements, but not all of these elements will require coordination or harmonization. For example, systems may differ in their scope – i.e. in the sectors of their respective economies that are included under an emissions cap – but this difference need not create a barrier to linkage and trading.
11. This could be particularly important to avoid double counting in overlapping jurisdictions.

12. Prag et al. (2013) argue that mandating a standard type of international compliance unit type may not improve accountability and could add complexity as domestic mitigation schemes evolve over time.
13. Although allowing linkages with non-parties would enhance cost-effectiveness, it would diminish the incentive of non-parties to join the core agreement.
14. The Convention on Contracts for the International Sale of Goods (CISG) and the OECD Model Tax Convention (OECDMTC) illustrate the role of default rules in lowering transaction costs. The CISG provides a set of substantive rules that parties can use to prepare contracts; these have become a *lingua franca* of international commerce (Kröll et al., 2011) and are enforceable in domestic courts. The OECDMTC serves as a basis for over 225 bilateral tax treaties (Miller & Oats, 2014). Although the OECDMTC is not binding on any nation, the terms of the convention are so commonly adopted as part of bilateral treaties that they represent, in effect, default rules for bilateral linkages between tax systems.
15. In the US context, the Clean Air Task Force has proposed that the US Environmental Protection Agency issue a model rule for interstate emissions trading, under its proposed power plant rule under section 111(d) of the Clean Air Act (Clean Air Task Force, 2014).

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