20 Linkage of regional, national, and sub-national policies in a future international climate agreement

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As international negotiations proceed towards COP21 in Paris in December 2015, a hybrid policy architecture is emerging under the 2011 Durban Platform for Enhanced Action, in which all countries will participate under a common legal framework. This hybrid architecture for the Paris agreement will likely feature bottom-up elements in the form of a pledge-and-review system of Intended Nationally Determined Contributions (INDCs) plus top-down elements, such as for monitoring, reporting, and verification. The INDCs will feature a broad range of targets (in keeping with the UNFCCC principle of common but differentiated responsibilities and respective capabilities) and a diverse set of national policies and actions intended to achieve those targets. Cap-and-trade has emerged as one preferred policy instrument for reducing emissions of greenhouse gases (GHGs) in much of the industrialised world, as well as within key parts of the developing world. This includes Europe, the US, China, Canada, New Zealand, and Korea. Because linkage – unilateral or bilateral recognition of allowances – can reduce compliance costs and improve market liquidity, there is considerable interest in linking cap-and-trade systems. Beyond this, many jurisdictions will propose or adopt other types of climate policies, including carbon taxes, performance standards, and technology standards. With varying degrees of difficulty, such heterogeneous policy

1 This chapter draws upon previous co-authored work, including Bodansky et al. (2014), and Ranson and Stavins (2015), but the author is responsible for any errors and all opinions expressed here.

instruments can also be linked across borders. This chapter reviews the key benefits and concerns associated with various types of linkages, and examines the role that linkage may play in the 2015 Paris agreement.

1 Introduction

The Kyoto Protocol, negotiated in 1997, has entered what is probably its final commitment period of 2013-2020, covering only a small fraction – 14% – of global GHG emissions. It is scheduled to be replaced by a new international agreement featuring a new policy architecture. In 2011, at the Seventeenth Conference of the Parties (COP17) of the United Nations Framework Convention on Climate Change (UNFCCC), the nations of the world adopted the Durban Platform for Enhanced Action, in which they agreed to develop a 'protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties' for adoption at COP21 in December 2015 in Paris (UNFCCC 2012).

It now appears likely that the Paris agreement will feature 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' (INDCs) from each participating country describing what it intends to do to reduce emissions, starting in 2020, based on its national circumstances (Bodansky and Diringer 2014).

For such a system to be cost effective – and thus more likely to achieve significant global emissions reductions – a key feature will be linkages among regional, national, and sub-national climate policies, where 'linkage' refers to the 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 purposes of complying with the first jurisdiction's mitigation programme. How can the 2015 Paris agreement facilitate such linkage?

2 Diverse forms of linkage

Policy instruments in different political jurisdictions can be linked through mutual recognition and crediting for compliance. This can be between two cap-and-trade systems, between two tax systems, between cap-and-trade and tax systems, between either of those and non-market regulatory systems, or among regulatory systems (Metcalf and Weisbach 2012). Linkage can be direct or indirect, and bilateral or multilateral.

Direct linkage occurs when an agreement is reached between two systems to accept allowances (or credits) from the other jurisdiction for purposes of compliance. This can occur on a one-for-one basis – for example in the case of cap-and-trade linkage – where an allowance from one jurisdiction is accepted in place of an allowance for the same amount of emissions in another jurisdiction (Ranson and Stavins 2013, 2015), or a trading ratio (exchange rate) can apply to allowance transfers between the two systems. Direct linkage can be bilateral (two-way), where both systems accept allowances from the other system for compliance, or unilateral (Ranson and Stavins 2013).

Indirect linkage occurs when two systems do not accept allowances from each other, but both accept allowances (or credits) from a common third party (Ranson and Stavins 2013). For example, by accepting credits (or allowances) from a common source (jurisdiction), two cap-and-trade allowance markets influence the common offset market, and in turn both influence allowance prices (and compliance costs) in each other's markets.

Cap-and-trade programmes provide the most obvious example of linkage, but it is highly unlikely that all or even most countries will employ national cap-and-trade instruments as their means of reducing GHG emissions under the Paris agreement. Other possible instruments include carbon taxes or fees, emission reduction credits (ERCs), and traditional regulatory approaches.[2] Hence, it is important to consider options for linking different types of policy instruments (Hahn and Stavins 1999, Metcalf and Weisbach 2012).

2 See the chapters in this book by Sterner and Köhlin (2015) and Burtraw (2015).

For example, firms that are subject to a carbon tax could be allowed to pay taxes at a higher level than they owe based on their emissions, and sell certified 'Emission Tax Payment Credits' (ETPCs) to firms that are operating under a cap-and-trade system. Within the cap-and-trade region, firms could use ETPCs just as they would the equivalent quantity of allowances for purposes of compliance. Conversely, firms under the cap-and-trade system could sell allowances to firms required to pay a carbon tax, allowing the purchasing firm to lower its tax obligation by the amount of allowances it submits for retirement. Likewise, either a carbon tax or a cap-and-trade system could be linked with policies that provide subsidies for emissions reductions, which could be traded like ERCs to be used in place of allowances to comply with a cap-and-trade programme, or as ETPCs for compliance with a carbon tax (Metcalf and Weisbach 2012).[3]

Market-based mechanisms (taxes, targeted subsidies, and cap-and-trade) could – in principle – be linked with a conventional, performance-based regulatory system. If the regulation is in the form of a quantity standard (for example, tons of carbon-dioxide-equivalent (CO_2-e) emissions reduction), firms could buy allowances or ETPCs from another market to meet the required quantity of reduction, or to achieve reductions in excess of the regulatory minimum and then sell additional reductions as ERCs (Metcalf and Weisbach 2012).[4]

3 Potential merits

Because linkage allows for voluntary exchanges across systems, it facilitates cost-effectiveness, that is, achievement of the lowest-cost emissions reductions across the set of linked systems, minimising both the costs for individual jurisdictions as well as the overall cost of meeting a collective cap. Also, by increasing the number of allowance buyers and/or sellers across linked cap-and-trade systems, linkage tends to increase market liquidity (Ranson and Stavins 2015). And to the degree that linkage reduces

3 For example, Mexico's carbon tax allows the use of offset credits from projects under the Kyoto Protocol's Clean Development Mechanism (CDM) in lieu of tax payments (ICAP 2014).

4 Technology standards present a much greater challenge, because it is difficult to verify the additionality of emissions reductions from meeting or exceeding a technology standard.

carbon price differentials across countries or regions, it also reduces the potential for competitive distortions caused by leakage, that is, incentives for emissions-generating sources or activities to move to jurisdictions with less stringent climate policies.

Moreover, by expanding the scope and size of the market for carbon allowances, linkage can mitigate allowance price shocks caused by unexpected shocks (Burtraw et al. 2013), and thereby reduce price volatility, although in the process, linkage also can transmit price volatility from one jurisdiction to another. Finally, linkage can reduce the market power of individual market participants, provided that the same entity is not a significant allowance buyer or seller in both jurisdictions (Wiener 1999, Metcalf and Weisbach 2012).

Turing to potential political advantages, one possible political motivation for linkage is the ability of a country to demonstrate global leadership. For example, the European Commission indicated that linking the European Union's 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. This is related to the notion of 'climate clubs' as an approach to international cooperation (Nordhaus 2015).[5]

Likewise, international linkage agreements can offer domestic political benefits, as leaders can point to linkage as a sign of 'momentum' for increasing participation in systems similar to (or at least compatible with) their domestic climate policies. There can be administrative benefits from linking that come from sharing knowledge about the design and operation of a policy instrument. For example, Quebec may benefit from

5 A frequently proposed mechanism to make benefits exclusive to the members of a climate club has been a set of national border adjustments (tariffs in countries with carbon taxes and/or import allowance requirements in countries with cap-and-trade systems); Nordhaus (2015) follows this approach. In this chapter, I emphasise fundamentally less coercive approaches to international cooperation, but in both forms of cooperation, the use of market-based policy instruments and international linkage are key.

its linkage with the larger Californian cap-and-trade system.[6] Also, linkage may reduce administrative costs through the sharing of such costs and the avoidance of duplicative services.

Political support for linkage may also come from the capture of greater local co-benefits, such as reductions of emissions of correlated pollutants (Flachsland et al. 2009). If one jurisdiction has a lower GHG price than another before linkage, linkage may provide a market for additional emissions reductions in the low-price jurisdiction that yields additional co-benefits to that jurisdiction. Conversely, a high-price jurisdiction may resist linking with a low-price system because linkage could mean fewer domestic emissions reductions, with the loss of related co-benefits. This concern was raised during debates in California regarding whether to link with Quebec's cap-and-trade system.

4 Potential problems

First, linkage has the potential to improve the cost-effectiveness of a pair of linked policies only if there is sufficient environmental integrity in both systems with respect to their monitoring, reporting, and verification requirements (Ranson and 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, these loopholes will be exploited throughout the system, damaging the cost-effectiveness of the full set of linked policies. This can create significant barriers to linkage between nations with different levels of environmental and financial management (Metcalf and Weisbach 2012).

Linkage 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. Of course, guarding against such errors is one of the roles for the top-down elements of the Paris policy architecture, as I discuss later.

6 For details about the California-Quebec and other existing linkages, the reader is referred to Bodansky et al. (2014) and Ranson and Stavins (2015).

Strategic behaviour could also produce adverse economic consequences in a set of linked systems (Helm 2003). In particular, if countries anticipate the possibility of future linkages, they may behave strategically when establishing their national targets. And even if a linkage is established, it may not be executed in terms of actual trades if transaction costs inhibit trading.

Turning to potential political problems of linkage, it is important to recognise that whereas linkage has the potential to improve aggregate cost-effectiveness across jurisdictions, it can also have significant distributional implications between and within jurisdictions (Ranson and 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 et al. 2013).

An increase in the volume of trades (as a result of linkage) may also have distributional implications and attendant political consequences, depending on the relative influence of buyers and sellers in the jurisdiction (Ranson and Stavins 2015). Within jurisdictions, the potential also exists for elites in developing countries to capture allowances from domestic cap-and-trade systems and sell them into linked markets to the detriment of the local economy (Somanathan 2010).

In some cases, jurisdictions that have established emissions-reduction policies may be motivated, at least in part, by a political desire to provide incentives for long-term investment in domestic abatement activities. If a system with a high allowance price links with a system with a lower allowance price, the firms in the system with higher abatement costs will have less incentive to find innovative ways to reduce their emissions, since they can opt instead to purchase allowances at the new lower price. The result may be less technological innovation than expected under the emissions policy pre-linkage.

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 that they have separately established for their respective systems (Ranson and Stavins 2013). As those design features may represent a compromise between competing stakeholder interests within a country, any changes could pose political hurdles.

5 Linkage under the 2015 Paris agreement

Specific elements of a future international policy architecture under the 2015 agreement could help facilitate the growth and operation of a robust system of international linkages among regional, national, and sub-national policies. On the other hand, other potential elements of a new agreement could get in the way of effective, bottom-up linkage.

5.1 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), but the precise meaning of this principle of supplementarity has been debated since the adoption of the Protocol.

A second issue is the confusion that can arise from competing and conflicting objectives and rules between the UNFCCC and regional or national policies. The potential for conflicting rules relates to a broader issue about how national or regional carbon mitigation systems become recognised as valid for the purposes of meeting international

commitments under the Paris agreement. There are two possible approaches – approval and transparency – through which reductions under domestic systems might become eligible for counting in the UNFCCC context (Marcu 2014). The former would require explicit COP approval of domestic systems, while the latter would involve the development of model rules through COP negotiations.

A third area of potential concern stems from a lack of clarity (or even confusion) over objectives. For example, adding a 'sustainable development condition' to CDM projects can create confusion in markets. 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.

5.2 Elements that could facilitate effective linkage

If linkage is to play a significant role in executing a hybrid international policy architecture, several categories of design elements merit consideration for inclusion in the Paris agreement, either directly or by establishing a process for subsequent international negotiations.

Effective linkage requires common definitions of key terms, particularly with respect to the units that are 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. Registries and tracking are necessary with linked systems, whether the links bring together a homogeneous or heterogeneous set of policies.

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 centralised institution could maintain the accounts of parties that hold allowances, record transfers of allowances between account holders, and annually reconcile allowances and verified emissions. 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. There is also a possible role for the UNFCCC to provide centralised registry services for countries that lack the capacity to develop national registries on their own. Finally, there may be economies of scale in regionalising 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 (Weiner 2015). Likewise, compliance and enforcement mechanisms are of generic need in any effective agreement.

The interaction of linked systems with cost-containment elements (banking, borrowing, offsets, and price-stabilisation mechanisms) 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. In some cases, national and international institutions may already exist, or need only relatively minor additional capacity, to provide these functions.

6 Conclusion

The 2015 Paris agreement will likely be a critical step in the ongoing international process to reduce global GHG emissions. Whether the agreement is judged to be sufficiently ambitious remains to be seen. In general, greater ambition is more easily realised when costs are low. Linkage — between and among market and non-market systems for reducing GHG emissions — can be an important element in lowering costs.

If linkage is to play a significant role, then several categories of design elements merit serious consideration for inclusion in the Paris agreement. However, including detailed linkage rules in the core Paris 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 – for example, the COP could establish minimum requirements for national measuring, reporting and verification (MRV), registries, and crediting mechanisms. In terms of linkage, the function of the core Paris agreement might be confined to articulating general principles relating to environmental integrity, while also authorising the COP or another organisation to develop more detailed rules.

Ultimately, the most valuable outcome of the Paris agreement regarding linkage might simply be the inclusion 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 meet INDCs. Such a statement would help provide certainty both to governments and private market participants and is likely a necessary condition for widespread linkage to occur. Such a minimalist approach will allow diverse forms of linkage to arise among what will inevitably be heterogeneous INDCs, thereby advancing the dual objectives of cost-effectiveness and environmental integrity in the international climate policy regime.

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