

Implementing and Linking Carbon Pricing Instruments: Theory and Practice

Enel Foundation

Harvard Project on Climate Agreements

*23rd Conference of the Parties, United Nations Framework
Convention on Climate Change, Bonn, Germany*

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Linking Carbon Pricing Policies (Consistent with the Paris Agreement)

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Key Challenge for Eventual Success of Paris Agreement

- Can Paris Agreement, with NDCs *anchored* in domestic political realities, *adequately* address emissions with sufficient ambition?
- Are there ways to enable and facilitate *increased ambition* over time?
- **Linkage of regional, national, and sub-national policies can be part of the answer** – connections among policy systems that allow emission reduction efforts to be redistributed across systems
 - Linkage is typically framed as between cap-and-trade systems...
 - ... but regional, national, and sub-national policies will be highly *heterogeneous*

Heterogeneous Climate Policy Instruments

- Major CO₂ cap-and-trade regimes in place & announced
 - European Union Emissions Trading System, \$6/ton (2005-)
 - New Zealand Emissions Trading Scheme, \$12/ton (2008-)
 - U.S. Regional Greenhouse Gas Initiative, \$2.50/ton (2009-)
 - California's AB-32 GHG Cap-and-Trade System, \$13/ton (2013-)
 - Korea's Emissions Trading Scheme, \$18/ton (2015-)
 - China's national CO₂ cap-and-trade system (2017?-)
- Selected carbon (and related energy) taxes
 - Finland (1990), Norway (1990), Sweden (1991), Denmark (1992), Costa Rica (1997), British Columbia (2008), Switzerland (2008), Ireland (2010), Iceland (2010), Japan (2012), Mexico (2012), United Kingdom (2013), Chile (2014), France (2014), South Africa (2016)
- Many other jurisdictions will *not* employ carbon pricing, but will use *performance standards* and/or *technology standards* instead
 - Less cost-effective than carbon pricing
 - Muted/distorted price signals
 - Still, in some cases will place an implicit shadow-price on carbon

Why Focus on Linkage?

- Potential for **cost savings** by allowing firms to take advantage of lower cost abatement opportunities in other jurisdictions;
- Linkage may **improve functioning** of individual markets:
 - reduce *market power* by enlarging the trading market; and
 - reduce total *price volatility* by thickening markets;
- **Political benefits** to linking parties
 - Sign of “momentum” as political jurisdictions band together
 - Potential to influence non-linking countries to participate
- **Administrative economies of scale**
 - Knowledge sharing in designing & operating controls
 - Shared administrative and oversight costs
- Allow for UNFCCC’s CBDR *without* sacrificing cost-effectiveness

Concerns with Linkage

- Distributional impacts
 - Redistribution within jurisdictions
 - Redistribution across jurisdictions
 - A political problem
- Automatic propagation of some design elements
 - Weak design in one jurisdiction affects prices and quality of program in all jurisdictions
 - Price shocks can propagate through all linked jurisdictions
- Decreased autonomy
 - Rules set jointly by all linked parties
 - Leader-follower dynamic

Linkage and the Paris Agreement

- *Article 6.2* – cooperative approaches involving *Internationally Transferred Mitigation Outcomes*
 - can function as an international accounting mechanism
- *Article 6.4* – mechanism to contribute to emissions mitigation and support sustainable development

Three Major Categories of Heterogeneity

- **Heterogeneous Instruments**

- Cap-and-Trade
- Emission Reduction Credit (Offset)
- Tax
- Performance Standard
- Technology Standard

- **Heterogeneous Jurisdictions/Geographic Scope**

- Regional , National, and Sub-National

- **Heterogeneous NDC Targets**

- Hard (mass-based) emissions cap
- Relative mass-based emissions cap (relative to BAU)
- Rate-based emissions cap (per unit of economic activity or per unit of output)
- Other, non-emissions caps, such as penetration of renewable energy sources
- *Also*, differences in base year, target year, sectors, GHGs, GWPs, & conditionality

Exploring Linkage: Five Cases

Case	Categories of Heterogeneity				
	Policy Instrument	Jurisdiction/Scope		Target	
		Level of Jurisdiction	Status under Paris Agreement	Policy Instrument	NDC
1	Cap-and-Trade + Cap-and-Trade	National + National	Party + Party	Mass-Based + Mass-Based	Absolute GHG + Absolute GHG
2	Carbon Tax + Cap-and-Trade	Sub-National + Sub-National	In a Party + in a Party	Mass-Based + Mass-Based	Absolute GHG + Absolute GHG
3	Cap-and-Trade + Cap-and-Trade	Regional + Sub-National	Party + in a Non-Party	Mass-Based + Mass-Based	Absolute GHG + N/A
4	Performance Standard + Cap-and-Trade	National + National	Party + Party	Rate-Based + Mass-Based	Absolute GHG + Relative GHG
5	Carbon Tax + Carbon Tax	National + National	Non-Party + Non-Party	Mass-Based + Mass-Based	N/A

Case 1: Cap-and-Trade + Cap-and-Trade

- **Linkage straightforward, but specific design elements can raise *concerns*, if *not* impediments to feasibility**
- **Design Heterogeneity**
 - Difference in allowance prices
 - Difference in scope of sectoral coverage
 - Difference in point of regulation (upstream vs. downstream)
 - Difference in point of allocation (upstream vs. downstream)
 - Difference in nature of allocation (auction vs. free distribution)
 - Difference in monitoring, reporting, & enforcement provisions
 - Difference in cost-containment provisions (offsets, banking, borrowing, price floor, price ceiling)

Example:
New Zealand + Switzerland

Cap-and-Trade Design Heterogeneity

- Difference between allowance prices ↑
 - Cost savings ↑
 - Lower or higher price can impair policy objectives (e.g., technological change)
 - Price↑ in system prone to *emissions leakage* → global emissions↑
 - Potential increase/reduction in co-benefits as emissions reductions reallocated
 - Distributional implications: winners & losers in both systems
 - Capital flows can be political issue
- Difference in scope of sectoral coverage
 - Linked systems need *not* cover same sectors (and single-sector system is automatically linked to all sectors covered by other system)
 - But scope of coverage can affect difference in allowance prices
- Difference in point of regulation (upstream vs. downstream)
 - Concern about double-counting of emissions when fuel in upstream system is used in downstream system, ...
 - But issue arises whether or not systems are linked
 - Solution: upstream system excludes exported fuel from allowance requirement

Cap-and-Trade Design Heterogeneity (continued)

- Difference in point of allocation (upstream vs. downstream)
 - Affects distributional implications in both systems
- Difference in nature of allocation (auction vs. free distribution)
 - Normally does *not* affect allowance price/opportunity cost, but affects distributional implications in both systems
 - Output-based updating allocation (for competitiveness) → total costs can ↑
- Difference in monitoring, reporting, & enforcement provisions
 - Trading can increase total emissions; increase price volatility (& hence costs)
- Different cost-containment provisions: offsets, banking, price floor/ceiling
 - Automatic propagation from one system to the other

Case 1: Legal Questions

- **Potential (legal) heterogeneity of instrument:**
 - Possible differences in the degree of formality and normativity
 - Less formal and/or voluntary CAT will offer less predictability and accountability than more formal and/or mandatory instruments → risk potentially ↑
- **Potential (legal) heterogeneity of target:**
 - Again possible differences in the degree of formality and normativity
 - Aspirational target or target adopted by political program will offer less credibility and accountability than statutory and/or legally binding target → risk potentially ↑
- Some **linking mandates** specify substantive and formal robustness criteria re. instrument and/or target (e.g. Calif. SB 1018: “equivalent to or stricter”, ensuring “enforcement of applicable laws”; EU ETS Dir. Art. 25 (1a): “mandatory” w. “absolute ... caps”)
- ... but no *heterogeneity of jurisdiction*

Case 2: Sub-national Carbon Tax + Cap-and-Trade

Example:
British Columbia and Tokyo

- **Direct two-way linkage feasible via Emission Tax Payment Credits (ETPCs)**
 - Linkage of Tax + CAT the same as CAT-CAT link where one system has a very narrow price collar
 - *Previous issues* of design heterogeneity in CAT-CAT link also apply here, *plus some special considerations ...*
- **Key Factors specific to Carbon Tax-CAT linkage**
 - Unrestricted linkage turns a cap-and-trade system into a tax – two concerns:
 - Absolute limit on emissions in CAT country defeated by link to Tax country
 - Tax revenues in Tax country can be reduced

Case 2: Legal Questions

- **Heterogeneity of instrument:**
 - Some linking mandates specify eligible type of instrument to link to (e.g. EU ETS Directive Art. 25 (1a): linking only to “greenhouse gas emissions trading systems”)
 - Otherwise same considerations as under Case 1
- **Heterogeneity of target:**
 - Same considerations as under Case 1
- **Heterogeneity of jurisdiction:**
 - Usually lacking treaty-making powers, subnational entities may have to rely on informal arrangements to link, e.g. an MoU → predictability, accountability pot. ↓
 - Only countries can (currently) be parties to the Paris Agreement and thus account for internationally transferred mitigation outcomes (ITMOs) under Art. 6.2
 - Subnational jurisdictions in countries that are parties to the Paris Agreement have to rely on their country to approve ITMO use towards NDC (Art. 6.3)
 - Rationale is to prevent subnational jurisdictions from “trading away” emission reductions needed to meet national NDC – coordination needed across levels

Case 3: Regional Cap-and-Trade + Sub-National Non-Party Cap-and-Trade

European Union
And
California

- **Policy Instrument: all the same issues/concerns as in Case 1**
- **Heterogeneity of instruments presents no insurmountable impediments**

Case 3: Legal Questions

- **Treatment under Article 6 of the Paris Agreement:**
 - Nothing precludes *non-Party* from using emission reductions achieved by a Party to Paris Agreement (although it is unclear whether the Party has to agree, Art. 6.3)
 - Party may not include that mitigation in reporting to UNFCCC (double-counting)
 - The real issue is how to treat reductions achieved by a *non-Party* that are claimed by a Party to the Paris Agreement
 - Conceptually similar to the CDM (i.e. CERs from non-Annex I Parties without QELROs under the Kyoto Protocol)? Maybe, but that sets no legal precedent
 - Art. 6 wording is interpreted by some to mean that transfers (or at least use towards NDC achievement) is limited to Parties, but the text is *inconclusive*
 - CMA guidance on Art. 6.2 may clarify, although its mandate is limited

Common Threads and Policy Implications

- Most features of heterogeneity *do not present insurmountable obstacles* to linkage,
 - but *some present real challenges*,
 - and indicate *need for specific accounting guidance* if linkage includes *transferred ITMOs to achieve NDCs*.
- Article 6.2 provides mandate to adopt guidance for *robust accounting to avoid double-counting*
 - But *less clear* whether guidance can (or should) stipulate provisions that go beyond accounting issues, such as on matters of environmental integrity.

The Outlook for Heterogeneous Linkage Consistent with the Paris Agreement

- Negotiators have opportunity to *define clear & consistent guidance* for accounting of emissions transfers under Article 6
 - *Robust accounting framework* for ITMO transfers & can foster *better linkage* of climate policies across jurisdictions
- *But* if guidance extends much beyond basic accounting rules,
 - ... restrictive requirements could *impede* effective linkage
- True to the spirit of the Paris Agreement, *less may be more!*
- So, combination of *common accounting rules* and *absence* of restrictive criteria & conditions can accelerate linkage, ...
 - ... and allow for *broader & deeper climate policy cooperation*,
 - ... and – most important – thereby *increase* the latitude of Parties to *scale up the ambition* of their NDCs.

For More Information

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