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How to Include Developing Countries in a Climate Club: the Case of Mexico and North America

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Abstract: Establishing transformative climate clubs, linking sustainable domestic emissions trading schemes (ETSs), and including developing countries in ambitious climate action strategies are hot topics in global climate policy discussions. With several domestic ETSs already operational, we use the example of North America, applying innovative ETS sustainability and risk assessment frameworks to explore the potential for linking heterogeneous ETSs and providing technical, institutional, and political guidance.

Keywords: Climate Club; climate policy; ETS; carbon pricing; climate change.

Como incluir países em desenvolvimento em um Clube do Clima: o caso do México e da América do Norte

Resumo: Estabelecer clubes climáticos transformadores, vincular esquemas domésticos sustentáveis de comércio de emissões (ETS, em inglês) e incluir países em desenvolvimento em estratégias ambiciosas de ação climática são tópicos importantes nas discussões sobre políticas climáticas globais. Com vários ETS domésticos já em operação, usamos o exemplo da América do Norte e aplicamos uma inovadora estrutura de sustentabilidade para ETS e de avaliação de risco para explorar o potencial de vincular ETS heterogêneos e fornecer orientações técnicas, institucionais e políticas.

Palavras-chave: Clube do Clima; política climática; ETS; precificação do carbono; mudança climática.

The world is still not on track to achieve the Paris Agreement's 1.5 °C target (UNEP 2021). This alarming reality raises questions about the efficacy and political feasibility of a multilateral regime for ambitious climate action among competing global powers.

Initially theorized as a possible alternative to a global climate agreement by Nordhaus (2015), the concept of the climate club has emerged as a complement to this activity. Normative or bargaining climate coalitions such as the Global Methane Pledge (2021) and the Powering Past Coal Alliance (PPCA 2021) were cemented at COP26. These mitigation alliances aim to encourage greater climate ambition (Stua 2017): members—such as like-minded countries or trading partners—agree to observe stringent climate policy targets and conditions, while imposing sanctions on non-members to prevent free riding (Paroussos et al. 2019; Keohane & Victor 2016). However, ambitious and legally binding transformative climate clubs can be politically challenging to establish—mainly because the distributional conflicts inherent in collective mitigation action cannot be overcome (Falkner et al. 2021).

Nonetheless, climate clubs have recently made it to the top of the political agenda as potential tools to enhance environmental stringency—for example, through higher carbon prices. The EU Green Deal and the newly established Carbon Border Adjustment Mechanism have triggered discussions on an E.U.-U.S. climate club—potentially even with a link to China (Tagliapietra & Wolf 2021); and the G7 recently launched a G7-based club to discuss industrial policy toward decarbonization (G7 2022).

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However, in their current form, such clubs would raise equity concerns with respect to developing countries, as the latter would be penalized in international trade even though they are not responsible for historical greenhouse gas (GHG) emissions. One solution could be to complement the establishment of ambitious

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climate clubs with emissions trading scheme (ETS) linking strategies, with the specific aim of including developing countries in these clubs. For example, this approach has been encouraged in relation to Article 6.2 of the Paris Agreement under the Climate Action Teams initiative (https://climateteams.org/).

Emissions Trading Scheme (also known as Cap-and-Trade) is a market-based policy tool that puts a cap on pollutants and issues a respective number of tradable emission rights. The polluting entities must then cover all their emissions by an equivalent number of allowances. By making such allowances tradable among entities, the scheme establishes a price for emissions, which incentivizes an efficient use of the resource. Since the late 1960s in theoretical writing, and the 1990s in practice, ETSs have emerged as a promising policy tool for achieving effective meaningful GHG reductions (environmental effectiveness) at low cost to society (economic efficiency) (Schmalensee & Stavins 2019). It is also possible to design ETSs in a truly sustainable way that also accounts for social justice, which could help facilitate societal acceptance of ETSs. The establishment of ETSs is a growing trend and some 17% of global GHG emissions are already covered by such schemes (ICAP 2022).

In this regard, North America makes for an innovative, insightful case study on the role of ETS linking in promoting the inclusion of developing countries in minilateral climate clubs. Since the early 2000s, North American jurisdictions have established domestic ETSs—such as the Regional Greenhouse Gas Initiative (RGGI), which covers 12 Northeastern U.S. states; the Western Climate Initiative (WCI), now covering California and Washington State, as well as the Canadian provinces of Québec and Nova Scotia; and, more recently, the Mexican Pilot ETS (MEX P-ETS)—and international carbon trading partnerships. They have recently stepped up their ambitions to integrate their carbon pricing policies under the Paris Declaration on Carbon Pricing in the Americas. Hence, this study encompasses well-established ETSs in the high-emitting developed jurisdictions of the U.S. and Canada, alongside a pioneering ETS in a developing country, Mexico (ICAP 2022)—one of the biggest emitters of all developing countries, but also an early mover with respect to carbon pricing (Averchenkova 2018).

Unlike the Kyoto Protocol, the Paris Agreement has successfully secured the active engagement of developing countries. It calls for the submission and regular updating of nationally determined contributions (NDCs) by both developed and developing countries, while still respecting the principle of common but differentiated responsibilities and respective capabilities. As a result, many developing countries have submitted NDCs detailing their GHG emission targets and the means to achieve them, while also requesting international financial support and cooperation (Sforna 2019; Senshaw & Kim 2018). Additionally, in most developing countries, carbon pricing is increasingly being adopted (World Bank 2021). For example, China, Argentina, Colombia and South Africa introduced carbon pricing in 2021; Brazil, Pakistan and Indonesia are considering this possibility; and Turkey and Thailand are planning pilot ETSs.

While U.S. and Canadian climate policy, the respective subnational ETSs and even linking options have been studied intensively in the past (Rudolph, Lerch & Kawakatsu 2017), the academic literature thus far has largely neglected Mexico, despite its importance as a pioneering developing country. Although some recent works suggest that a (linked) ETS would be a promising policy tool for Mexico (Barragán-Beaud et al. 2018; Cruz-Pastrana & Franco-García 2019; Diniz Oliveira et al. 2020), a comprehensive design analysis of MEX P-ETS and its potential for facilitating the establishment of a North American climate club has not yet been conducted.

Hence, in this paper, we aim to advance earlier studies on North American linking (Mehling & Haites 2009) by taking a closer look at the recently developed MEX P-ETS; by connecting the ETS linking discussion to one of the most hotly discussed topics in global climate policy—that is, the establishment of climate clubs that include developing countries; and by proposing strategies to overcome barriers. We do so by building on a sustainability framework for domestic ETS design, inter-jurisdictional linking and risk assessment; describing and evaluating Mexico's climate policy and MEX P-ETS; and discussing the prospects for the establishment of a sustainable North American climate club via ETS linking, before concluding with a policy strategy discussion. As significant results with immediate applicability to policy, we highlight the shortcomings of MEX P-ETS and make recommendations for improvements toward a more sustainable design which also provide important policy lessons for other developing countries. We also explore the technical, institutional and political prospects and challenges of establishing a sustainable North American climate club by linking domestic ETSs in the U.S., Canada and Mexico; and outline strategies to overcome respective barriers, which can also serve as guidance for the establishment of climate clubs in other parts of the world.

TOWARD SUSTAINABLE ETS LINKAGE

As shown by Rudolph and Aydos (2021), ETSs can be designed in a sustainable way so that they simultaneously fulfill environmental effectiveness, economic efficiency and social justice criteria. The Sustainable Model Rule (SMR) proposed by the authors provides a framework for evaluating and reforming ETS towards a more sustainable design. The SMR builds on a set of theoretically well-founded criteria of environmental effectiveness, social justice, and economic efficiency, which are then applied to all major design features of an ETS such as coverage, cap, allocation, revenue use, flexibility mechanisms, price management, compliance, and linking (Column 1 in Table 1). As a result, the SMR outlines a fully sustainable model design for an ETS (Column 2 in Table 1), against which ETS in practice can be judged (for North America in Column 3 of Table 1) and reform proposals towards more sustainability can be derived.

	SMR	MEX	WCI	RGGI
Coverage	• Mandatory participation	●	●	●
	• All GHGs (based on CO2e)	○	●	○
	• All polluters	○	◉	○
Cap	• −25–40% by 2020; −50–65% by 2030 (base 1990) (Paris Agreement)	○	◉	●
	• Absolute volume cap (“budget approach”)	●	●	●
	• Gradual cap reduction (“contraction and convergence”)		●	●
Allocation	• Initial allocation by 100% auctioning	○	◉	●
	• Frequent auctions, equally accessible to all parties	○	●	●
	• Well-established, equally accessible secondary market platform	●	●	●
Revenue use	• 100% revenue recycling	○	●	●
	• Earmarked to equal per-capita climate dividend	○	○	◉
Flexibility mechanisms	• Banking permitted	●	●	●
	• Borrowing prohibited	○	●	●
	• Offsets limited to sustainable projects (“Gold Standard”)		○	○
Price management	• Price floor (auction) (≥ SC-CO2 – that is, US$50/US$60 per ton in 2020/2030)	○	○	○
	• Price ceiling (≥ 2°C target achievement cost – that is, US$80/ US$100per ton in 2020/2030)	○	○	○
Compliance	• Control periods of no more than three years or interim holdings	●	●	●
	• Continuous emission monitoring, tracking and registration or annual third-party verified reporting	●	●	●
	• Discouraging fines for non-compliance (> allowance price)	○	●	●
	• Full compensation of excess emissions	●	●	●
Linking	• Multilateral direct linking	◉	●	●

Note: (●) is attributed to an ETS that fully complies with a certain design recommendation of the SMR; while (○) represents a complete lack of compliance. Partial compliance is represented by (◉), which is attributed to those cases where the ETS is predominantly compliant with the SMR.

Table 1. SMR and North American domestic ETSs. Source: Table by the authors.

Therefore, by comparatively analyzing ETS design based on the SMR, we intend to understand the opportunities and barriers for a North American ETS linkage. Despite scattered criticism (Green 2017), the majority of environmental economists has long emphasized the economic benefits of ETS linking, which result from shared costs and efforts (Burtraw et al. 2013; Flachsland et al. 2009). First, linking increases economic cost efficiency compared to autarky[1] by equalizing marginal abatement costs across linked partners. Second, by expanding the market size, ETS linking enhances market liquidity and minimizes the risk of both market power abuse and price volatility in case of external shocks. Third, ETS linking reduces administrative costs through economies of scale. Fourth, linking reduces the risk of carbon leakage among trade partners. Fifth, the economic benefits of ETS linking can enhance mitigation ambition (Bodansky et al. 2016). It has further been observed that the more heterogeneous the linking partners—for example, with respect to differing marginal abatement costs between developed and developing countries—the more beneficial linking will be (Metcalf & Weisbach 2011; Mehling et al. 2018).

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Linking also offers several social justice advantages. Environmental gains with respect to mitigation ambition and carbon leakage promote intergenerational justice by protecting future generations from extensive global warming. Economic cost savings also relieve current generations from unnecessarily high-cost burdens of mitigation. Furthermore, the additional cost savings to be gained from linking offer wider scope for redistributional measures such as supporting developing countries with climate adaptation or protecting low-income households from the regressive effects of carbon pricing, thus advancing national and international intragenerational justice. Eliminating price differences among discrete ETSs also reduces inequities among polluters that may formerly have been subject to more relaxed or more stringent domestic schemes, depending on the countries in which they operate, thus serving the equality requirement. Price harmonization between jurisdictions with *ex ante* low and *ex ante* high allowance prices also serves the polluter pays principle and intragenerational justice, because the average price in the linked system burdens the laggards and disburdens the pioneers.

1. The condition of non-linked ETS.

There are also several risks and challenges regarding linking ETS systems. For example, from an economic perspective, linking might reduce overall emission abatement if there is allowance surplus. Also, linking to a lower price system can incentivize the companies to buy allowances from the cheaper system rather than investing the money in better technologies to reduce their own emissions. In addition, there would be a loss of public funds from auctioning the permits after the higher price system adjusts to the lower price system. There can also be uncertainty for price or supply controls since if one of the systems has a price cap, this cap will serve as the upper limit for both systems. Furthermore, the prospect of higher revenues from the allowances might cause countries to have less ambitious caps to sell more allowances to the linked system (Carbon Market Watch 2015). From a political perspective, a crucial question is whether linking partners commit to their level of efforts and reduction schedule. From a regulatory point of view, linking mixes the system designs which might deteriorate the original policy priorities. Also, the regulatory intervention scope will be restrained compared to single systems (Flachsland et al. 2009).

While linking does not necessarily require that the designs of the respective schemes be identical, the linking literature emphasizes that ETSs should converge in design, as proposed in Table 2, in order to meet the conditions for successful linking (Tuerk et al. 2009; Bodansky et al. 2016). For example, linking between absolute and relative cap ETSs might increase the overall emissions (Verde, Galdi, Borghesi & Ferrari 2020). Against this background, Table 2 presents an ETS design harmonization framework[2] and, in column 3 (Risk in case of non-harmonization), the risks of linking heterogeneous schemes using three criteria:[3] economic efficiency, environmental effectiveness (ambition) and system robustness.

While the risks relating to economic efficiency are mainly influenced by the method to allocate emissions quotas, temporal flexibility (like banking or borrowing) and possible price management intervention from authorities, those relating to environmental effectiveness are mainly determined by cap size, coverage (which enterprises are concerned) and offsets (buying emissions credits from outside the ETS). Due to their key roles, compliance issues such as penalties, monitoring, reporting and verification (MRV) and emission and allowance registries are of utmost importance to all risk categories.

In order to reduce these environmental, social, economic and robustness risks, the harmonization and risk assessment framework also presents scheme reform proposals in column 4 (Reforms proposed to facilitate linking and climate club).

2. Harmonization framework related to the work of Marchinsky et al. (2012); Burtraw et al. (2013); and Bodansky (2016).

3. For more arguments on these criteria, see ICAP (2018).

Regulation	Design heterogeneities	Risk in case of non-harmonization	Reforms proposed to facilitate linking and climate club
Coverage	**MX:** Energy sectors and industry—40% total **WCI:** Large industries, electricity generators and imports, oil and gas industry…—75% total **RGGI:** Fossil fuel electricity-generating units—10% total	Risk in case of non-harmonization of sector coverage: *Economic efficiency + Environmental ambition* (carbon leakage)	Sectoral coverage alignment for EITE sector
	MX: Mandatory (annual)—inclusion threshold ≥ 100,000 $tCO_2\ yr^{-1}$ **WCI:** Mandatory (three years)—inclusion threshold ≥ 25,000 $tCO_2\ yr^{-1}$ **RGGI:** Mandatory (three years)—inclusion threshold ≥ 25MW yr^{-1}	Risk in case of divergent inclusion threshold for EITE sectors: *Environmental ambition* (carbon leakage)	National scheme (U.S.A. & Canada) Convergence of inclusion threshold/sector EITE Technology transfer agreement
Cap	**MX:** Absolute but constant in the first phase (2021 estimated: 273.1 $MtCO_2$) **WCI[4]:** Absolute ~4% decrease/yr (2021 for California: 320 $MtCO_2$) **RGGI:** Absolute ~3% decrease/yr (in 2021: 108.9 $MtCO_2$)	Risk in case of divergent cap-setting: *System robustness + Environmental ambition*	Absolute target ETS cap (declining) Agreement on rules for cap setting
Allocation	**MX:** Free allocation (grandfathering)[5] **WCI:** Free allocation (benchmarking);[6] but 58% auction of "vintage" allowances **RGGI:** Auctioning per quarter	Risk in case of divergent allocation system: *System robustness + Environmental ambition*	Similar method for initial allocation for EITE sector Auction-based allocation Joint auctions Common trading platforms
Price management	**MX:** *Ex post* adjustment allowed; banking allowed; Borrowing not mentioned **WCI:** Auction reserve price (price floor for auction); banking allowed (with restrictions); borrowing not allowed **RGGI:** Auction price floor (2.38US$/$tCO_2$ in 2021); emissions containment reserve (up to 10%); banking allowed; borrowing not allowed	Risk in case of divergent temporal flexibility and/or divergent price management mechanism: *System robustness + Environmental ambition + Economic efficiency*	Common framework for price management (ex post adjustment) Limit banking to same proportion Ban borrowing
Compliance	**MX:** Annual reporting (6 UNFCCC GHG + CFCs & HFCs); third-party verifier; currently no penalty **WCI:** Annual reporting (6 UNFCCC GHG) **RGGI:** Quarterly reporting (CO_2)	Risk in case of divergent MRV standards: environmental ambition (including carbon leakage)	Align MRV rules for offset projects Align data monitored and gathered in the registry Adopt penalty in case of non-compliance (MX ETS)

Table 2. Current design heterogeneities and harmonization framework for ETS linking. EITE: emissions-intensive trade-exposed sectors.

4. In this table, we consider the Californian ETS.

5. Free allocation based on historical emissions.

6. Free allocation based on the emissions performance of each sector.

CLIMATE POLICY AND ETS IN MEXICO

Climate Policy in Mexico

Mexico is the world's eleventh-biggest GHG emitter and ranks sixth among developing countries (ClimateWatch 2021). Total emissions increased by 40% from 417 million tons of CO_2e (carbon dioxide equivalent) in 1990 to 695 million tons in 2018, with almost 80% of emissions coming from the energy and industry sectors.

Climate policy from 1990 to 1992 saw Mexico oppose binding targets in the United Nations Framework Convention on Climate Change (UNFCCC). This was followed by the formation of an epistemic community (1993–96) and subsequent inter-ministerial wrangling and electoral politics (1997–2000). In 2000, Mexico ratified the Kyoto Protocol; but while programs such as the National Climate Strategy (NCS), with a 30% below baseline emissions target (i.e., 554 million tons), were published from 2006 to 2008, little action was taken (Pulver 2009). In 2009, the Mexican government committed its federal agencies to national mitigation and adaptation objectives and submitted its Fourth National Communication to the UNFCCC (Ibarrarán Viniegra et al. 2011). The Cancun Agreement, which called for a Green Climate Fund (GCF) and a second commitment period of the Kyoto Protocol, was a major achievement of COP16, hosted in Mexico in 2010. Two years later, Mexico adopted the General Law on Climate Change as a comprehensive legal framework (Cámara de Diputados del Honorable Congreso de la Unión 2020); this was followed in 2015 by the Energy Transition Law, which aimed to further decarbonization (Averchenkova & Guzmán Lun 2018). Between 2014 and 2018, Mexico continued to demonstrate its environmental commitment by contributing to the GCF, submitting the first developing country NDC and a long-term climate strategy to the UNFCCC, and amending its climate law to reflect the Paris Agreement (Gabbatiss 2021).

Nonetheless, Mexico was the first developing country to levy a carbon tax on all fossil fuels except for natural gas. Introduced in 2014, it now covers about 25% of Mexico's total GHG emissions

In 2020, Mexico updated its NDC to set an unconditional target of reducing GHG emissions by 22% below business as usual (BAU) by 2030 (UNFCCC 2020; Cámara de Diputados del Honorable Congreso de la Unión 2020), and a conditional

36% reduction target should it receive financial, technical and capacity-building support. However, the updated NDC also revised BAU upwards and thus weakened the 2030 target. As a consequence, Mexico's overall approach to mitigation was rated "Highly insufficient" in 2021 (Climate Action Tracker 2021).

Nonetheless, Mexico was the first developing country to levy a carbon tax on all fossil fuels except for natural gas. Introduced in 2014, it now covers about 25% of Mexico's total GHG emissions. The tax rate is set at US$3 per ton of excess CO_2, or less if the tax exceeds 3% of the price of a particular fossil fuel (Blacks et al. 2021), with revenues directed to the national budget (World Bank 2019). The tax is estimated to raise US$1 billion in revenues; but due to the low tax rate, price-induced emission reductions are unlikely to result (SERMANAT 2019). The tax also recognizes international offset credits as a means of payment (ICAP 2021).

Mexico's Pilot ETS

In 2020, MEX P-ETS became operational (SERMANAT 2019; 2020; ICAP 2020). The program was mandated by the transitional article in the General Law on Climate Change amended in 2018, and is regulated by the implementation regulations finalized in 2019. A two-year trial period during which the system design will be tested is followed by a one-year transition phase to the full operation starting in 2023. The main objective of the pilot program is to raise the quality of emissions data, and build capacity for the covered entities (enterprises) in order to eventually improve the design of the operational phase (ICAP 2020).

MEX P-ETS covers CO_2 emissions from around 300 very large stationary energy and industry sources that emit more than 100,000 tons of CO_2 per year, thus bringing approximately 40% of total GHG emissions under the scheme. Participation is mandatory for these entities. When evaluated against the SMR, it is clear that MEX P-ETS fails to comply with the full GHG and source coverage requirements, although it does comply with the mandatory participation requirement.

A Specific Design

The following paragraphs will explain the design details of the pilot program and evaluate it against the SMR model. During the pilot phase, the cap was held constant at about 271.3 million tons (2020) and 273.1 million tons (2021) of CO_2 per year. When evaluated against the NCS reduction target for covered sectors—222 million tons of CO_2e[7]—these caps appear overgenerous. Three reserves, comprised

7. This result was calculated by applying the ETS covered sectors' share (40%) of total 2020 target emissions (i.e., 554 million tons of CO_2e).

of allowances additional to the cap (see below), have further weakened the trial phase cap. Nonetheless, for the following reasons, it is difficult to evaluate the MEX-P-ETS cap against the SMR. First, the SMR was developed for industrialized country reduction pathways (e.g., 25–40% by 2020 against 1990 levels). Second, the caps for future years—including the Paris Agreement target year of 2030—have not yet been set (SERMANAT 2020). And third, Mexico's unconditional 2030 NDC target of 22% below BAU is relative rather than absolute, and refers to baseline emissions which were recently adjusted upwards, thus weakening the target. Despite these uncertainties, however, we can still conclude that the fact that the MEX P-ETS cap is set in absolute volume terms can be labeled sustainable, while the size of the current cap and the lack of a clear pathway toward a Paris target-compatible cap do not comply with the SMR.

The initial allocation of emission allowances to covered entities is based on a grandfathering approach, which provides emission allowances based on historic emission levels.[8] Additional allowances can be allocated in case of production expansion; and the government can even increase reserves should demand for reserve allowances exceed the reserve supply. Allowances from the auction reserve may be sold to covered entities from 2021. Thus, while the allowance market is equally accessible to all interested parties and thus complies with sustainability requirements, the current free-of-charge allocation is not in line with the SMR; and likewise, as the grandfathering approach does not generate revenues, the recycling of revenues to mitigate the detrimental social effects of a higher carbon price is impossible.

MEX P-ETS features several elements of flexibility. Banking is allowed during the trial phase, but it is still under consideration for subsequent years. Borrowing is not officially mentioned in the applicable regulations, but it is implicitly allowed by the rules for surrendering allowances. Offset protocols are still being considered for domestic GHG projects in priority sectors such as forestry, agriculture and transport; for early action before the implementation of MEX P-ETS; and for voluntary mitigation efforts (e.g., under Article 6 of the Paris Agreement). While projects are supposed to follow internationally recognized protocols, the details have not been specified yet. In addition, a quantitative limit applies, whereby entities can only cover 10% of their compliance obligations through offsets. Hence, while banking is in line with the SMR requirements, implicit borrowing is not; and the still-to-be-established offset rules cannot be judged at this point in time.

In terms of price management, MEX P-ETS provides for three reserves comprised of allowances additional to the cap:

8. For sectoral allocation and detailed installation-level calculation rules, see SEMARNAT (2020).

- an auction reserve equivalent to 5% of the cap;
- a new entrants reserve equivalent to 10% of the cap; and
- a general reserve, again equivalent to 5% of the cap for *ex post* adjustments.

This price control approach is not in line with the SMR requirements.

With respect to compliance, the first two-year trading period (2020–2021) was followed by a one-year transitional phase (2022); the length of the compliance period from 2023 has not been decided yet. Covered entities must prove compliance every year by surrendering allowances equal to the emissions for the preceding year. Monitoring is effected through electronic self-reporting by entities covered under the MEX P-ETS and independent third-party verification of these reports. In case of non-compliance, entities lose the right to bank unused emission allowances in the next compliance period during the pilot phase, and will receive two fewer allowances for each ton not initially covered in the fully operational phase. However, additional fines for non-compliance have not been introduced. Thus, except for the lack of fines, the MEX P-ETS rules on MRV comply with the SMR.

In sum, as shown in Table 1, MEX P-ETS complies with the SMR for sustainable ETS design only to a very limited extent. Key features such as coverage, the cap and initial allocations require major revisions before they can be called sustainable. More positive, however, are the MRV rules and the stated ambition to link. In comparison, however, the potential North American linking partners—the RGGI and the WCI-based schemes in California and Quebec—feature significantly more ambitious designs. This requires careful consideration when contemplating the potential establishment of a North American climate club by linking domestic ETSs.

COMBINING ETS LINKAGE AND CLIMATE CLUB NEGOTIATIONS IN NORTH AMERICA

North America as a heterogeneous climate club laboratory

As in many developing countries, the effectiveness of climate action in Mexico has been hindered by several factors, including: lack of coordination between federal and local governments and among stakeholders; weak institutional structures for engaging stakeholders; absence of mechanisms to monitor financial, human and technological resources; underestimation of emissions; and conflicts of interest among stakeholders (Dibley & Garcia-Miron 2020; Pulver 2009; Sosa-Rodriguez 2013; Ortega-Díaz & Gutiérrez 2018). As a result, recent developments such as the lackluster NDC, new public investment in fossil-fuel based power generation and a bill bringing private investment in renewable energies to a halt have further weakened Mexico's climate policy (SERMANAT 2020; *Gobierno de México* 2020). Given these political barriers, Mexican climate policy could benefit significantly from further international collaboration—in particular, as a partner in a North American climate club that would support enhanced ambition in the region.

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North America could thus become a climate club laboratory. Mexico, the U.S. and Canada have long-standing trade relations, governed initially by the 1994 North American Free Trade Agreement, and today by the 2020 United States-Mexico-Canada Agreement. Given these well-established economic relations, as well as their geographic proximity and limited cultural and language barriers—particularly in comparison with other world regions—the North American jurisdictions are particularly prone to carbon leakage. Hence, in climate policy, recent initiatives have indicated an interest in intensified collaboration among North American countries (North American Climate Leadership Dialogue 2019). And in the realm of carbon pricing, particularly regional governments in Canada, the U.S. and Mexico have an even longer history of close collaboration. Since 2007, the WCI has facilitated ETS collaboration and design harmonization among states and provinces; and in 2017 several North American jurisdictions signed the Paris Declaration on Carbon Pricing in the Americas, which was updated at COP26 in Glasgow.

Since crucial issues of ETS collaboration under Article 6 of the Paris Agreement were settled at COP26, the Glasgow Declaration on Carbon Pricing in the Americas could act as a cornerstone in establishing a North American climate club through domestic ETS linking encompassing both carbon pricing and trade policy (Cruz et al. 2018).

When it comes to potential linking partners, the Mexican government has focused its attention on both North and South America (ICAP 2021). In 2015, Mexico signed a memorandum of understanding with California and Québec, which could also be extended to Nova Scotia, should the latter join the WCI linking efforts. In addition, in 2017, Mexico and several other Latin American countries and regional jurisdictions signed the Paris Declaration on Carbon Pricing in the Americas to promote carbon pricing collaboration. Thus, while not yet realized, MEX P-ETS has opened the door to sustainable linking across North and South America in particular.

Against this background, Table 2 considers the prospects for North American linkage by identifying current design heterogeneities and harmonization requirements among MEX P-ETS, the WCI and the RGGI. Based on this design comparison, it provides a risk analysis and applies a design harmonization framework for sustainable linkage.

Table 2 illustrates the overall compatibility of the three North American schemes. Ongoing collaboration and jointly learned lessons from previous regional experiences explain why MEX P-ETS could technically be linked with its North American neighbors—particularly if the proposed harmonizations were accepted by all parties. This indicates that the main issue impeding ETS linking in the region is political.

Despite the obvious merits, in addition to the need for (partial) program harmonization, significant politico-institutional barriers to heterogeneous ETS linking must be overcome. Hurdles such as divergent carbon price levels and emission allowance quality, political differences, varying levels of ambition and a lack of confidence among partners all complicate implementation (Dellatte & Rudolph 2022; Pollitt 2016; Ranson & Stavin 2016; Green et al. 2014). Hence, heterogeneous ETS linking demands a particularly strong political will and an effective strategy to overcome the barriers to linking and harmonizing scheme design. These complex political challenges mirror those which apply to the establishment of transformative climate clubs. Combining ETS linking with a broader strategy for mitigation alliance-building through trade and industrial policy agreements could thus represent a promising political pathway to overcome these barriers.

OVERCOMING BARRIERS THROUGH A COMBINED STRATEGY ON ETS LINKING AND THE ESTABLISHMENT OF CLIMATE CLUBS

The academic literature often presents policy sequencing as a promising strategy to overcome resistance to ambitious climate policy and particularly carbon pricing (Meckling et al. 2015; Meckling et al. 2017; Pahle et al. 2018). Inspired by this logic, we propose a strategy to resolve the main political and institutional barriers both to ETS linking and to the establishment of ambitious climate clubs in a heterogeneous context—not by temporal sequencing, but by combining both policy discussions. This solution would help step up climate ambition on the one hand and promote climate policy cooperation between developed and developing countries on the other.

The strategy capitalizes on two main benefits: the cost efficiency benefits to be gained by exploiting additional marginal abatement cost difference through ETS linking; and the flexibility benefits—particularly with respect to fairness issues—to be gained by incorporating trade and industrial policy considerations into climate policy discussions in a climate club.

These benefits would create important mutual synergies in two respects: by facilitating the establishment of climate clubs through linking existing domestic ETSs; and by facilitating sustainable ETS linking through the negotiation of design harmonizations within the context of a newly established climate club.

Considering the North American case with regard to the first point above, the ETSs that have already been established at the regional level in the U.S. (California, the Northeast) and Canada (Québec, Nova Scotia) and at the national level in Mexico, and the tradition of jointly negotiating design elements through the WCI, have created a promising political and institutional environment for the establishment of a climate club between these jurisdictions based on ETS linking. Moreover, not only is MEX P-ETS explicitly open to linking, but the U.S. and Canadian schemes are already interlinked—across states in the case of RGGI, and even across national borders in the case of the WCI. And given the recent trend of other regions in the U.S. and Canada joining established linking programs (e.g., for RGGI, Virginia in 2020, Pennsylvania in 2022 and North Carolina under consideration; and for the WCI, Nova Scotia in 2019 and Washington State and Oregon in 2023), a climate club could potentially encompass a bigger geographic area.

With regard to the second point, the major challenges to address in the established ETSs in North America relate to environmental ambition and economic cost attribution. Most obviously, environmental stringency with respect to cap ambition differs significantly between the respective North American jurisdictions, as indicated in Tables 1 and 2. In addition, the future cap trajectory for Mexico is still unknown. While jurisdictions need not necessarily have the same cap or cap trajectory in order to link their ETSs, similar ambition certainly facilitates implementation. However, given its importance to the environmental integrity of domestic climate policy and its economic impact on polluters, ETS cap setting should be part of a more comprehensive agreement between linking partners. Ideally, domestic cap size should be included in a more general overall discussion on climate policy target ambition within the framework of a regional climate club. This would allow regional partners in Canada, the U.S. and Mexico to jointly settle target and cap questions by facilitating political agreement on the fairness of emission reduction trajectories. Resolving this issue multilaterally through a climate club would be significantly facilitated by connecting target and cap ambition arguments with prospective cost-efficiency gains from ETS linking. More broadly the effort sharing needed to reach joint decisions on setting domestic targets and caps can then feed into wider discussions on trade and industrial policy within the climate club region. This is of utmost importance—particularly in the case of negotiations between asymmetrical economic powers, as the current discussions on carbon leakage and carbon border adjustments bear out.

Similar considerations apply to coverage, as both sectorial coverage and the inclusion threshold for covered entities diverge considerably between the three North American regions (Tables 1 and 2). Usually, emissions-intensive trade-exposed sectors (EITEs) are most significantly impacted by carbon pricing policies. Most of those sectors are excluded altogether (as in RGGI), only partially covered (as in MEX P-ETS) or, at the very least, receive generous free allocations of emissions allowances (as in the WCI), due to fears of competitive disadvantages, carbon leakage and high carbon prices. Like cap size, coverage has significant implications for both environmental effectiveness and industrial and trade policy, and should thus be negotiated within a broader context, such as a regional climate club, in order to overcome barriers to ETS design harmonization. Coupling ETS linking with industrial and trade policy discussions in a climate club would also allow every available tool (e.g., R&D cooperation; access to technologies) to be used to address the critical question of EITE inclusion and cost attribution. Therefore, a North American climate club should be the forum for a discussion on the burden for EITE sectors, taking into account wider fairness considerations between asymmetrical economic partners. Negotiations on coverage could then be handled alongside discussions on technology transfer, R&D cooperation and the establishment of a level playing field for state aid for clean technologies.

Emissions allowances should initially be allocated by auction for various reasons, including economic efficiency and social justice (Dorsch et al. 2020; Beiser-McGrath & Bernauer 2019). The respective revenues would serve as an additional instrument for proactive coalition building—for example, by compensating low-income households for the regressive effects of carbon pricing or helping covered sectors transition to net zero. These revenues would also serve as a funding source for investment in clean technology, thus helping to overcome political barriers to an ambitious climate club. Furthermore, establishing a steady revenue stream through auctioned-based linked ETSs would provide a structural source of climate finance, especially for the less developed partners in the climate club, thus enhancing internal fairness.

Finally, while penalties need not be identical across the linked partners, the current absence of penalties in MEX P-ETS should be resolved to avoid carbon impunity and ultimately carbon leakage. In terms of compliance, the cooperation on MRV and registries necessary for ETS linking would also establish a platform for further regional collaboration on transparent climate policy through a climate club.

In sum, the innovative strategy of coupling ETS linking with the establishment of climate clubs would have significant political benefits. First, ETS linking between trade partners could accelerate ambitious carbon pricing implementation by quelling most of the opposition from concerned sectors, especially EITE sectors. Second, it would facilitate the inclusion of developing countries in an ambitious, transformative climate club by addressing the question of fairness through the club architecture. In this configuration, each party would be able to recognize benefits in the talks, offering a pathway to resolve traditional climate policy gridlock.

CONCLUSIONS

After COP27, the multilateral climate action gridlock is more alive than ever. To resolve this issue, establishing transformative climate clubs, linking sustainable domestic ETSs and including developing countries in ambitious climate alliances are of critical importance. However, the political barriers towards these alliances are often considered almost insurmountable. In this paper, we have proposed strategies to overcome these barriers—in particular, by combining the respective policy discussions and capitalizing on the resulting synergies.

We have identified North America not only as a major emitting region, but also as an ideal laboratory for this strategic policy innovation, given the geographical proximity of potential partners in Canada, the U.S. and Mexico; their strong economic ties; and the well-established regional ETSs that currently exist. Based on innovative sustainability and risk assessment frameworks, we have comparatively identified the need for domestic ETS design reforms toward greater sustainability—particularly in Mexico—and scheme harmonization with possible partners in RGGI and the WCI.

While Mexico is a global leader among developing countries on domestic climate policy in general and carbon pricing in particular, significant improvements in its ETS design could be achieved. Mexico needs to extend the scope of the MEX P-ETS to smaller emitters (i.e., more than 25,000 tons of CO_2e), and to the transport and heating sectors. It should base the cap at minimum on the implications of the domestic NDC target for covered sectors (i.e., 155 million tons of CO_2e). Finally, it should use auctioning as the sole initial allocation method and redistributing revenues mainly as an equal per capita dividend.

In terms of the potential partner jurisdictions in North America, Canadian Provincial and U.S. States governments should also update their policy to enhance sustainability, facilitate linking, and enable cooperation with Mexico. The RGGI would have to expand its coverage to include industry and the transport and heating sectors (thus far, efforts to integrate these within the scope of RGGI—for example, through the Transport and Climate Initiative—have failed due to lack of political support from RGGI member states). The WCI would have to phase out free allocation in industry.

In terms of the potential partner jurisdictions in North America, Canadian Provincial and U.S. States governments should also update their policy to enhance sustainability, facilitate linking, and enable cooperation with Mexico.

Against this backdrop, domestic climate policy in Mexico, and regional climate policy in Canada and the U.S., could benefit significantly from further international collaboration—for example, by jointly stepping up climate ambition and capitalizing on differences in marginal abatement costs of carbon. However, similar political and institutional barriers apply both to heterogeneous ETS linking and to ambitious transformative climate clubs that include developing countries. To resolve those issues, in this paper we have proposed that the establishment of climate clubs on the one hand be combined with ETS linking on the other.

This paper's strategy creates a window of opportunity by capitalizing on the cost efficiency benefits to be gained by exploiting additional marginal abatement cost difference through ETS linking, and the flexibility benefits—particularly with respect to fairness issues—to be gained by including trade and industrial policy considerations in climate policy discussions within the context of a climate club. We stress to facilitate the establishment of climate clubs through the use of a common instrument—that is, a linked ETS—and promote sustainable ETS linking by negotiating design harmonization at a high political level through a newly established climate club. Finally, it overcomes the most significant political barriers by quelling opposition from EITE sectors and addressing the question of fairness between developed and developing country members through the climate club architecture.

In sum, North America could serve as a promising laboratory for specific policy innovation—that is, the establishment of a climate club based on ETS linking that could resolve the international climate cooperation gridlock between developed and developing countries and overcome hesitation toward sustainable carbon pricing. This approach would further the arrival of sound political solutions to accelerate the implementation of ambitious climate policy during this critical decade.

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