Advancing Linked Carbon Pricing Instruments

Lessons on governing carbon pricing clubs from non-climate institutions

IISD REPORT

International Institute for Sustainable Development

Frédéric Gagnon-Lebrun
Philip Gass
Jennifer Allan
Daniella Echeverría
Yuliia Oharenko
Yanick Touchette

September 2018

Published by the International Institute for Sustainable Development

International Institute for Sustainable Development

The International Institute for Sustainable Development (IISD) is an independent think tank championing sustainable solutions to 21st–century problems. Our mission is to promote human development and environmental sustainability. We do this through research, analysis and knowledge products that support sound policymaking. Our big-picture view allows us to address the root causes of some of the greatest challenges facing our planet today: ecological destruction, social exclusion, unfair laws and economic rules, a changing climate. IISD's staff of over 120 people, plus over 50 associates and 100 consultants, come from across the globe and from many disciplines. Our work affects lives in nearly 100 countries. Part scientist, part strategist—IISD delivers the knowledge to act.

IISD is registered as a charitable organization in Canada and has 501(c)(3) status in the United States. IISD receives core operating support from the Province of Manitoba and project funding from numerous governments inside and outside Canada, United Nations agencies, foundations, the private sector and individuals.

Head Office

111 Lombard Avenue, Suite 325
Winnipeg, Manitoba
Canada R3B 0T4

Tel: +1 (204) 958-7700
Website: www.iisd.org
Twitter: @IISD_news

Advancing Linked Carbon Pricing Instruments: Lessons on governing carbon pricing clubs from non-climate institutions

Written by Frédéric Gagnon-Lebrun, Philip Gass, Jennifer Allan, Daniella Echeverría, Yuliia Oharenko and Yanick Touchette

September 2018

Acknowledgements

This paper was developed through a collaboration with the Environmental Defense Fund and our special thanks go to Alex Hanafi for his invaluable inputs throughout this research project.

We are also indebted to the following individuals for their insights and comments on the paper: Harro van Asselt (University of Eastern Finland Law School), Marissa Santikarn (International Carbon Action Partnership [ICAP]), Martin Lajoie and Stefan Wesche (Government of Canada), Sebastián Carranza (Government of Colombia) as well as Katie Sullivan, Clayton Munnings and Justin Johnson (International Emissions Trading Association [IETA]).

Table of Contents

1.0 Introduction

1.1 Context

The implementation of the Paris Agreement is anchored in a wide variety of climate targets and domestic policies, captured in Parties' Nationally Determined Contributions (NDCs) and intended to help countries meet the goals of the agreement. Economic instruments, and more specifically carbon pricing instruments (CPIs), are increasingly considered as a key policy tool to reduce greenhouse gas (GHG) emissions. In fact, 88 countries have included a mention of carbon pricing instruments in the NDCs, highlighting the enthusiasm for CPIs (Velloso, Vilas Boas, Lefèvre, & Nicolletti, 2018). By early 2018, there were 45 national and 25 subnational jurisdictions that priced carbon or were intending to (World Bank & Ecofys, 2018).

In the spirit of global cooperation that the Paris Agreement embodies, policy-makers face new challenges in defining ways to improve cohesion and efficiency in the implementation of CPIs. Cooperation among jurisdictions in the implementation of CPIs represents a politically attractive way to directly reduce emissions in a cost-effective manner (Ranson & Stavins, 2015) and an option to drive greater ambition over time. It is, for example, estimated that linking carbon markets could achieve nearly two times more emission reductions than existing policies at the same cost (Piris-Cabezas & Lubowski, 2018).

In that vein, the Paris Agreement's Article 6 laid out new ways for countries to cooperate in meeting their NDCs by connecting CPIs among countries. Article 6 provides a framework for accounting for countries' cooperation on linked CPIs and the transfers of so-called "mitigation outcomes," but it leaves it up to countries themselves to design and implement the instruments and establish the necessary ground rules to ensure the credibility and environmental integrity of their linked instruments.

The term "linking" means here that a jurisdiction can use allowances or emission units from another jurisdiction to meet its mitigation targets, whether these targets were adopted at the national or subnational level (see Box 1). The bottom-up nature of linked CPIs, in the context of the Paris Agreement, calls for complementary institutional arrangements. Effectively, linking CPIs boils down to joining forces in policy design and implementation—whereby policy choices made by one jurisdiction affect those of the linked jurisdictions—and requires joint governance arrangements (Görlach, Mehling, & Roberts, 2015). These can take the form of clubs or limited-membership coalitions, to be established to operate the functions necessary for linking CPIs in a way that is aligned with the rules and processes agreed upon under the UNFCCC.

Clubs may be created to establish the foundation for linking by developing standards and guidelines and then evolve to create a link between CPIs, following an incremental deepening of the cooperation (Burtraw et al., 2013). They may also be established through the linking of existing CPIs, as jurisdictions seek to exploit the benefits of cooperation and making the required adjustments to their instruments for linking.[1] In both cases, once created, clubs may expand and take on new members.

[1] Görlach et al. (2015) use the term "hub" to refer to the linking of emissions trading systems (ETSs) that are not coordinated from the outset.

Box 1. Different types of linking

Much research has been done on linking carbon markets, with a strong focus on full bilateral or multilateral direct links (Kachi et al., 2015). Such links would entail the mutual recognition of emission units by two or more jurisdictions, requiring a high level of harmonization between the linked systems. An example of such a link is the one between the Quebec and California systems, effectively creating one carbon market. Markets can also be linked in only one direction—a jurisdiction recognizes the units from another jurisdiction, but not the other way around—as well as indirectly, by two systems recognizing the same crediting system or standard for compliance (Ranson & Stavins, 2015).

Political and administrative barriers have, however, made such mutual linking challenging, as attested by the limited number of linked markets to date. These challenges—combined with the emergence of various types of carbon pricing initiatives, such as a carbon tax coupled with an offset system—have opened the door to exploring other ways to link that could accommodate different political preferences and concerns or pricing instruments.

One way is the idea of establishing restricted links, meaning establishing links that enable the transfers of units between jurisdictions imposing specific constraints, such as quotas or conditions, to help address concerns related to full mutual recognition of units (Lazarus, Schneider, Lee, & van Asselt, 2015). More recent work points to the possibility of linking different types of pricing instruments, such as a carbon tax, an emissions trading system or performance standards (Mehling, Metcalf, & Stavins, 2017). It is in recognition of the possible cooperation between jurisdictions implementing different types of CPIs that we do not focus solely on linking emissions trading systems.

Leadership in the creation of carbon pricing clubs by a small group of jurisdictions that are already engaged in pricing carbon (or at a minimum developing concrete programs) and that are motivated by the development of high-integrity international trading under the Paris Agreement could greatly accelerate climate action. The Americas is an example of a region that has seen promising cooperation—despite a recent setback in Ontario's announcement to abandon its cap-and-trade program and link to Quebec and California—with a wide variety of approaches to carbon pricing in the region.[2] It also has two examples of existing club structures, the Western Climate Initiative (WCI) and the Regional Greenhouse Gas Initiative (RGGI), which were notably strengthened by the Carbon Pricing in the Americas Declaration signed by 12 national and subnational jurisdictions.[3]

Our touchstone for the analysis is the possible development of innovative approaches to linking CPIs. If jurisdictions around the world are interested in enhancing cohesion between various CPIs, what kind of institution(s) might be designed—beyond or building on existing linked instruments like WCI and RGGI—to aid their efforts? What cooperative arrangements would be best suited to develop common or reciprocal standards to ensure environmental integrity and robust accounting, share market infrastructure and allow members to share experiences? What governance models could help develop and oversee these types of cooperation?

1.2 Objective and Approach

This paper considers how carbon pricing club members could govern their interactions to ensure emissions reductions and raise their mitigation ambitions while keeping transaction costs low. In a survey of research on linking ETSs, Kachi et al. (2015) found that there was a gap in research on the governance issues of linking carbon markets and more specifically on creating carbon pricing clubs. This paper attempts to shine some light on these issues and aims to explore possible institutional arrangements that could support enhanced collaboration between jurisdictions on linking CPIs, in a way that is compatible with the countries' commitments under the Paris Agreement.

[2] See Velloso et al. (2018) for a review of cooperation on CPIs in Latin America.

[3] See IETA (2017) for the Declaration itself.

However, unlike many of studies conducted to date, we draw primarily on examples from institutions that are not focused on carbon markets or climate change. There have been many assessments of institutions like the EU-ETS, WCI and RGGI, as well as broader climate-focused organizations (World Bank, 2016). There has been less consideration of what can be learned or drawn from non-climate-focused institutions. Yet the challenges facing carbon pricing clubs are, in many ways, common to several cooperative arrangements around other issues. For that reason, the objective of this study is to draw lessons from non-climate institutions that may be insightful for the creation of carbon pricing clubs.

This assessment focuses on a particular set of multi-jurisdictional institutions. These are not a representative sample, but were chosen to represent a broad selection of designs, decision-making processes and membership structures to allow for comparison of lessons and inferences for how these institutions' experience could inform a carbon pricing club.

To be most insightful, we have selected institutions that have some of the following characteristics:

- Membership is made up of governments, either at national or subnational levels.
- Membership is voluntary.
- There is a focus on common goals, with a scope of work aiming to facilitate cooperation among various jurisdictions to set a specific standard or set of rules.
- Institutional structures represent a diverse set of options and are the product of negotiation.

This approach allowed us to assess the impact of different design options as a first step to explore how institutions can influence the subsequent ability of jurisdictions to cooperate and to meet their stated goals. The organizations selected for this assessment are listed in Table 1.

Table 1. Non-climate institutions investigated

Organization	Mission	Nature of the organization
Asia-Pacific Economic Cooperation (APEC)	Support sustainable economic growth and prosperity in the Asia-Pacific region (APEC, 2017a).	Regional economic and trade forum, with 21 member economies.
Missile Technology Control Regime (MTCR)	Coordinate national export licensing to prevent the proliferation of unmanned delivery systems (MTCR, n.d.b).	Non-treaty export control regime, with 35 member countries.
Organisation for Economic Co-operation and Development (OECD)	Promote policies that will improve the economic and social well-being of people internationally (OECD, 2018a).	Intergovernmental economic organization with 35 member countries.
International Fuel Tax Agreement (IFTA)	Simplify the reporting of fuel taxes by carriers who operate in more than one member province or state (IFTA Inc., 2016a).	Subnational agreement between lower 48 US states and all 10 Canadian provinces.

Section 2 explores the rationale for deeper cooperation between jurisdictions in implementing CPIs, along with the benefits that would accrue from creating carbon pricing clubs. It also highlights four challenges to enhancing cooperation. Section 3 introduces the approach taken to the analysis of design features and presents the analysis of non-climate cross-jurisdictional institutions. Section 4 concludes the paper by drawing lessons from the experiences of non-climate institutions for the creation carbon pricing clubs.

2.0 Rationale and Challenges for Carbon Pricing Clubs

The current patchwork of CPIs around the world could be sewn into linked sets of carbon pricing clubs, able to coordinate efforts, generate efficiency gains and ultimately unlock greater mitigation ambition. Yet there are challenges associated with cooperation among jurisdictions implementing carbon market instruments. Below, we outline the rationale for the creation of carbon pricing clubs before turning to a discussion of the challenges. Section 3 examines the institutional arrangements of non-climate institutions with a view of providing insights for overcoming these challenges.

2.1 Rationale

There is potential, and perhaps political feasibility, to link existing CPIs together to recognize each other's compliance units. But what would drive a jurisdiction to seek partners to create a carbon pricing club? The main rationale for creating a carbon pricing club is to reap benefits coming from efficiency gains and lower compliance costs to meet a mitigation target (Keohane, Petsonk, & Hanafi, 2015). The premise is that such gains may help unlock greater mitigation ambition for the benefit of all (Environmental Defense Fund, 2018).

This can be done by creating an institution that carries out the necessary functions, which could include common standards, harmonized rules and procedures to promote greater transparency, shared infrastructure to track activities and technical cooperation. By limiting membership to a select few, clubs and their institutions can ensure that benefits accrue only to members. The establishment of the key functions for the link can also be negotiated more easily among a small number of actors and better tailored to the needs and objectives of the club members.

Along those lines, club members would accrue various benefits, even before linking, such as shared knowledge building and having the assurance that other jurisdictions use similarly stringent standards and enhanced transparency (Environmental Defense Fund [EDF], n.d.). It may also create positive momentum through which the cooperation makes the implementation of a CPI more palatable to domestic stakeholders and creates an incentive for policy durability (Keohane et al., 2015). Once governments are part of a club, it becomes challenging politically and economically to amend rules that are consistent with other members' pricing instruments, as it may, for instance, undermine cooperation with a friendly jurisdiction and reduce opportunities for some market actors. In short, it is better for members to be in than out of the club. One of the benefits of a higher degree of policy certainty is greater investor and consumer confidence in the market and, over time, the creation of a more attractive environment for low-carbon investment.

A club can also build a base for broadening the participation and ambition of multiple jurisdictions. A club can assist newly emerging markets that are interested in attaining membership to build capacity, but it also has a benefit for existing members, in that they can directly shape prospective markets to be consistent with the existing procedures of the club, both making membership easier to operationalize and increasing the potential trading market for existing members.

2.2 Challenges

The benefits of a club can be realized through the design of cooperative arrangements and robust infrastructure to deliver on its objectives. In fact, the greater the level of integration within a club—the more shared functions a club has—the more robust its common governance structures will need to be. We expect that forming a carbon pricing club may offer politically desirable ways to reduce mitigation costs while accessing foreign market opportunities. However, there are specific challenges associated with cooperation among carbon pricing initiatives, and many issues remain poorly explored.

Challenge #1: Ensuring Environmental Integrity and Effectiveness

One of the most fundamental challenges for a carbon pricing club is to ensure environmental integrity is safeguarded. Environmental integrity may be put at risk by, on the one hand, accounting of international transfers that is not robust or poor quality of units issued by a CPI and, on the other hand, an NDC that lacks environmental ambition (Schneider, et al., 2017)

To ensure environmental integrity, there is a need to develop harmonized or reciprocal standards, as well as joint or compatible processes, that enable jurisdictions to recognize each other's compliance units, in cases of bilateral or multilateral links (Keohane et al., 2015). Without these, there is little basis for credible and effective collaboration through linking. For jurisdictions to recognize other jurisdictions' units or offset credits in a unilateral manner, the harmonization or the reciprocity of standards may be less crucial, but there is still a need for cooperation, notably for tracking transfers and use. This does not, however, mean that these standards should be identical, commonly agreed or fully harmonized across all members (Mehling & Görlach, 2016), but they do need to be recognized as compatible and applied in a reciprocal manner across members. When linking, flawed features of one market tend to affect others, which makes the joint development or recognition of standards critical.

Beyond standards, there can also be concerns that are specific to fully linked markets. Ensuring the comparability of emission reduction targets is a paramount concern when jurisdictions aim to link carbon markets (Mehling & Görlach, 2016; Lazarus et al., 2015). The external assessments of the stringency of caps, the trajectory of a carbon tax or of CPI's design features are sensitive issues, possibly perceived as infringing on a jurisdiction's sovereignty. As a supra-jurisdictional institution, a carbon pricing club would have to strike a balance between the needs of the club for stringent mitigation targets, and the individual authority of club members to set their own level of mitigation ambition. This question needs to be addressed not only upfront, when new members seek entry into the club, but also continuously, as existing members update their GHG targets and policies and their NDCs over time. The latter may test the capacity of a club to adapt to changing circumstances.

Challenge #2: Adapting to Changing Circumstances

Linking policy instruments makes the cooperating jurisdictions mutually dependent on each other's policy choices and changing circumstances. Over time, environmental integrity and the overall effectiveness of the club in achieving its objectives can be difficult to maintain as governments' climate policies change and as the club faces unforeseen circumstances. These changes may require adjustments to (or a renegotiation of) rules. Such changes could be external to the club, such as economic hardship or changed political leadership. If parties to the Paris Agreement were ever to agree on the comprehensive standards and guidelines needed for a truly global carbon market to represent an alternative to the club, such a development would also possibly disrupt its membership or make the need for clubs obsolete.

Several internal changes are also possible. One of the most prominent examples is uncertainty over future club member policies, such as a revision of GHG target or of a feature that significantly affects supply or demand of units. Significant changes to membership, such as rapid growth in membership or one or more key members exiting the club, could also create temporary price fluctuations. Or a member may suffer a natural disaster that could drastically affect the units available for trade. A particularly pertinent example could be a large-scale forest fire that could affect the supply of forest-based carbon credits.

Challenge #3: Addressing Administrative Costs and Burdens

Linking existing markets offers the potential to realize economies of scale, it but can also increase administrative costs if the cooperation is not carefully planned. Each market may have its own bureaucratic systems, if linking occurs between existing systems, and linking those systems could feasibly create another layer of administration. This can raise the costs of cooperation, which may discourage participation, calling for a careful assessment of the needs and usefulness of shared or centralized functions to support the carbon pricing club. Examples of such functions include market oversight measures and joint infrastructure, such as offset registries and auctioning mechanisms.

Challenge #4: Engaging Existing and New Members

An effective club must create and maintain the conditions for members to remain fully engaged and in compliance with its rules. It also encompasses the challenge to mobilize new members that are fully committed to the rules. For some new members, there may be a learning curve that may require time and resources to reform policies and comply with the rules. Should it be beneficial for a club to grow, there may be a need to offer support throughout the accession process.

3.0 Lessons Learned From Non-Climate Institutions

Institutional design choices can help address the challenges that impede cooperation, from enforcement to collective action problems. What institutional design would allow for members of a carbon pricing club to deal with the potential challenges of cooperation and, at the same time, maximize the benefits from cooperation?

Institutions can rely on soft coordination, which entails, for example, information sharing and represents the least intrusive form of collaboration. Hard coordination involves requiring that members abide by a common set of rules, which can be more challenging for jurisdictions' sovereignty. Considering the nature of the challenges for carbon pricing clubs set out in Section 2, and the need for them to oversee the potential transfer of units across jurisdictions, this study focuses on cooperative arrangements that are binding or that rely on hard coordination.

Should the institution be enabled to prescribe or proscribe certain actions or activities? Should its role be to simply authorize transactions? How centralized should the institution be for such things as collecting information, reviewing implementation, monitoring compliance and resolving conflict? How should a club balance broadening its membership to reap the benefits of climate policy cohesion and market liquidity vs. safeguarding integrity and promoting compliance with the rules and standards?

To start tackling these questions, it is worth exploring different dimensions of cooperation used in multi-jurisdictional institutions. These dimensions, or institutional design features, can vary along several lines, including membership; scope of the issues addressed; centralization of governance; rules for controlling the institution; and flexibility of arrangements (Koremenos, Lipson, & Snidal, 2001).

For this paper, we have organized the dimensions of cooperation into three categories, around which this section is structured:

- **Membership**: Membership refers to who is in and out of a club, in terms of both the size of a club and the rules governing who can be admitted. Both the size of the club and the degree of homogeneity of members can vary widely and can influence how decisions are made. Small or homogenous clubs can reach agreement more quickly because there are fewer interests in play. Small clubs can often better monitor one another for compliance with club rules, although, as Koremenos et al. (2001) point out, large groups can disseminate lessons learned over time, which can become shared soft law.
- **Decision making and flexibility of the institutional arrangement**: Decision-making rules vary, from consensus or voting rules to the degree of control members cede to a centralized institution, such as a secretariat. The flexibility of the organization refers to its capacity to adapt its rules in response to changing circumstances or members' demands. In general, voting provisions allow for greater ambition and more rapid decision making, but risk alienating dissenting states. Delegating authority to a centralized institution can help reduce the costs of cooperation and ability to adapt by allowing the central body to implement and alter some rules. Delegation can also help reduce uncertainty and can increase enforcement of the rules.
- **Review processes and mechanisms to promote compliance**: Review mechanisms include individual or aggregate assessments of results achieved, outstanding gaps in performance, and systemic issues with implementation and compliance. Mechanisms to promote compliance can be in the form of "sticks" (such as punishing non-compliance or requiring greater commitments in the future) or "carrots" (such as facilitating access to support for implementation). Both help to instill confidence among members that others are living up to the rules and not "free riding" on the group's efforts. Reducing uncertainty can help members learn over time to improve their performance and ambition. Such mechanisms also protect the brand of the club.

There are obviously linkages among the different dimensions of cooperation. For example, larger clubs may require more formal review and enforcement mechanisms because there are more members to monitor for compliance. However, there are considerable independent effects within each dimension to warrant independent consideration.

This section examines the cooperation experiences of non-climate institutions along three dimensions, namely membership, decision making and compliance promotion. We focus on how each of these dimensions influences the club's ability to reach its goals.

3.1 Membership

Clubs are exclusive by definition, and maintaining such exclusivity requires membership rules. Institutions consider similar questions when it comes to membership rules. These include whether and how to expand membership, membership conditions and possible modalities of leaving an institution, all of which can influence the cooperative efforts of the club.

The set of non-climate institutions assessed shows that membership can include different types of entities beyond national governments and that the members can be quite heterogeneous. The OECD and the MTCR both have countries as members, while the IFTA in North America is an example of a cooperation agreement between subnational governments from different countries. APEC's members are not countries but "economies."[4] The focus on economies allows APEC to work around complicated political issues, such as the relationship between China, Hong Kong and Chinese Taipei, which would not normally be possible if the focus was only on countries.

What matters most for cooperation is a shared mission between members and trust among them that the benefits of cooperating are reserved for members. This section sheds light on the experience of existing institutions with regards to membership exclusivity, accession rules and exiting an institution.

3.1.1 Exclusive Benefits

Exclusive or restrictive membership can be a source of motivation for jurisdictions to join, and once members, for them to cooperate effectively and comply with the rules. The benefits can, however, be of a different nature and are reserved to members to varying extents in different institutions.

For example, the main attraction of the OECD is the benefit of association, i.e., recognition as part of a group of advanced countries, which can pay off through such benefits as increased investor confidence (Davis, 2016). Another benefit of joining the OECD includes obtaining policy expertise, although this is not merely an exclusive benefit, as OECD research is widely available to non-members.

For members of the MTCR, another non-treaty association of countries, benefits include restricting the transfer of missile technology by committing to guidelines for export control. Despite exclusive membership, the MTCR is perceived as having failed to deliver on its primary objective to limit the risks of proliferation of missile technology (IRIA, 2014), highlighting that exclusivity provides a strong basis for cooperation, but no guarantee to success. In the case of MTCR, the compliance failures of some MTCR members hint that missile export control in itself may not be a sufficient motivation for cooperation. In fact, the main attraction of MTCR appears to be access to new technology and participation in space programs, which are privileges reserved to members (Zaborsky, 2004), highlighting a misalignment between the motivations for members and the core mission of the institution.

In the IFTA in North America, the benefits for members are mainly financial and administrative, as the IFTA was established to improve the collection of fuel taxes from trucking companies, who also saw a benefit in streamlining

[4] APEC's justification for the use of the term "economies" is that the cooperative process is concerned with trade and economic issues and members therefore engage each other as economic entities (APEC, 2017c).

reporting, audit and compliance requirements of fuel taxes (Multistate Tax Commission, 2003). In 1991, the risks of losing tax revenues from trucks and buses registered in other states became a strong incentive for U.S. states to join the already 16-state institution (IFTA, Inc., 2008a). At the same time, cooperation helps promote compliance and increase audit coverage.

3.1.2 Accession Rules and Membership Conditions

For membership to remain exclusive, membership conditions need to be clearly laid out and strictly applied through a transparent accession process. In all exclusive membership organizations, existing members act as gatekeepers that vet applicants. In the MTCR, member countries must support an application for it to be approved; failure to obtain support of current members has led to denied applications. Both China and India initially had their membership applications denied by the MTCR because of practices not consistent with the mission of the group.

For the OECD, the accession process aims to increase the policy convergence of member countries, thereby striving to preserve the integrity of the existing group and the benefits to its members. It has fixed terms and conditions for accession and has set up a working group on future size and membership to consider these issues of strategic nature for the OECD. The accession process to the OECD is transparent and aims to assess both whether an applicant meets the requirements and implications of a new member for the organization (see Box 2). As such, the members agree that the organization "must maintain in all circumstances the integrity and objectivity of the accession process and its tradition of high standards for membership" (OECD, 2007). It currently has three countries in the accession process to become members, five countries with the status of Key Partners,[5] and several countries have recently expressed their interest in membership. The race for membership seen at the OECD provides a good example of the incentive that exclusivity and collaboration among like-minded countries can provide.

Box 2. OECD's Framework for the Consideration of Prospective Members

The framework was adopted by the OECD Council on June 2, 2017. It provides guidelines to member countries on assessing prospective members (OECD, 2017b) against four key criteria laid down in the "Noboru Report": like-mindedness, significant player standing, mutual benefit and global considerations. It is worth noting that "While 'like-mindedness' and 'significant player' focus on defining the eligibility of an individual candidate, 'global considerations' concerns the overall balance of the membership. Also, while the first two criteria, together with 'mutual benefit', work as 'selective' elements of the membership composition, 'global considerations' is 'reflective' of the overall composition of membership" (Noboru Report, cited in OECD, 2017b).

It also outlines the process for deciding whether to open accession discussions with an interested country. In particular, Annex I of the framework lists specific characteristics to assess the state of readiness of a prospective member (e.g., adherence to standards and principles in relation to an open market economy, tax transparency, stability of its financial system, etc.) and commitment to OECD values and membership obligations. Because the framework is publicly accessible, it also assists prospective members in considering their position before expressing an interest to join the organization.

The council can invite a prospective member to start an accession process, or a candidate country can submit a written request. The secretary-general prepares detailed information on a prospective member to inform council's decision regarding the opening of an accession procedure. In cases where a positive decision is made, the council adopts an "accession roadmap" detailing all terms and conditions and processes for the accession of each prospective member. The roadmap *inter alia* includes a list of policy areas subject to in-depth reviews by substantive OECD committees to evaluate how policies and practices of a prospective member country compare with best practices in the OECD (see e.g., Accession Roadmap of Lithuania). On the basis of this technical evaluation, each committee submits a "formal opinion" to the OECD Council, which is taken into an account for a final decision (OECD, 2015). Council possesses a right to postpone or terminate the accession process at any time.

[5] Key partners are part of a program and contribute to the OECD's work, for example that of substantive bodies of the organization.

APEC has managed its numbers upfront since shortly after its creation. It is also concerned about membership expansion, and members agreed to "remain limited in size both on account of its Asia-Pacific regional character and because of the need for the group to remain manageable and effective" (APEC, 1997). In 1997, members gave themselves three years to accept only a limited number of new members, although there was not a stated cap on new members. The same year, it also adopted new guidelines to assess applicants for membership (APEC, 1997). These included a requirement to introduce an individual action plan for implementation and commence membership in the APEC Collective Action Plans, activities existing members have committed to doing themselves only since the 1998 Osaka Action Agenda.

It is worth noting that the request to develop an individual action plan before commencing the accession process can serve as a self-assessment tool and pushes the burden of accession onto the applicant as much as possible. The OECD has a similar aim by publishing the specific requirements for accession. Becoming a member of these organizations is not easy; it requires commitment, possibly through successive governments over a number of years, to gain entry to the club.

Membership experiences in these organizations is also linked to members' ability to reach their stated objectives. The OECD is open to growth, but aware of the potential challenges of a larger membership. On the one hand, as Davis (2016) points out, ironically, the more the OECD grows, the more it dilutes the appeal of the brand. On the other hand, as an organization grows, there are risks that the diversity of views stands in the way of consensus or that it embraces a broader mission to please more members. This appears to have happened to the MTCR, with the growth of the organization to 35 members resulting in the organization losing sight of its core objectives and becoming less focused in its actions (IRIA, 2014). Characteristics of clubs that seem to matter here are both the size of the organization and the homogeneity of membership, which offers cautionary tales for any clubs keen to expand.

The APEC and the OECD experiences suggest that membership conditions may need to evolve over time. For example, at its inception, a group of jurisdictions may coalesce around a common mission and the willingness to design standards to abide by. Once standards have been agreed among the initial members, memberships conditions may need to be adjusted to reflect the new expectations toward members. In short, as cooperation between members matures and deepens, membership conditions need to change to protect existing members and the integrity of the club.

3.1.3 Exiting an Institution

To encourage membership, the possibility of leaving needs to exist and, for all institutions assessed, it is always an option for any member to leave an organization. While it may seem sensible that organizations would adopt provisions to ensure a smooth exit (for example to minimize the impacts on the remaining members) we have not found such a case in the organizations reviewed. This may be due to the perception that exit provisions would represent a barrier to join or simply as an aspect that is overseen as jurisdictions engage in good faith discussions to establish an organization.

3.1.4 Lessons Learned

Various lessons can be drawn from the case studies on how membership rules and accession processes can help foster cooperation.

First, exclusive benefits to club members can vary—from being associated with a group to providing market access or economic efficiencies—and their different members are likely to weigh them differently as they decide to join a club. Reputational benefits, however, seem to weigh heavily in the social community of governments, whether it be at national or subnational levels and can help the cohesion of a group.

Second, homogeneity in membership seems to matter significantly, in terms of shared values and principles, but not in terms of type of jurisdiction. The institutions assessed show that clubs can include countries and subnational entities from different countries and that cooperation is possible despite these mixed types of members. What matters in our cases was shared commitment to the goals and buy-in for the processes of the organization. Membership criteria can assure homogeneity and commitment by requiring applicants to have certain characteristics, that are like those of existing members in important respects for the issue at hand. At the same time, limiting membership can create a perverse incentive to make the club too small to adequately address the issue at hand. Organizations seem to aim to strike a balance between growing a club, and thereby growing its influence and impact, and safeguarding the "brand" attraction and the exclusive benefits among a smaller group.

Third, accession processes can be designed to promote policy coherence and the like-mindedness of members, which can ease cooperation. This has been achieved by organizations outlining criteria related to the organization's goals and issues of concern along with their ability to contribute to benefits. Organizations tend to use both selective and reflective criteria in screening applicants. Selective criteria may include an assessment of the applicant's capabilities to comply with the rules of an institution, whereas reflective criteria relate to an assessment of the overall composition of membership and the implications of a new member joining. Clearly outlining criteria and requiring applicants to take steps to show commitment to the goals (for example by preparing an action plan) can help make membership more exclusive among a more like-minded group. Any steps taken to help potential members assess their chances of succeeding in joining a club will help in ensuring the seriousness of those applying, manage their expectations and reduce the burden of screening applicants for the organizations.

Fourth, conditions for membership and the accession processes may need to evolve over time to reflect the level of maturity of the institution and protect the integrity of the group. Both APEC and OECD have reviewed their guidelines, highlighting the fact that processes to revisit membership criteria as cooperation matures are important for maintaining trust among members.

3.2 Decision Making

Issues of decision making relate to the relative level of control members have over the institution, as well as the level of control that the central agency has over its members, essentially with regards to the binding nature of these decisions. Koremenos et. al. (2001) reveal questions for characteristics of institutions in regard to decision making, including the following questions: How will collective decisions be made? What are the rules of decision making? What role, if any, should a central agency play?

3.2.1 Centralization

Centralization for the pooling of resources can prevent potential duplication of effort of individual members and helps achieve economies of scale by ensuring that all members have access to research products, analyses or other services. There is an important distinction to be made, however, between centralization of tasks to support the mission of an organization and the centralization of enforcement, which is examined in more detail in the following section (Koremenos et al., 2001). Centralization of tasks allows members to benefit from a technical body acting as a supporting arm for the collective members. This does not, however, mean that the technical body has powers to enforce any decisions. The enforcement function can remain a collective responsibility, but be conducted through the individual members' sovereign actions. Centralization, in this section, refers to the centralization of tasks.

Having a centralized body able to undertake complex tasks will require members to invest in ensuring it has the adequate capacity. Having multiple members investing financial resources into a centralized technical body can create an economy of scale by pooling resources, and the overall cost may be lower based on a scenario where members keep their analysis of these types of technical tasks in-house.

One function often centralized to secretariats is research and technical advice. APEC is one such example where work and events on topics of focus for many members may be held with members benefiting from the APEC secretariat. For instance, APEC's policy support unit (the research and analysis arm of APEC) is attached to the secretariat and funded by voluntary contributions. The policy support unit is charged with undertaking research and increasing access to greater levels of data and commentary on economic issues for APEC members, supporting them in their own initiatives and leveraging international expertise (APEC, 2017b). The OECD, through its secretariat, is able to inform decision making by its member countries through centralized analysis, dissemination of knowledge and sharing of best practices across a wide range of issues (Henriques & Laredo, 2012; Porter & Webb, 2008). The OECD secretariat publishes its country focus studies as well as work on statistical resources that benefit all its members, such as their publicly accessible database of budgetary supports and tax expenditures (OECD, 2018b).

Centralized bodies can also be established to support the administration of programs, providing support to members in implementing common rules. This is the case of IFTA, whose members decided in 1991 to create IFTA Inc., an administrative body tasked with the collection and management of information needed for tax reconciliation between members and conducting audits. The main rational for its creation was cost savings, as IFTA had grown to 16 states by then (IFTA, Inc., 2008a). IFTA Inc. serves as the information hub on tax rates, on licensing (e.g., carriers with revoked or suspended licences) and exemptions for the 58 member jurisdictions; it also facilitates monitoring and amendment process (Denison & Facer, 2005; O'Connell, Yusuf, & Hackbart, 2007). IFTA, Inc. also runs clearinghouse services to help members exchange data on motor carriers that pay taxes in all participating jurisdictions. A nine-member board of trustees, elected by the membership, governs IFTA, Inc., that is headed by an executive director, who is the also the eighth board member but with no voting rights (Denison & Facer, 2005; O'Connell et al., 2007).

IFTA Inc.'s responsibilities, however, do not include tax collection or any taxing authority, which remain the prerogative of individual U.S. states and Canadian provinces. This exemplifies the limits of delegating powers to a central agency in a cooperation agreement.

A third function that a secretariat can serve is one of reviewing members performance and sharing best practices. The OECD's work promoting science policy innovation is supported by the secretariat that carries out country reviews and engages member countries in peer-focused discussions (Henriques & Laredo, 2012). The IFTA Inc. also reviews member compliance with the agreement. Both OECD's and IFTA's review mechanisms are conducted with a view to ensuring alignment with the institutions' missions and respect of rules. These are discussed in greater detail in Section 3.3.1.

3.2.2 Processes for Rule and Standard Setting

Organizations use different models for defining the rules and/or standards that their members agree to abide by.

At the organization level, the OECD operates on a consensus-based model, led by a council composed of representatives from all member countries. This council is responsible for setting OECD's oversight and strategic vision and also directs work to its various committees. OECD priorities are set up through ministerial-level meetings (OECD, 2017a). OECD's committees and central bodies feed input from member countries in preparation for decision making. Their legwork includes making some lower level decision making such as requesting specific work on a key theme or priority, but ultimately major decisions, such as agenda and priority setting are conducted at the ministerial level. The OECD's overall work is overseen by the member-based council, chaired by the secretary-general (OECD, 2017a).

One of the benefits of this model is that it allows for the secretariat to work largely autonomously of the council after the overall priorities are determined, although OECD committees, made up of member countries' representatives, do request, review and contribute to work of the secretariat. Major decisions of the OECD are still made by members, but in a manner informed by the work of the committees and secretariat.

The MTCR also uses a consensus decision-making model. Unlike the OECD, the MTCR has no secretariat; rather the Ministry of Foreign Affairs of France acts as MTCR's "point of contact" and carries out some administrative functions for the regime (IRIA, 2014). Through its governing council, members of the MTCR jointly develop guidelines on common export control, including national control laws and procedures, two-category common control lists, and facilitates information sharing on licensing, interdiction and best practices with regard to missile proliferation (IRIA, 2014). By following the guidelines, international standards on responsible missile non-proliferation are developed (MTCR, n.d.a). IRIA (2014) observed that the large membership of the MTCR makes achieving consensus increasingly challenging on sensitive issues.

At the IFTA, member states and provinces meet annually, and decisions are made through two-thirds majority votes (Rowen, 2009). Members also can amend the terms of the Agreement under a three-quarters vote, following amendment proposals that can be submitted by a member or any of the IFTA Committees, under a "full track" or a "short track" ballot process (O'Connell et al., 2007; Rowen, 2009). There appear to be a few proposals per year, and participation rates have historically been above 90 per cent (IFTA, Inc., 2016b). Interestingly, despite the fact that this agreement is an example of hard coordination and involves cash transfers between members, amendments to the agreement can be made without all members agreeing to them by consensus.

The trucking industry's concern was one of the drivers behind the creation of IFTA. Prior to the IFTA, trucking companies had a heavy and expensive burden complying with various states' fuel tax requirements. The simplification of a base state and the administration under IFTA, Inc. significantly reduced compliance costs for the trucking industry, and although they are not involved in the administration of IFTA they do work closely with IFTA, Inc. in a number of ways. For example, trucking industry representatives attend IFTA meetings and also serve on the IFTA Industry Advisory Committee, but do not have decision-making power (O'Connell et al., 2007).

3.2.3 Lessons Learned

Various lessons can be drawn from the case studies on how decision-making rules, transparency and flexibility can help foster cooperation.

First, the need for a support function was evident across the institutions assessed, whether to help conduct the business of the organization and/or implement the provisions of an agreement between jurisdiction. All institutions devolved some responsibility for providing technical advice or support to members. In most cases this was done through a secretariat. Yet even the MTCR, which lacks a secretariat, requires a coordination function, provided by the French Ministry of Foreign Affairs. These are important functions that can shape the perceptions of members and define the possible solutions available for decision making.

Second, the centralization of tasks has limitations. For instance, none of the institutions analyzed have delegated decision-making power for certain vital tasks, most notably standard setting. For instance, IFTA members kept the responsibility of setting tax rates and collecting tax revenues and did not delegate it to IFTA Inc. Such powers remain with the member jurisdictions, as they go beyond the objectives of the cooperation agreement. Governments also did not devolve authority on standard setting. They kept these powers for themselves, to ensure their ability to negotiate a standard that meets their interests and, given the widespread use of consensus decision making, block a standard that does not meet them.

Third, decision-making requires a mutual recognition of members' ability to act unilaterally being restrained by the decisions of the group, which may mean that these members give up a degree of sovereignty. This calls for inclusive and transparent processes that will foster a strong ownership of decisions by members. For that reason, decision making is often done by consensus, but that is not a condition for a successful cooperation. As seen in IFTA, voting rules are also used, even in an organization with a hard coordination governance model and much at stake between the members in terms of tax collection and redistribution.

3.3 Promoting Compliance

This section examines these two topics drawing some lessons from case studies on how organizations have looked to ensure that the decisions they make are followed, and what is done if they are not.

3.3.1 Review of Implementation

Review processes to monitor the implementation of standards and/or joint decisions is a useful tool to create pressure on members to conform (Mahon & McBride, 2009, p. 86). Further, some form of ex-ante assessment and review of members' contributions to collective goals can be useful to help ensure that contributions are ambitious and fair (van Asselt, 2015).

OECD reviews are often both qualitative and/or quantitative, and allow for non-members to participate on a voluntary basis (van Asselt, 2015). Non-members' participation in the reviews can be seen as a way to extend OECD's influence and mobilize potential new members. Reviews of a country's performance are usually conducted for all OECD members based on a set of standards and best practices agreed upon by members depending on the subject of the review (Henriques & Laredo, 2012). The standards are defined through benchmarks obtained from the country's economic surveys, analysis from the secretariat and reviews by member countries.

Similarly, all APEC member economies are to submit their individual action plans to peer review, which cover a member economy's progress with respect to a range of policies related to free and open trade and investment, from intellectual property rights to customs procedures and competition policies (APEC, 2017d). The reviews are conducted by independent experts and involve APEC's independent private sector body, the APEC Business Advisory Council.

Unlike OECD and APEC, MTCR members do not conduct regular or systematic reviews of individual member activities. Information and views on missile program development and national missile non-proliferation export licensing issues are shared on an ad hoc basis through annual plenary meetings, as well as between meetings (IRIA, 2014).

Among the institutions assessed, IFTA stands out as an institution with a strict, formal implementation and review process, embedded in state and provincial legislation as well as in jointly agreed procedures. IFTA member states and provinces are required as part of the agreement to conduct an annual audit of at least 3 per cent of carriers registered in their jurisdictions (O'Connell et al., 2007). The transportation carriers are responsible for keeping records to support the information reported on their quarterly tax returns, as these are subject to audit. Despite some issues with tax avoidance, in a 2007 survey IFTA members did not support an increase to 5 per cent, mainly because of cost concerns for extra auditors (O'Connell et al., 2007).

Because the carriers' records are used to conduct tax revenue transfers between IFTA members, an auditor in one jurisdiction is in fact working on behalf of every member jurisdiction. The obligation of conducting audits is therefore at the heart of IFTA; if overlooked, it risks compromising tax revenue for any member jurisdiction. As all IFTA members have an interest in ensuring the audits are conducted adequately across all members, they have made mandatory the use of a standardized audit program (IFTA, Inc., 2017) and have set up a peer-review process early on, in 1994. Today, the Programme Compliance Review Committee conducts periodic reviews of the tax returns and supporting documents of carriers licensed in each jurisdiction (IFTA, Inc., 2017). The process is run by IFTA Inc. and involves other members; each member jurisdiction is required by the IFTA to participate in up to two compliance reviews each year.

3.3.2 Enforcement

Rule enforcement can be more or less centralized, although most international organizations have relatively decentralized enforcement arrangements (Koremenos et al., 2001). In other words, individual members most often hold each other to account, as opposed to devolving an enforcement function to a secretariat or one member.

The MTCR is an example of an institution facing enforcement challenges. The regime does not include legally binding provisions or, as a consequence, a formal enforcement mechanism. It is considered an informed political understanding[6] whereby countries are expected to abide to the guidelines they mutually agree on by consensus. Enforcement lies with individual member countries, who are encouraged to address issues bilaterally and are able to enact sanctions if appropriate. The IRIA (2014) found that there have been mixed results from the MTCR in achieving its mission of controlling trade in missile technologies, with a noted lack of enforcement on offending parties.

IFTA's processes are much more formal than any other organization analyzed in this paper in terms of enforcement. Like other institutions, responsibility for enforcing the fuel tax agreement lies with member states and provinces through the jurisdiction-level tax collection and audits of licensed carriers. In all jurisdictions, carriers that do not have accurate or complete recordkeeping risk having their licences and decals revoked by the jurisdiction that issued them (O'Connell et al., 2007). The possibility of revoking a carrier's licences is an important incentive embedded in the enforcement mechanism and acts as a mean of protecting all members against carriers that are not in compliance with their jurisdiction's fuel tax legislation (Denison & Facer 2005).

Because tax revenue collection and transfer lie at the heart of IFTA, there is a strong incentive for all IFTA members to ensure they comply with their obligations to collect taxes and audit carriers to whom they issued licences to ensure accurate records. The IFTA members operate an enforcement mechanism through the work of the Program Compliance Review Committee, made up of representatives from the 12 member jurisdictions. Upon conducting review of a jurisdiction, if a jurisdiction finds itself in non-compliance with the mandatory audit program, a recommendation is made by the committee to remediate the issue (IFTA, 2008b). Should the jurisdiction fail to bring its program into compliance, the committee can decide to file a "Final Determination Finding of Non-Compliance" against the jurisdiction through a two-thirds majority vote. This may lead to the committee deciding to expel the member, unless it decides to refer the matter to the Dispute Resolution Committee.

3.3.3 Lessons Learned

First, review mechanisms can be voluntary or mandatory, formalized or ad hoc. From the institutions analyzed, it appears that review mechanisms—and the enforcement procedures that may ensue—are structured in line with the members' perception of the value of implementing the agreed rules and standards. The higher value placed on ensuring all members implement the standards, the stricter the system seems to be.

Second, most review mechanisms include peer review and/or a review by a third party. Such reviews provide a level of transparency that is greater than self-reporting without reviews and helps build trust. Peer review can also encourage the sharing of experiences and learning of lessons while also boosting club members' confidence that the information provided about implementation is robust and accurate. As we have seen in IFTA, even the mere possibility of a member conducting a peer review can enhance trust or raise the cost of defection among members.

[6] According to IRIA (2014, p. 9), "Since MTCR is not a treaty-based regime, therefore it merely acts as a supplier cartel."

It can create powerful incentives to participate, both to avoid public shaming for non-compliance and to benefit from possible capacity-building support when the review helps identify needed improvements in the review.

Third, few institutions analyzed in this paper have established enforcement mechanisms to address situations in which a member would not comply. They rather rely on the peer pressure that comes from review mechanisms and the benefits that result from the cooperation. As for the stringency of review mechanisms, it appears that enforcement mechanisms are established as a function of the risks that non-compliance by one member poses to the other members. The MTCR has shown that without "sticks" and relying only on ad hoc reviews, there may be little incentive for members to comply with the rules. At the opposite end of the spectrum, IFTA provides a good example of an institution that has formalized its rules over time (along with its enforcement mechanisms and processes) to address disputes considering the financial stakes at play.

In short, both review and enforcement mechanisms can enhance compliance through improved transparency or through the threat of punishment. We found more examples of review mechanisms than enforcement procedures, indicating jurisdictions are able to find agreement on how to use carrots rather than sticks for holding each other accountable. Those with effective enforcement mechanisms developed them over time.

4.0 Inferences for the Governance of Carbon Pricing Clubs

Sections 2 and 3 examined dimensions of cooperation, and the related design features of various non-climate institutions related to issues of membership, decision making and compliance promotion. Various lessons of relevance to carbon pricing clubs can be drawn from the experiences of those institutions in fostering cooperation as well as tackling issues that hamper it.

A carbon pricing club aims to govern the transfer of carbon units between members. Such transfers entail risks related to environmental integrity and to environmental effectiveness (Challenge #1), that can be addressed through a high level of cooperation. Cooperation can also help reduce the implementation costs of different carbon pricing instruments (Challenge #3) and encourage other jurisdictions to adopt such instruments by attracting new members (Challenge #4). However, a growing club will likely face challenges related to its capacity to adapt to changing circumstances (Challenge #2). With such a mission, and considering the transfer of assets with a financial value between jurisdictions, hard coordination appears key for the governance of a carbon pricing club, as it results in binding standards on members and can lead to the imposition of clear rules for compliance.

With that premise in mind, this section highlights lessons learned and governance design features that may be useful for tackling the challenges of establishing and maintaining carbon pricing clubs. Key lessons are summarized in Table 2.

Table 2. Key lessons for tackling the challenges of carbon pricing clubs

Challenges	Dimensions of Cooperation	Inferences
Ensuring environmental integrity and effectiveness	Membership	Exclusive membership is an important driver for establishing strict standards and complying with the rules. Homogeneity of members, particularly in the early stages of club formation, can foster cooperation to set a more stringent standard.
	Decision Making	Strict membership criteria and processes are crucial, possibly through a secretariat. Consensus is not required once standards are set.
	Review and Compliance	Facilitative approaches based on reviews can be effective and easier to negotiate, although dispute resolution mechanisms, despite challenges, can be implemented.
Adapting to changing circumstances	Membership	Expanding membership often requires to adaptation of membership rules.
	Decision Making	Consensus and majority vote can be used to reform organizations, and larger clubs with large secretariats risk being less responsive.
	Review and Compliance	Facilitative approaches with periodic reviews can help a club adapt, evolve and reduce uncertainty, thereby helping to retain members despite change.
Addressing administrative costs and burdens	Membership	Membership growth imposes significant burden on all members. A secretariat can be useful to oversee the process.
	Decision Making	As a club grows, economies of scale can be achieved through establishing a secretariat or hiring external support services.
	Review and Compliance	Peer-review processes can help reduce costs and even the possibility of ad hoc peer-reviews can promote compliance. This may become even more important as a club matures, if it adds more members.

Engaging existing and new members	Membership	Exclusivity is a strong motivation for potential members, but defining the right size of a club and selecting the right members is challenging.
	Decision Making	Clearly defined accession processes and guidance for potential members can ease decision making. Accession rules that put the onus on potential members to outline how they will contribute to and uphold the goals help limit the pool of applicants and the burden for members to manage the accession process.
	Review and Compliance	Technical assistance and knowledge sharing can be beneficial in mobilizing new members that will be in a better position to comply with the rules.

Challenge #1: Ensuring Environmental Integrity and Effectiveness

The development of standards and processes to ensure the environmental integrity of transfers will be at the heart of the cooperation of members for a club to be effective and have any credibility. This is true for both clubs that coalesce to develop standards and processes for an eventual link as well as clubs that link existing CPIs.

Managing membership carefully and ensuring that members exclusively benefit from the products of the cooperation can go a long way in ensuring environmental integrity. This is because of the fact that to abide by the agreed standards members need to feel protected by membership rules and empowered, since they act as gatekeepers of the club's integrity and mission. This would provide confidence that members, at a minimum, have the intention of playing by the rules and the capacity to abide by them. Such exclusivity is key and most likely means that members would likely agree to not trade with any jurisdictions outside of the carbon pricing club or to not allow offset credits from jurisdictions and/or projects that do not meet certain standards agreed upon by the members (Keohane et al., 2015).

Criteria for membership should be based on the needs of the collective and are probably best managed by a secretariat or other centralized body once the club has reached a certain size or is expanding quickly. The criteria should not be based on the types of jurisdiction, but rather on their ability to contribute to the club's goals and pool of benefits. New members should have their market designs and other climate policies assessed (along with their capacity to abide by the rules of the club) as a condition of being considered for membership. In addition, the level of an applicant's mitigation ambition and implications of its entry on the functioning of the club would likely matter to existing members. This will raise confidence in the member's ability to meet standards for environmental integrity in the future. In this sense, new members should be "rule takers" while initial members could be "rule makers."

It is critical that members develop a strong sense of ownership of the standards and rules agreed upon. Along those lines, a core secretariat in charge of undertaking technical analysis to support members' decision making and actions, in a way that is considered unbiased, can be beneficial in defining and refining standards. It may help build ownership by all members, as opposed to having a small set of members develop standards. By relying on a centralized secretariat for technical analysis, consensus around standards may also be easier to achieve among members. A number of organizations examined utilize their secretariats in this way.

At the same time, various multilateral initiatives, such as the International Carbon Action Partnership (ICAP) and the World Bank Partnership for Market Readiness (PMR), already make important contributions in this regard and to some extent promote, directly or indirectly, the harmonization of some CPI design features to ease linking (Görlach et al., 2015). To avoid duplication it will be important for clubs to build on those and support such work.

Many of the institutions assessed make decisions based on consensus, but it appears that this does not necessarily need to be the norm. Voting rules can be adopted and be just as effective in building ownership while perhaps leading to quicker decision making.

The degree of compliance with the standards by the members will be vital for both the environmental effectiveness of the club, in terms of achieving mitigation ambition, and the environmental integrity of the transfers. The ultimate security for members of a carbon pricing club would be a robust enforcement mechanism. It can however be more challenging for jurisdictions' sovereignty, and as such, will become an option for a jurisdiction only if the benefits clearly outweigh the loss of sovereign control (Mehling & Görlach, 2016). In most cooperative arrangements analyzed, the best alternative is strong buy-in from members through an inclusive decision-making process.

As such, many institutions assessed relied on peer review or audit mechanisms to encourage compliance, while at the same time limiting encroachment on jurisdictions' sovereignty that would come with a rigorous enforcement mechanism. It appears that reviews can be quite effective, since a facilitative approach to compliance—and the support of a secretariat in conducting the reviews, and eventually supporting members facing challenges—can be helpful. Cooperation can be facilitated by a review process performed regularly, in a transparent manner and that involves the assessment of an individual member's contribution to the whole. This can also help provide an indication of ambition and equitability of effort across membership. Encouraging transparency and members' comments in reviews can help drive individual and collective ambition, adding a slight element of peer pressure to the process.

Clearly defined processes to enact in cases of non-compliance appear to be challenging to integrate in international or cross-jurisdictional agreements. The IFTA included a dispute resolution mechanism and the possibility of expulsion. Its key characteristic is that its cooperation targets a clearly defined issue that represents fairly high stakes for members and over which members have direct control. Tax collection and revenue transfers between members have implications that are in fact very similar to those of a carbon pricing club. While a secretariat can help uncover cases of non-compliance, decisions on the need for further actions always rested with the members.

Challenge #2: Adapting to Changing Circumstances

The stricter and more harmonized the standards and rules of an institution are, the harder it may be for members to adapt the club to changing circumstances, especially when members are not affected to the same degree by the changes. It may also be easier for small clubs to make adjustments, which provides an argument for keeping the club small, at least initially, as the club consolidates its institutions.

All institutions reviewed in this paper evolved over time, by widening the membership and adapting their accession rules to new circumstances. The creation of a carbon pricing club, for instance, may entail a first phase characterized by the development and adoption of standards and guidelines, followed by a second phase of growth in members willing to adhere to the rules designed by the initial members.

Reforming institutions has proved challenging for some consensus-based organizations, while IFTA has tackled issues and reformed its agreement through majority votes. Strong buy-in of members, coalescing around a common goal and clear processes, appears key to an institution being able to reform itself.

While review and enforcement is important, it is essential that, in designing a carbon pricing club, its members bear in mind that ultimately enforcement can only go so far, and that changing circumstances can easily lead to member withdrawals or policy changes. Provisions, notably as part of a review mechanism, should be in place to protect members from such unforeseen changes and voluntary exits. While issues are known, and remedies exist in theory for linked carbon markets (Görlach et al., 2015), it appears that few institutions have thought through procedures to deal with a voluntary exit. A common example with carbon markets is New Jersey's withdrawal from the RGGI system, where an exit was negotiated by all parties when New Jersey wished to leave after a change in the political orientation of government (Huber, 2013). This is a very similar situation as that of Ontario in the WCI and the European Union's contingency plans for an eventual exit of the UK from the EU-ETS.

A secretariat body could be charged with periodic review of decisions made by club members as well as ensure that the overall group is achieving progress on its overall goals. While enforcement may be best left to members to undertake, the review function could be charged to a secretariat as we have seen with most institutions. That said, the larger a secretariat becomes, the more difficult it could be for it to be responsive and adaptive, which is an important consideration when determining size and scope for the secretariat.

Challenge #3: Addressing Administrative Costs and Burdens

The stricter the rules governing a club, the more onerous it may be to review their implementation and ultimately enforce them. At the same time, the core benefit of a club is to enable the transfer of units, which requires strict rules to ensure environmental integrity and for the benefits of cooperation to accrue to members.

Hard coordination, strict accession processes, review processes and dispute resolution mechanisms all add to the administrative costs and burden of a carbon pricing club, but they have to be weighed against the benefits they provide in addressing the other challenges, particularly economic effectiveness and providing policy stability. There is a trade-off between keeping costs low while supporting and ensuring robust implementation by members. This brings to the forefront the level of certainty club members will need—i.e., the margin of error that could be acceptable—and the processes to put in place to achieve it, for example by determining the frequency of reviews and the sample of audits to be conducted.

Another possibility to reduce costs could be to use a peer-review process, where member jurisdictions team up to assess each other's implementation of the club's standard. This could be done voluntarily and in a rotating manner, as has been seen in some institutions.

The issue of costs and burdens can be a double-edged sword when considering a centralized secretariat function. It certainly takes resources to set up a highly functional centralized secretariat, such as the one operated by the OECD. Members will have to dedicate financial resources to operate this group. However, if the secretariat serves to conduct research on behalf of the carbon pricing club on technical issues or screens and makes recommendations on new potential members, there may be an economy of scale benefit rather than having all members conduct these tasks individually. Most institutions reviewed have decided early on to establish a secretariat to help them conduct their business.

Also, there may be ways of "piggybacking" on infrastructure or platforms set up by existing initiatives, like those of WCI Inc.. Its platforms could be adapted and used by members of another club, thereby lowering the upfront development costs. Such platforms include a compliance tracking system, a mechanism for administering allowance auctions and a market monitoring function. More research would be needed to assess how these may be adapted and the extent to which, and under what terms, they could be made available to other clubs.

Challenge #4: Engaging Existing and New Members

The crux of this challenge is finding the right size to make the club work by providing sufficient benefits to members. Finding the right members is also a challenge.

Exclusivity, with strict membership rules, is perhaps the strongest motivational factor for existing members to stay in the club, particularly to establish a brand that will attract new members. Governments find it attractive to be members of organizations that give credibility to their policy, like the OECD, or show they meet some guidelines, which can give them greater market access, as it is the case with the MTCR. Both of these reasons are likely to be strong motivations to become members of a carbon pricing club.

A hard coordination model, with strict accession rules and standards to meet, could be seen as detrimental to growing an organization, particularly if membership is seen as onerous for new members. However, for potential members, strong coordination could be seen as an asset, meaning that they can have trust that the carbon pricing club will be effective in assisting members to achieve its goals. Essentially, the "right" type of members will be attracted.

Along those lines, factors beyond simple economic benefits can also come into play and ease cooperation in a new field. This was the case for many institutions assessed. For example, in the carbon pricing space, RGGI was developed around states that shared an electricity system, and joint electricity policy reforms played a major role in enabling favourable political economy conditions for joint auctions (Huber, 2013). The same could be said for the Pacific Alliance in Latin America. At the same time, a legacy of close cooperation on various issues or geographical proximity is not a condition for cooperation through a club or any guarantee of success (Görlach et al., 2015), as shown by Ontario leaving the WCI.

Clearly defined and transparent accession processes and easily assessable criteria would outline the expectations of new members, and help mobilize the "right" new members for the club. They can also reduce the burden imposed by the accession process and negotiation time (Mehling & Görlach, 2016). A strong secretariat can play a key role in communicating the accession process, providing trainings on meeting the requirements and screening applicants. This becomes particularly critical as membership grows or if a club has ambitions to grow rapidly. While larger clubs tend to have greater means to develop such process, they also have greater leverage to impose their own set of rules. In fact, the experience of non-climate institutions has shown that, as cooperation between members matures and deepens, membership conditions need to change to protect existing members and the integrity of the club, requiring communication and in some cases trainings to prospective members.

In this vein, a secretariat can be an asset to promote the club and recruit new members, particularly for those that may be new to carbon pricing or have limited internal capacity on the topic. The capacity-building, knowledge-sharing and technical-assistance activities that a secretariat could provide would be beneficial to mobilizing new members and help them achieve compliance with the rules and standards of the club so that they can join.

References

APEC. (1997, November). *APEC Ministerial Statement on Membership*. Retrieved from https://www.apec.org/-/media/Files/AboutUs/PoliciesandProcedures/MemberParticipation/1997_MinisterStatemtMembership.pdf

APEC. (2017a). *About APEC*. Retrieved from https://www.apec.org/About-Us/About-APEC

APEC. (2017b). *Policy Support Unit*. Retrieved from https://www.apec.org/About-Us/Policy-Support-Unit

APEC. (2017c). *Member economies*. Retrieved from https://www.apec.org/About-Us/About-APEC/Member-Economies

APEC. (2017d). *Action Plans*. Retrieved from https://www.apec.org/About-Us/How-APEC-Operates/Action-Plans

Burtraw, D., Palmer, K., Munnings, C., Weber, P., & Woerman, M. (2013). *Linking by degrees: Incremental alignment of cap-and-trade markets*. Washington DC: Resources for the Future. Retrieved from http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-13-04.pdf

Davis, C. (2016, June 26). *More than just a rich country club: Membership conditionality and institutional reform in the OECD*. Retrieved from https://scholar.harvard.edu/files/cldavis/files/davis2016b.pdf

Denison, D., & Facer, R. (2005). Interstate tax coordination: Lessons from the International Fuel Tax Agreement. *National Tax Journal 58*(3) Retrieved from https://www.researchgate.net/publication/228131400_Interstate_Tax_Coordination_Lessons_from_the_International_Fuel_Tax_Agreement

Environmental Defense Fund (EDF). (n.d.). *Building a coalition of carbon markets to spur faster, deeper cuts in climate pollution*. Retrieved from https://www.edf.org/sites/default/files/content/building_a_coalition_of_carbon_markets_to_spur_faster_deeper_cuts_in_climate_pollution.pdf

Environmental Defense Fund. (2018). *Catalyzing carbon markets globally to realize the promise of Paris: The power of markets to increase ambition*. Washington, DC.: Environmental Defence Fund (EDF). Retrieved from https://unfccc.int/sites/default/files/resource/236_Talanoa%20submission%20carbon%20markets%20potential%20EDF%20April%203.pdf

Görlach, B., Mehling, M., & Roberts, E. (2015). *Designing institutions, structures and mechanisms to facilitate the linking of emissions trading schemes*. German Emissions Trading Authority (DEHSt), Ecologic Institute and Ecologic. Retrieved from https://www.ecologic.eu/sites/files/publication/2016/goerlach_et_al_2015_linking-governance-1.pdf

Henriques, L., & Laredo, P. (2012). Policy-making in science policy: The 'OECD model' unveiled. *Research Policy, 42*, 801–816. Retrieved from http://www.chss.uqam.ca/Portals/0/docs/STS8000/Laredo.pdf

International Emissions Trading Association (IETA). (2017, December 12). P*aris Declaration on Carbon Pricing in the Americas*. Retrieved from http://www.ieta.org/resources/News/Press_Releases/2017/Declaration%20on%20Carbon%20Pricing_FINAL.pdf

International Fuel Tax Agreement (IFTA), Inc. (n.d.). *Best Practices Audit Guide*. Retrieved from https://www.iftach.org/committee/ac/Best%20Practices%20Guide.pdf

International Fuel Tax Agreement, Inc. (2008a, March 14). *Highlights of the International Fuel Tax Agreement*. Retrieved from https://www.iftach.org/IFTA%20Highlights%20-%20March%2014%202008.pdf

International Fuel Tax Agreement, Inc. (2008b, March). *IFTA Program Compliance Review Committee Member Guide*. Retrieved from https://www.iftach.org/committee/pcrc/IFTA%20PCRC%20Member%20Guide%20-%20APPROVED.pdf

International Fuel Tax Agreement, Inc. (2016a). *A Quick Reference for Roadside Enforcement of IFTA Requirements.* Retrieved from https://www.iftach.org/committee/lec/LEC%20Brochure%20-%20January%202016.pdf

International Fuel Tax Agreement, Inc. (2016b). *IFTA Full Track Final Ballot Proposal3-2016: Voting results*. Retrieved from https://www.iftach.org/Ballots/2016/FTFBP%203-2016%20Results.pdf

International Fuel Tax Agreement, Inc. (2017, July). *Audit manual*. Retrieved from https://www.iftach.org/manuals/2017/AM/Audit%20Manual%20-%20July%202017.pdf

International Fuel Tax Agreement, Inc. (2018). *Final Agenda: IFTA/IRP Audit Workshop*. Retrieved from https://www.iftach.org/AnnualMeeting/2018audit/Final%20Agenda%2002.08.18%20-%20Audit%20Workshop.pdf

International Relations Insights & Analysis (IRIA). (2014). *Analyzing the effectiveness of missile technology control regime*. Retrieved from http://www.ir-ia.com/reports/IRIA-Analyzing-the-Effectiveness-of-Missile-Technology-Control-Regime.pdf

Kachi, A., Unger, C., Böhm, N., Stelmakh, K., Haug, C., & Frerk, M. (2015). *Linking emissions trading systems: A summary of current research*. Berlin: International Carbon Action Partnership. Retrieved from https://icapcarbonaction.com/en/?option=com_attach&task=download&id=241

Keohane, N., Petsonk, A., & Hanafi, A. (2015). *Toward a club of carbon markets*. Climatic Change.

Koremenos, B., Lipson, C., & Snidal, D. (2001). *The rational design of international institutions*. International Organization, 55(4), pp. 761-799. Retrieved from http://www.columbia.akadns.net/itc/sipa/S6800/courseworks/RationalDesign.pdf

Lazarus, M., Schneider, L., Lee, C., & van Asselt, H. (2015). *Options and issues for restricted linking of emissions trading systems*. Berlin: International Carbon Action Partnership. Retrieved from https://icapcarbonaction.com/en/?option=com_attach&task=download&id=279

Mahon, R., & McBride, S. (2009). Standardizing and disseminating knowledge: The role of the OECD in global governance. *European Political Science Review, 1*(1), 83–101.

Mehling, M., & Görlach, B. (2016). *Multilateral linking of emissions trading systems*. Retrieved from http://ceepr.mit.edu/files/papers/16-009.pdf

Mehling, M., Metcalf, G., & Stavins, R. (2017). *Linking heterogeneous climate policies (Consistent with the Paris Agreement)*. Cambridge: Harvard Project on Climate Agreements. Retrieved from https://www.hks.harvard.edu/sites/default/files/centers/mrcbg/files/Mehling-Metcalf-Stavins%20Linking%20Heterogeneous%20Climate%20Policies%20(Consistent%20with%20the%20Paris%20Agreement).pdf

Missile Technology Control Regime (MTCR). (n.d.a). *Frequently asked questions (FAQs)*. Retrieved from http://mtcr.info/frequently-asked-questions-faqs/

Missile Technology Control Regime. (n.d.b). *Home page*. Retrieved from http://mtcr.info/

Multistate Tax Commission. (2003, June). *Federalism at risk*. Retrieved from http://www.mtc.gov/uploadedFiles/Multistate_Tax_Commission/Resources/Studies_and_Reports/Federalism_at_Risk/FedatRisk--FINALREPORT.pdf

Organisation for Economic Co-operation and Development. (n.d.). OECD-IEA fossil fuel support and other analysis: Publication. Retrieved from http://www.oecd.org/site/tadffss/publication/

Organisation for Economic Co-operation and Development (OECD). (2007). *A general procedure for future accessions*. Paris: Organisation for Economic Cooperation and Development. Retrieved from http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?doclanguage=en&cote=C(2007)31/Final

Organisation for Economic Co-operation and Development. (2015, July 13). *Roadmap for the accession of Lithuania to the OECD Convention*. Retrieved from http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=C(2015)92/FINAL&docLanguage=En

Organisation for Economic Co-operation and Development. (2017a). *Who does what*. Retrieved from http://www.oecd.org/about/whodoeswhat/

Organisation for Economic Co-operation and Development.. (2017b). *Report of the Chair of the Working Group on the Future Size and Membership of the Organisation to Council: Framework for the Consideration of Prospective Members*. Retrieved from http://www.oecd.org/mcm/documents/C-MIN-2017-13-EN.pdf

Organisation for Economic Co-operation and Development.. (2018a). *About the OECD*. Retrieved from http://www.oecd.org/about/

Organisation for Economic Co-operation and Development.. (2018b). *OECD analysis of budgetary support and tax expenditures*. Retrieved from http://www.oecd.org/site/tadffss/data/

O'Connell, L., Yusuf, J.-E., & Hackbart, M. (2007). *The International Fuel Tax Agreement (IFTA) and International Registration Plan (IRP): Allocating commercial fuel tax and registration fee payments across multiple jurisdictions*. Kentucky Transportation Center.

Porter, T., & Webb, M. (2008). The role of the OECD in the orchestration of global knowledge networks. In R. Mahon, & S. McBride (Eds.), *The OECD and transnational governance*. Vancouver: UBS Press.

Ranson, M., & Stavins, R. N. (2015). Linkage of greenhouse gas emissions trading systems: learning from experience. *Climate Policy*.

Rowen, S. (2009, July 15). *The importance of your votes: Voting procedures*. Retrieved from http://slideplayer.com/slide/6103968/

Schneider, L., Füssler, J., La Hoz, S., Kohli, A., Graichen, J., Healy, S., & Broekhoff, D. (2017). *Environmental integrity under Article 6 of the Paris Agreement*. Berlin: German Emissions Trading Authority (DEHSt).

van Asselt, H. (2015). *Assessment and review under a 2015 climate change agreement*. Nordic Council of Ministers. Retrieved from http://norden.diva-portal.org/smash/get/diva2:797336/FULLTEXT01.pdf

Velloso, G., Vilas Boas, B., Lefèvre, G., & Nicolletti, M. (2018). *Policy brief: Carbon pricing instruments in Latin America*. Konrad Adenauer Stiftung and Sao Paulo School of Business Administration. Retrieved from http://www.kas.de/energie-klima-lateinamerika/en/publications/53377/

World Bank. (2016, July). *Carbon market clubs and the New Paris Regime*. Retrieved from Networked Carbon Markets.

World Bank & Ecofys. (2017). *Carbon pricing watch 2017*. Retrieved from https://openknowledge.worldbank.org/bitstream/handle/10986/26565/9781464811296.pdf?sequence=4&isAllowed=y

World Bank & Ecofys. (2018). *State and trends of carbon pricing 2018*. Washington, DC: World Bank Group.

World Bank, Ecofys & Vivid Economics. (2017, November). *State and trends of carbon pricing 2017*. Retrieved from: https://openknowledge.worldbank.org/bitstream/handle/10986/28510/wb_report_171027.pdf?sequence=7&isAllowed=y

Zaborsky, V. (2004, October 1). *Does China belong in the Missile Technology Control Regime?* Retrieved from https://www.armscontrol.org/act/2004_10/Zaborsky

Published by the International Institute for Sustainable Development.

Head Office

111 Lombard Avenue, Suite 325
Winnipeg, Manitoba
Canada R3B 0T4

Tel: +1 (204) 958-7700
Website: www.iisd.org
Twitter: @IISD_news

IISD

iisd.org