

Can Preferential Trade Agreements Address Climate Change?

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Although preferential trade agreements (PTAs) are increasingly used to address environmental issues, they are an underutilized tool for addressing climate change. PTAs allow two or more countries to offer preferential market access on a reciprocal basis through tariff reductions. As World Trade Organization (WTO) negotiations continue to stall, many countries are looking to PTAs, among smaller groups of countries, to push international trade policy forward. Some PTAs are regional such as the recently agreed United States-Canada-Mexico Agreement (USCAM). Others reflect strategic economic relationships such as the United States–South Korea Free Trade Agreement or the United States–Israel Free Trade Agreement. Many recently negotiated PTAs mirror the WTO’s existing framework policies, while also increasingly providing reciprocal preferential treatment as well as extending policies beyond their core trade liberalizing function. Indeed, PTAs also serve as instruments of regional integration, vehicles for strategic market access and security—and increasingly—instruments for environmental protection and thus potential climate change action.

Environmental provisions in PTAs have become more far-reaching over time. Early PTAs merely replicated the WTO’s environmental provisions. Recent PTAs typically include a full-length chapter entirely devoted to environmental protection, with precise and enforceable obligations on various environmental issue areas.¹ PTAs have already made significant contributions to biodiversity governance. For example, the United States-Peru PTA catalyzed the implementation of mahogany-related provisions of the Convention on International Trade in Endangered Species (CITES) in Peru. This effort resulted in the re-categorization of Peru into the highest CITES compliance category.² Likewise, some recent

PTAs include provisions on genetic resources and the protection of traditional ecological knowledge that go well beyond the 2010 Nagoya Protocol.³ Although it is yet premature to fully understand the environmental impact of these PTA environmental provisions, recent studies have suggested that PTAs do play a role in articulating new environmental norms and diffusing environmental policies across borders.⁴ With multilateral climate negotiations delivering less than scientists say we need to avoid dangerous anthropogenic impacts of climate change, PTAs could play an important role in the emerging polycentric landscape of climate change governance. Just as some PTAs have reached beyond the scope of multilateral biodiversity agreements, one can similarly imagine a PTA with mitigation and adaptation commitments that go beyond the Paris Agreement on climate change, which was agreed to by the parties to the United Nations Framework Convention on Climate Change in 2015.

The potential contribution of PTAs to climate change governance rests on four distinctive features of trade negotiations. First, rather than bringing several countries together around a relatively integrated issue area, as multilateral environmental agreements (MEAs) do, PTA negotiations involve a limited number of partners addressing a multitude of different issues. This context fosters bargaining and the conclusion of new agreements. Second, PTAs are based on direct reciprocity, and thus in principle open the door to retaliation through sanction-based dispute settlement should states violate their climate change-related provisions. Some PTAs' dispute settlement mechanisms, particularly those contained in recent U.S. agreements, already offer stronger incentives, such as sanction-based dispute settlements, to comply with agreed commitments than MEAs do, which typically have weaker compliance mechanisms.⁵ Third, PTAs offer opportunities for policy experimentation, as several new PTAs are negotiated every year, with diversity in types and membership. In this way, they act as institutional laboratories to design and test climate change provisions at a limited scale and among like-minded countries. Fourth, PTAs are

uniquely positioned to address trade-related aspects of mitigation, such as the export of low-emission technologies, border-tax adjustments on polluting production processes, fossil fuel subsidies, and trade in carbon credits. These four features of trade negotiations led a number of analysts to argue that PTAs can potentially contribute to climate change governance.⁶ However, this is the first study to assess the actual regulatory contribution of the full landscape of PTAs to global climate change governance.

Our assessment focuses on the quality and quantity of climate change provisions included across all PTAs. We consider a provision “climate-related” when it directly addresses climate change. It might not explicitly include the words “climate change,” but it should address the mitigation of greenhouse gas emissions or adaptation to climate change. For example, as we explain in more detail below, some energy efficiency provisions do not mention climate change explicitly, but nonetheless could have direct effects on mitigation of greenhouse gases. The wide variety of PTA provisions that address environmental protection more generally, however, are not considered “climate-related” for the purposes of this paper. For example, if a PTA requires that all countries implement MEAs to which they are party, it would not be captured in our definition of “climate-related,” even though it could require, for example, implementation of the Paris Agreement if both PTA parties are also party to the Paris Agreement.

To be clear, we do not aim to explain why certain countries include climate-related provisions in their PTAs while others do not. Likewise, we do not assess the impact of these provisions in addressing climate change through, for example, resulting emission reductions.⁷ We do not assert a causal connection here. Rather, our analysis assesses the regulatory contribution that PTAs make to global climate change governance by manually coding the climate-related provisions contained in 688 PTAs signed between 1947 and 2016. We

identified these climate-related provisions in the Trade and Environment Database (TREND).⁸

We assess PTAs' regulatory contribution to climate change along four interacting dimensions: innovation, legalization, replication, and distribution. These dimensions are original to this study and were selected to examine climate provisions' scope and diversity (innovation), their legal strength (legalization), their relative presence in the overall PTA population (replication), and the type of countries that have endorsed them (distribution). For PTAs to significantly contribute to the regulation of climate change governance, they need to include comprehensive climate provisions, be highly enforceable, quantitatively numerous, and cover countries that qualitatively matter the most for climate change governance.

Centrally, we find a high degree of regulatory innovation in climate provisions in the PTAs included in our sample. These provisions do not simply echo those under the UNFCCC umbrella, but, in some cases, are more specific and more enforceable than the Kyoto Protocol and the Paris Agreement. We argue here, however, that these regulatory innovations make a weak contribution to broader climate change governance because they remain weakly "legalized," failing to replicate broadly in the global trade system, and were not adopted by the largest greenhouse gas (GHG) emitters. Despite the inclusion of innovative climate provisions in several PTAs, their weak design and limited replications position them as some of the feeblest environmental provisions within PTAs globally.

In the next section, we present the regulatory climate innovations that we find in PTAs, and group them into six categories. We then argue that, despite the wide variety of these climate provisions, climate-related provisions remain weak because they are poorly legalized. We then argue that climate change provisions have failed to replicate across PTAs, especially when compared with replication trends for other environmental issues across

PTAs. Finally, we argue that climate-related provisions are further weakened by their lack of uptake by large GHG emitters.

Innovation

PTAs tend to be highly standardized. New trade agreements often replicate provisions from earlier agreements.⁹ In some instances, however, they introduce novelties not present in any previous agreements. We call these unprecedented provisions “regulatory innovations.”¹⁰ As innovating can be costly and risky due to transaction costs and unintended consequences, tracking such innovations not only reveals new governance forms, but also where and when negotiators were particularly committed to tackle this problem. We identify below six categories of PTA regulatory innovations that directly address climate change, and some other regulatory innovations that are not climate-related provisions per se, but might contribute indirectly to climate change governance.

Renewable Energy and Energy Efficiency

The most common climate-related provisions in PTAs address renewable energy or energy efficiency — with 138 such provisions in PTAs adopted by China, Japan, India, Korea, Mexico, the United States, and the European Union (EU). Energy-related provisions also constitute some of the oldest environmental provisions in PTAs. Indeed, as early as 1979, the Lomé II convention, between Europe and the ACP (African, Caribbean and Pacific) countries, promoted solar, geothermal, wind, and hydroelectric technologies. Many countries subsequently also included provisions on research, cooperation, assistance, project development, and the exchange of information on renewable energy and energy efficiency. The 2014 agreement between Australia and Korea, for example, calls on parties to organize joint activities, to exchange views on policy, and to enhance scientific exchange on “energy

efficiency measures and measures relating to climate change.”¹¹ A 2011 agreement between Korea and Peru goes even further by including a provision “...encouraging public and private institutions related to small and medium-sized enterprises to cooperate in [...] renewable energy, and other subjects of mutual interest.”¹²

Cooperation on Climate Change Governance

Provisions related to cooperation on climate change governance are relatively prolific. Such provisions have been included in 38 PTAs since before the international community agreed on the UNFCCC. In 1991, for example, the EU concluded agreements with Poland and Hungary, which required cooperation on climate change matters by encouraging dialogue on the issue between trading partners.¹³ Some PTAs are more specific and ask parties to cooperate in the development of coordinated measures on climate change issues. Recently, some PTAs incorporated provisions that required states to cooperate in “trade-related aspects of international climate change regimes.”¹⁴ These “trade-related aspects” may potentially include the use of protectionist measures to assist domestic renewable energy producers (e.g. subsidies), or to level the playing field with countries that do not attempt to reduce their GHG emissions (e.g. border tax adjustments).

Reduction of GHG Emissions

Thirty-one PTAs directly address the reduction of GHG emissions. Many of them touch on mitigation vaguely by, for example, promoting general cooperation on the issue. The agreement between the EU and South Africa invites parties to collaborate on “issues surrounding the reduction of greenhouse gas emissions.”¹⁵ The more recent agreement between the EU and Central America is slightly more specific, stating that “cooperation shall in particular address [...] the strengthening of carbon market mechanisms.”¹⁶ Other

agreements, including the Indonesia-Japan Economic Partnership Agreement, refer directly to the Kyoto Protocol's Clean Development Mechanism.¹⁷ Some PTAs promote trade in environmental goods and services specifically related to GHG emissions. The agreement between the EU and Georgia provides that "parties shall strive to facilitate the removal of obstacles to trade or investment concerning goods and services of particular relevance to climate change mitigation [...]."¹⁸ This agreement also states that cooperation between the EU and Georgia shall aim at "promoting measures at international level [...] in the areas of [...] research, development, demonstration, deployment and diffusion of safe and sustainable low carbon [...] technologies."¹⁹ Other PTAs are far more specific. A 2012 agreement between Australia and Malaysia, for example, details requirements related to the transfer of carbon capture capacities between the two countries.²⁰

Adaptation to Climate Change

Climate change adaptation provisions appear less frequently in PTAs than do climate change mitigation provisions. Only 14 PTAs include a provision directly related to adaptation. Most of these 14 PTAs vaguely call for greater cooperation in the area of adaptation and the adoption of measures that promote climate change adaptation. For example, the agreement between Korea and Peru states that each party "shall adopt policies and measures [...] for evaluating the vulnerability and adaptation to climate change."²¹ The agreement between Moldova and the EU requires parties to cooperate on "adaptation to climate change" and the development of "adaptation technologies."²² Other PTAs address the adverse effects of climate change in specific sectors like forests, fisheries, and agriculture. Agricultural adaptation is an area where PTAs could facilitate particularly important action on climate change governance due to the agricultural sector's economic centrality and high climate vulnerability in many developing countries. Several agreements thus include agricultural

adaptation provisions. For example, the agreement between China and Costa Rica calls on parties to “promote effective risk management in the agribusiness chains aiming to incorporate measures for adaptation [to] climate change.”²³ The agreement between Korea and Australia similarly highlights the importance of agricultural adaptation and calls on parties “to promote cooperative activities in [...] climate change adaptation [...]” in that sector.²⁴

Ratification or Implementation of Climate Agreements

Thirteen PTAs require their parties to ratify or implement a specific climate agreement. In 1993, the Common Market for Eastern and Southern Africa (COMESA) was the first PTA to provide that its parties must accede to the UNFCCC. At the time, 17 COMESA countries had not yet ratified the UNFCCC but they all did so in the months following their signature of COMESA. However, it was more than 10 years after the adoption of the Kyoto Protocol in 1997 before there was reference to the Protocol in a PTA. The first was the EU-Montenegro agreement, which provides that “special attention shall be paid to the ratification and the implementation of the Kyoto Protocol.”²⁵

Some PTAs give an important status to multilateral climate change agreements by providing that “nothing in this Agreement shall limit the right of a Party to adopt or maintain measures to implement [these] agreements [...]”²⁶ This provision would support an interpretation of the trade agreement favorable to the Kyoto Protocol in case of legal incompatibility. However, the agreement also makes clear that measures to implement MEAs “shall not be applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between the Parties or a disguised restriction on trade.”²⁷ As such, these climate provisions are typically weak and their compatibility with trade law remains murky in the event of any future conflict.

Harmonization of Climate Regulation

Only two PTAs, both signed by the EU, require harmonization of climate change regulation across parties. The EU typically introduces harmonization provisions into its PTAs with countries seeking accession. Recently, the EU has also included references to harmonization of legislation related to climate change. For example, the EU's agreements with Ukraine and Moldova both provide that the latter countries shall "gradually approximate [their] legislation to [...] Directive 2003/87/EC, establishing a scheme for greenhouse gas emission allowance trading within the Community [...]"²⁸

Provisions Indirectly Related to Climate Change

Several PTAs include environmental provisions that are not "climate-related provisions" as they do not specifically relate to climate change but could indirectly be useful in addressing it. Many of these provisions are more common than the ones addressing climate change directly. For example, one of the most frequent environmental provisions is an exception to trade commitments for the conservation of natural resources. This exception arguably could justify trade-restrictive measures that aim at conserving the global atmosphere. Several dozen PTAs also include provisions providing that the level of environmental protection should not be weakened to attract trade or investments. While not addressing climate change directly, these environmental provisions may provide legal justification for cooperation on climate change matters under the auspices of these PTAs.

Provisions related to air pollution are particularly relevant to climate change because air pollution often co-varies with GHGs emissions, and can therefore be used to indirectly mitigate GHG emissions. We found 46 PTAs with such provisions on air pollution and vehicle emissions. In several of these PTAs, states agree to participate in joint work programs

or to coordinate their strategies (e.g. COMESA 1993). Some agreements also reiterate existing provisions from specific bilateral agreements addressing air pollution (e.g. China-Korea in 2015, art. 16(7)). Recent European agreements are perhaps the most related and precise, as they regularly provide for specific vehicle emissions standards (e.g. EU-Montenegro 2007).

Another category of provisions indirectly related to climate change concerns is natural disaster-related provisions. Such provisions will become more important, as the frequency and intensity of climate change-induced disasters will likely increase. The Treaty of Rome (1957) was the first to introduce a provision facilitating assistance to other members in case of a natural disaster. It provides exceptions to general trade principles, especially for the awarding of contracts to facilitate rapid response efforts. Other PTAs create financial mechanisms to facilitate and accelerate the distribution of aid (e.g. Yaoundé I, 1963, art. 39). Some of them also provide rules governing the distribution of aid in the case of natural disasters and addressing delays in payments and level of contributions (e.g. Lomé III, 1984, art. 203.8). Other PTAs include detailed provisions on cooperation to reduce the vulnerability of Parties to natural disasters, including by building research, monitoring, early-warning, prevention, rehabilitation and reconstruction capabilities (e.g. China-Costa Rica, 2010, art. 124). Some PTAs even include provisions regarding assistance to third countries, such as the European Treaty of Lisbon.²⁹

Finally, two PTAs reiterate a core principle of the global climate change regime, common but differentiated responsibilities (CBDR), which seeks, in part, to guide the fair distribution of emission reduction responsibility between countries. Although antithetical to the global trade regime's central premise of non-discrimination, two recent European agreements (EU-Colombia-Peru and EU-Central America) included explicit references to CBDR.

In sum, we find an impressive degree of innovation related to climate change across the 688 PTAs we analyzed, with eight distinct categories of policy innovation in this area. Innovations related to energy efficiency and renewable energy are particularly prolific, but we also find several other less utilized but nonetheless important innovations related to GHG mitigation and, to a lesser extent, adaptation. Finally, we identify several other provisions that do not reference climate change specifically, but have indirect climate relevance, for example as related to air pollution. These indirect provisions may provide states with the latitude to innovate further, through PTA implementation, if they choose to interpret these provisions as relevant to climate change.

Legalization

To complement our analysis of the contribution of PTA climate provisions to climate change governance, we measure the legalization of these provisions. Legalization is an important metric because it reflects the strength of climate change governance through PTAs. We define legalization along three dimensions: obligation, precision, and delegation.³⁰ Obligation refers to the strength of the commitment that states make. Precision limits parties' discretion by narrowing the possible interpretations of a rule. Delegation is related to the contribution of external actors, including judicators, in implementation and enforcement. If all three dimensions are strong, we classify the PTA as highly legalized. At the other end, low legalization happens when obligation, precision, and delegation are weak. Between these two extremes, we identify several moderate degrees of legalization.

Based on these definitions, we have identified specific indicators to evaluate the degree of obligation, precision, and delegation of PTAs' climate change provisions (see Table 8.1). We measured the level of obligation along a six-degree continuum, ranging from an explicit negation of intent to be legally bound (low legalization) to a legally binding

commitment (high legalization). A mere recommendation to consider issues related to climate change adaptation would receive the weakest degree of obligation. In contrast, firm commitments that use terms like “shall” or “must” denote a higher degree of obligation. We classified the degree of precision into four categories. General references, the weakest degree of precision, include the mere acknowledgement of the existence of the UNFCCC. The most precise provisions are those that provide for a specific target, such as the commitment to ratify a given MEA before a certain date. To assess the degree of delegation, we checked whether PTAs that include at least one climate change provision also provide for a judicial mechanism to settle disputes on that provision. We looked more specifically for an independent and accessible court or arbitration mechanism, with an automatic right to action that renders legally binding and enforceable decisions. We coded each dimension from 0 (the least legalized) to 1 (the most legalized). When PTAs included several provisions on climate change, we considered only the highest value reached by any provisions of the agreement, so that we do not penalize wordy agreements with long preambles.

Table 8.1: Coding legalization

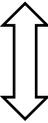
	Obligation	Precision	Delegation
Least legalized (0)	0.0. Explicitly not binding	0.0. General reference	
	0.2. Mere recognition	0.3. Discretionary measure	0.0 Political bargaining
	0.4. Optional commitment	0.6. Detailed measure	1.0 Judicial mechanism
Most legalized (1)	0.6. Hortatory commitment	1.0 Specific target	
	0.8. Implicit commitment		
	1.0 Binding commitment		

Table 8.2 presents the results of our analysis. We find that several climate change provisions have legally binding language. Sixty-four percent of all PTAs with climate-related

provisions have at least one provision that is highly legalized as measured through degree of obligation. These climate provisions are rarely precise, however, with only 10 percent denoting specific targets. Further, reflecting low levels of precision, more than 38 percent of PTAs with climate provisions merely acknowledge the climate change problem. For example, the clause stating that “The Parties shall develop and strengthen their cooperation to combat climate change”³¹ scores high in obligation, because it states that Parties *shall* do this, but low in precision, because the reference is vague and lacks a specific target or measure. Finally, the level of delegation is very low. Seventy percent of PTAs with climate-related provisions do not provide for a third party to settle disputes on these provisions. For those that have such mechanisms, few provide for sanctions or remedies in case of violation. For example, the China-Korea agreement (2015) only authorizes parties to request for consultations if an environmental dispute arises.³² As reflected in many PTAs, there is a double standard with stronger enforcement mechanisms for trade commitments than for environmental ones.

Table 8.2: Legalization of PTAs’ climate provisions

	Median	Mode
Obligation	Binding commitment	Binding commitment
Precision	Discretionary measures	General reference
Delegation	No dispute settlement mechanism	No dispute settlement mechanism

Although the level of legal reinforcement remains low across two of our three metrics, it has increased significantly since the 1990s. In the 1990s, the few agreements that included climate change provisions used language that was highly imprecise and poorly enforceable. For instance, the 1992 Framework Agreement on Enhancing Association of Southeast Asian Nation (ASEAN) Economic Cooperation has merely a vague clause calling on Parties to cooperate on energy efficiency.³³ In the beginning of the 21st century, PTA

provisions on climate change became more precise. A note to the 2011 agreement between Korea and United States, for example, is particularly precise in providing that:

“[...] from 2012 through 2015, a manufacturer that sold up to 4500 motor vehicles in the territory of Korea in calendar year 2009 shall be deemed to comply with the target level set forth in the regulations if either the average fuel economy or the average CO₂ emissions level for the vehicles the manufacturer sold in the territory of Korea during the relevant calendar year meets a target level that is 19 percent more lenient than the relevant target level provided in the regulation that would otherwise be applicable to that manufacturer.”³⁴

We also see variation across countries in the level of legalization reflected in their PTAs. European agreements are characterized by a higher degree of legalization than average. They are highly binding and moderately precise.³⁵ However, they favor dispute settlement by consultation, although arbitration is also available in some recent agreements. In contrast, especially in recent agreements, the United States tends to include dispute settlement mechanisms that include legally binding decisions and sanction-based enforcement provisions. The United States, therefore, scores higher than the EU for delegation, due to the strong dispute settlement mechanisms.³⁶ However, United States agreements contain a significantly weaker level of obligation and precision in their climate change provisions than do those of the EU. There appears to be a trade-off between these provisions, as states rarely score high on all dimensions.

To summarize, the degree of legal commitment to climate change provisions in PTAs varies across our three metrics. Although most agreements have at least one provision that scores high on obligation, the majority of climate provisions lack high levels of both precision and delegation. Different countries also favor different forms of legalization.

Whereas the EU favors higher levels of precision and obligation in its PTA climate provisions, the United States is weaker on those metrics but higher on delegation. Overall, this suggests that while the level of legalization of PTAs' climate provisions is relatively weak, it is becoming stronger over time.

Replication

Most PTAs' environmental provisions are not tailored for a specific trade partnership. Rather, they are reproduced from their earlier agreements *verbatim* (or nearly so), and sometimes from third-country agreements.³⁷ We refer to this process as “replication.” In this section, we examine the extent to which climate-related provisions were replicated. The reproduction of these provisions is important in evaluating PTAs' contribution to climate governance because it indicates how widely adopted a particular governance innovation has become.

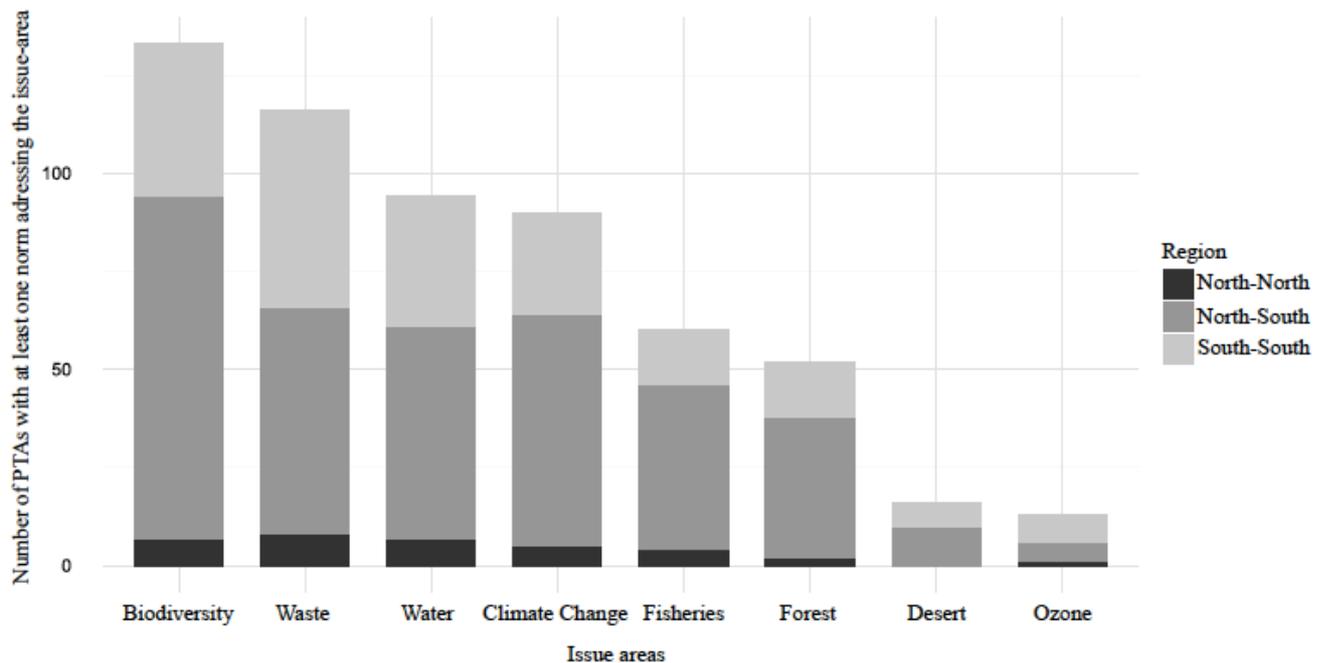
Eighty-six percent of the 688 PTAs we examined include at least one provision relating to the environment. Thirty-two percent of these PTAs (or 222 agreements) include at least one provision addressing a specific environmental issue, such as biodiversity, desertification, hazardous waste, forestry, or ozone depletion. However, only 14 percent of PTAs (or 98 agreements) have incorporated provisions that address issues related to climate change. Although climate change provisions have recently become more common in PTAs, replication of these provisions within the trade system remains limited. Only 52 percent of all PTAs signed between 2010 and 2015 include a provision on climate change. These results highlight that, although several countries are increasingly willing to include detailed environmental provisions in their PTAs, some still avoid addressing climate change directly.

To better assess the replication of climate change provisions within the trade regime, we compare PTA provisions on climate with those on biodiversity. The climate change and biodiversity regimes share a number of important features allowing for their comparison:

they are two prominent global environmental regimes with significant environmental, social, and economic implications; both regimes have wide scope and cover several more specific issues, as evidenced by the proliferation of transnational and international instruments addressing these issues; the core treaties of these regimes, the UNFCCC and the Convention on Biological Diversity (CBD), were both adopted in 1992; North/South politics structure central normative debates in both regimes; the United States has opposed some key instruments of both regimes; and finally, both are trade-related but not trade-focused. Based on these similarities, we might expect that roughly as many PTAs would refer to climate change as to biodiversity.

Despite these similarities, our dataset reveals that far fewer PTAs address climate change than biodiversity (Figure 8.1).³⁸ Moreover, the gap between the number of provisions on climate change and those on biodiversity grows over time. Between 1990 and 1995, 11.7 percent included at least one climate change provision while 17.5 percent of agreements included at least one biodiversity provision. More recently, between 2010 and 2015, the percentage of agreements that include at least one climate change provision reached 54.8 percent. For the same period, 74.2 percent of PTAs included at least one provision on biodiversity. Despite a remarkable rate of replication for environmental provisions across the trade regime, the scope of replication for climate provisions remains smaller than that of biodiversity provisions.

Figure 8.1: Number of PTAs with at least one provision addressing the issue area



To evaluate the replication of climate provisions relative to other environmental issues, we also compared the frequency of references to MEAs in PTAs across issue areas. PTAs refer to MEAs for various reasons, including requiring parties to ratify or implement the MEA. In addition to the UNFCCC and the Kyoto Protocol, we look at the Vienna Convention (1981) and its Montreal Protocol (1987), the Convention on Biological Diversity (1992) and its two protocols (Cartagena, 2000 and Nagoya, 2010), and the Basel Convention on hazardous wastes (1989). We calculated the percentage of PTAs that refer to each MEA since its conclusion. This means that older agreements are evaluated on the basis of a larger sample of PTAs. The UNFCCC and the Kyoto Protocol are clearly underrepresented in comparison to other MEAs, as less than 3 percent of PTAs adopted since 1992 refer to them. Evidently, the climate change regime is lagging behind other MEAs in terms of the extent to which related provisions are replicated across multiple PTAs.

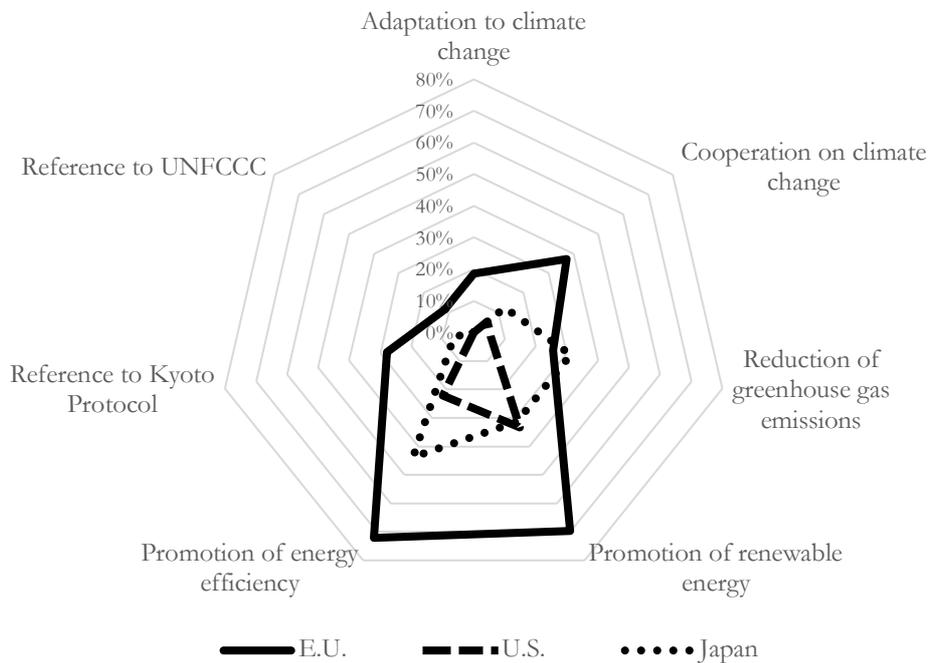
We have demonstrated that climate-related provisions are among the least replicated of all environmental provisions in PTAs. We support this finding by evaluating both the raw number of PTAs that reference climate change relative to other environmental issues, and the number of PTAs that reference climate change MEAs relative to MEAs in other issue areas.

Distribution

The distribution of PTAs' climate change provisions is also important to consider. It is more important that states critical to the success of the climate change regime (i.e. the largest emitters) sign PTAs with climate provisions than it is how many PTAs in total have included climate provisions. Indeed, one argument for including climate provisions in PTAs is precisely that climate change leaders can use their trade leverage to convince laggard or ambivalent countries. Unfortunately, we find that it is rarely the case.

The distribution of climate change provisions remains concentrated around Europe. The EU was the first to explicitly use the term "climate change" in a PTA, in its agreements with Hungary and Poland on December 16, 1991, before the international community even concluded the UNFCCC. Moreover, until 2004, the EU was alone in explicitly referring to climate change in its PTAs.³⁹ Today, 38 percent of all European PTAs address climate change, and 100 percent of EU PTAs signed since 2008 contain climate provisions. The 50 or so EU trade agreements concluded since the adoption of the UNFCCC in 1992 contain an average of 2.6 climate provisions, and many of the most recent EU agreements contain more than seven such provisions. By comparison, PTAs signed throughout the world since 1992, excluding European agreements, have an average of 0.2 provisions on climate change. Figure 8.2 shows EU leadership on climate change governance through trade agreements in comparison to other major emitters, including the United States and Japan. Not only does the EU more frequently include climate provisions in its PTAs, but it also includes a wider variety of climate provisions.

Figure 8.2: Percentage of PTAs that include provisions on climate change since 1992



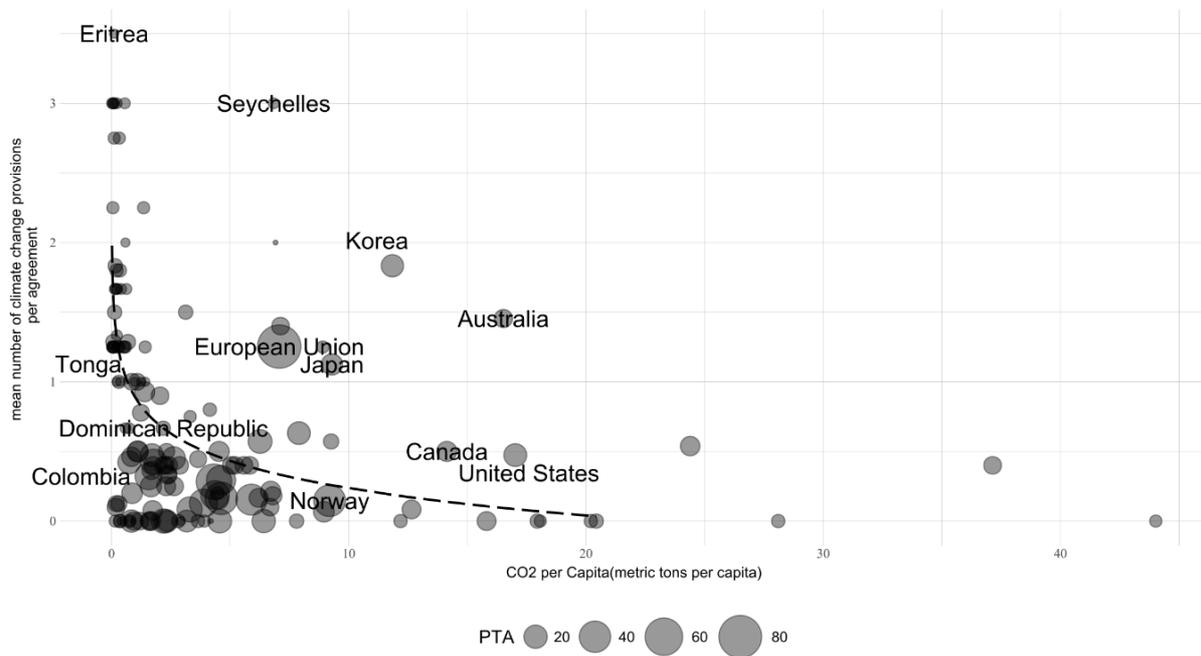
We also conducted a network analysis to determine the distribution of climate provisions across countries. The EU's central position clearly emerges from the constellation of agreements it has established with its trading partners. The network grew mainly around European influence and remains focused around the EU. That is, the EU is the most central actor, whether measured by degree centrality, closeness centrality, or betweenness centrality.⁴⁰ We also see that the EU is struggling to export its model beyond its immediate trading partners. Only a small section of the network seems to have developed independently of EU influence. A number of Pacific Basin countries, in particular, have played a role in the dissemination of climate provisions, and some of their respective partners have gone on to reproduce these provisions in their subsequent agreements. Nevertheless, their influence remains marginal compared with the EU.

Unfortunately, many other major actors within the climate change regime have not followed the EU's lead. Nearly 50 countries have not addressed climate change in any of

their PTAs. Among these countries are some of the most significant GHG emitters and oil producers, such as Saudi Arabia, Brazil, Venezuela, and Iran. Additionally, several major emitters only incorporate weak and few climate change provisions into their PTAs. Neither the United States, India, China, nor Canada include a significant number of climate change provisions in their PTAs signed since 1992 (their respective averages of 0.6, 0.3, 0.4, and 0.8 compare to the EU's 2.6). The United States includes a number of climate-related provisions in its recent PTAs (especially on renewable energy and energy efficiency), but explicitly refers to climate change only once, in the 2004 United States-Australia Environmental side-agreement. That provision lists 12 specific environmental issues for cooperation between the United States and Australia, with "global climate change" among them. This lack of emphasis on climate change is in stark contrast to the attention the United States pays within its PTAs to other environmental issues, such as forest protection and endangered species.⁴¹

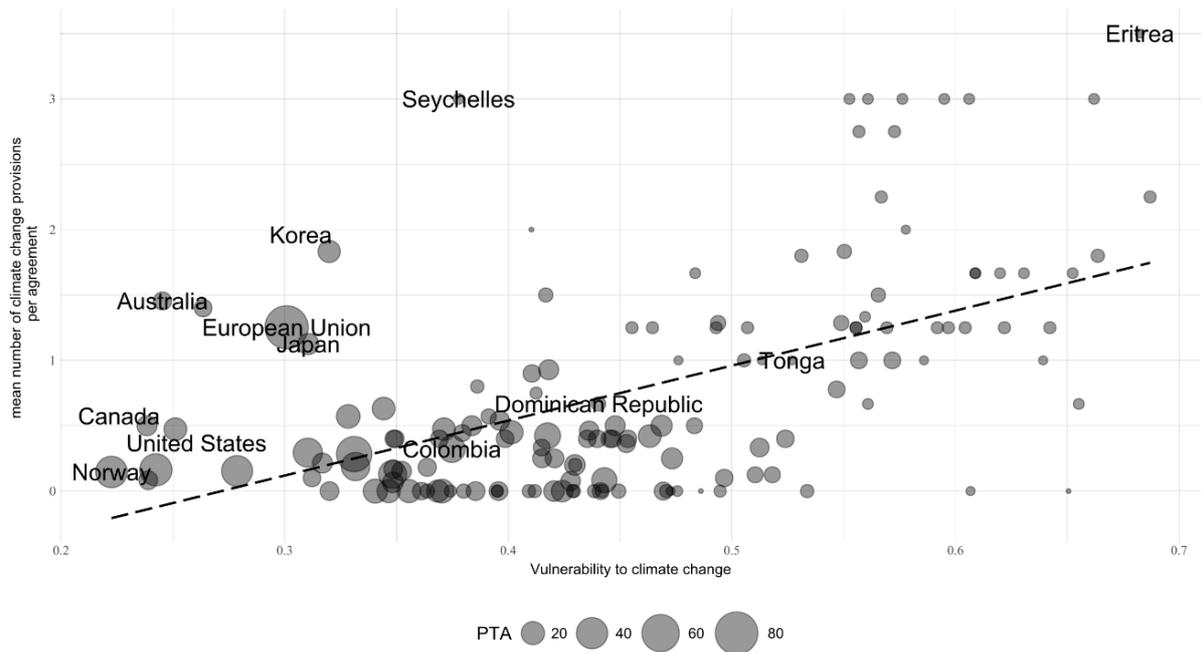
To further assess the distribution of climate provisions in PTAs we compared the average number of climate change provisions in each country's PTAs with their level of carbon dioxide emissions.⁴² The size of the bubbles in Figure 8.3 corresponds to the number of PTAs signed by each country. As such, smaller bubbles deserve less attention and should be interpreted with more caution than the larger ones. This analysis reveals that countries that include more climate provisions in their PTAs tend to be low emitters. Moreover, this relation is more significant for developed countries than for developing ones, with most developed countries seeming to design PTAs that reflect only their short-term economic interests regarding climate change.

Figure 8.3: Relation between carbon dioxide emission and PTAs' climate provisions



The relationship between climate provisions and vulnerability is slightly more straightforward: highly vulnerable countries are more likely to include climate provisions in their PTAs.⁴³ The country with the most climate change provisions in its PTAs, Eritrea, ranks as the second most vulnerable country to the impacts of climate change (after Somalia). Conversely, countries with the lowest vulnerability indices, such as Norway, the United States, and Canada, include fewer climate provisions in their PTAs. The EU appears as an outlier, as it is less vulnerable to climate change while being one of the strongest proponents of mitigation in its PTAs.

Figure 8.4: Relation between vulnerability to climate change and PTAs' climate provisions



This section has demonstrated the limited distribution of climate change provisions in PTAs. Although the EU is a clear leader on climate change governance through PTAs, other major emitters are laggards, including only few and weak climate-related provisions. Finally, vulnerable countries tend to incorporate more climate provisions than do countries less vulnerable to climate change. But the very fact that some nations have included climate change provisions in their PTAs demonstrate that this tool to promote action is available—and could be expanded.

Conclusions

International efforts to mitigate climate change are no longer strictly limited to the UNFCCC — the centerpiece of global efforts to combat climate change. Preferential trade agreements have become an emerging space where countries are increasingly developing innovative climate change solutions. PTAs can enhance global climate change governance in a number of ways. First, the multitude of PTAs negotiated every year provides an opportunity for

policy experimentation. Second, unlike the Paris Agreement on climate change, PTAs can be armed with sanction-based dispute settlement mechanisms. As such, they offer a possibility for enhanced enforcement should states fail to fulfill their climate change commitments. Finally, as demonstrated by the ambitious environmental norms included in some PTAs in the realm of biodiversity conservation, PTAs can serve as a key avenue to go beyond the targets set forth in the Paris Agreement and enhance the global climate change agenda.

PTAs have provided an exceptional contribution to the climate change regime through novel climate provisions on issues ranging from renewable energy to climate change adaptation. Nonetheless, PTAs remain weak in terms of legalization, replication, and distribution. The legalizations of climate provisions are weak due to their lack of precision and weak dispute settlement mechanisms. Replication of climate provisions is also limited in comparison to other environmental issues. Finally, with the exception of the EU, distribution is also weak, with limited uptake among large GHG emitters (including China and the United States) and among countries that are not highly vulnerable to climate change. Clearly, PTAs could better address climate change if countries strengthened their efforts measured by these metrics.

The 2018 Comprehensive and Progressive Transpacific Partnership (CPTPP) is a good example of a missed opportunity in this regard. Despite containing a multitude of environmental provisions, even after the 2018 U.S. withdrawal from the CPTPP's predecessor (i.e. the TPP), the remaining 11 countries maintained weakly legalized climate-related provisions. The CPTPP merely requires parties to cooperate on issues related to a "transition to a low emissions and resilient economy."⁴⁴ It is possible that this carefully worded language is structured so as to make a U.S. reentry into the agreement in the future more likely. The recently agreed Canada-EU Comprehensive and Economic Trade Agreement (CETA) contains similarly weak climate provisions. It only requires that parties

“pay special attention to” removal of trade barriers on climate change mitigation technologies and that they cooperate on climate change issues.⁴⁵ Although inclusion of climate change policy in these PTAs *at all* is important, these weakly legalized provisions suggest countries should see these PTA provisions as a floor for the potential contributions PTAs can have in this area.

In addition, countries can use many other approaches to better address climate change through trade agreements. An aggressive approach might entail countries more fully integrating climate change policies into PTAs in similar ways to how the United States integrated forest management issues into its PTA with Peru.⁴⁶ This approach should be used with caution; deep prescription into the domestic policies of other countries can lead to unintended consequences, including cookie cutter policies that don’t fit within variable domestic contexts, or the abuse of power to push PTA environmental policies through, without adequate attention to core issues of democratic participation.⁴⁷

A more moderate approach might involve linking PTAs to energy issues in efforts to decarbonize through trade incentives.⁴⁸ Indeed, this trend is increasing with many states now promoting renewable energy and energy efficiency through subsidies or other protectionist measures such as border tax adjustments. Ultimately, politics will mediate these decisions, which must necessarily evolve in parallel to ongoing international climate change negotiations and retreating multilateralism in some important countries.

Notes

¹ Jean Frédéric Morin, Joost Pauwelyn, and James Hollway, “Trade Regime as a Complex Adaptive System: Innovation and diffusion of environmental norms in trade agreements,” *Journal of International Economic Law* 20, no.2 (2017): 365.

² Sikina Jinnah, “Strategic linkages: The evolving role of trade agreements in global environmental governance,” *The Journal of Environment & Development* 20, no. 2 (2011): 191.

³ Jean-Frédéric Morin and Mathilde Gauquelin, “Trade Agreements as Vectors for the Nagoya Protocol’s Implementation,” *CIGI Papers* no. 115, Centre for International Governance Innovation, 2016, <https://www.cigionline.org/sites/default/files/documents/Paper%20no.115.pdf>.

⁴ Morin, Pauwelyn, and Hollaway, “Trade Regime as a Complex Adaptive System,” 365; Sikina Jinnah and Abby Lindsay, “Diffusion Through Issue Linkage: Environmental norms in US trade agreements,” *Global Environmental Politics* 16, no. 3 (2016): 41.

⁵ There is great variation across PTAs in this regard. (Axel F. Marx, Nicholas Hachez, and Jan Wouters, *Dispute Settlement in the Trade and Sustainable Development Chapters of EU Trade Agreements* (Leuven: Leuven Centre for Global Governance Studies, 2017)). However, the fact that recent U.S. agreements include environmental provisions under the general dispute settlement suggests the potential for broader replication of such provisions to other PTAs. In contrast, the Paris Agreement and Kyoto Protocol both defer to the UNFCCC Article 14 for resolution of any disputes. This article 14 is largely limited to conciliation, and in some limited circumstances, deferment to the International Court of Justice; Jinnah and Lindsay, “Diffusion Through Issue Linkage,” 41.

⁶ OECD, *Environment and Regional Trade Agreements* (Paris: OECD, 2007); John Whalley, “What Role for Trade in a Post - 2012 Global Climate Policy Regime,” *The World Economy* 34, no. 11 (2011): 1844; Rafael Leal-Arcas, *Climate Change and International*

Trade (Cheltenham: Edward Elgar Publishing, 2013); Markus Gehring, Marie-Claire Cordonier Segger, Fabiano de Andrade Correa, Patrick Reynaud, Alexandra Harrington, and Rodrigo Mella, “Climate Change and Sustainable Energy Measures in Regional Trade Agreements,” Issue Paper no. 3 (Geneva, Switzerland: International Centre for Trade and Sustainable Development, 2013), <https://www.ictsd.org/downloads/2013/08/climate-change-and-sustainable-energy-measures-in-regional-trade-agreements-rtas.pdf>; Harro van Asselt, “Climate Change and Trade Policy Interaction: Implication of regionalism,” *OECD Trade and Environment Working Papers* 2017/03, OECD, 2017.

⁷ Our analysis assesses agreements signed before December 31, 2016. It does not include the EU-Japan trade agreement, which is the first trade agreement to specifically refer to the Paris Agreement; Jean Frédéric Morin, Andreas Dür, and Lisa Lechner, “Mapping the Trade and Environment Nexus: Insights from a new dataset,” *Global Environmental Politics* 18, no. 1 (2018): 122.

⁸ TREND borrows its collection of trade agreements from the Design of Trade Agreement (DESTA) Project. Andreas Dür, Leonardo Baccini, and Manfred Elsig, “The Design of International Trade Agreements: Introducing a New Database,” *Review of International Organizations* 9, no. 3 (2014): 353.

⁹ Todd Allee and Manfred Elsig, “Are the Contents of International Treaties Copied-and-Pasted? Evidence from Preferential Trade Agreements,” Working Paper 8, World Trade Institute, 2016, <http://wp.peio.me/wp-content/uploads/PEIO8/Allee,%20Elsig%2013.2.2015.pdf>, 8.

¹⁰ Morin, Pauwelyn, and Hollaway, “Trade Regime as a Complex Adaptive System.”

¹¹ “The Korea–Australia Free Trade Agreement (KAFTA),” Korea-Australia, Dec. 12, 2014

¹² "Peru - Korea Free Trade Agreement (KPFTA)," Peru-Korea, Aug. 1, 2011,

http://www.sice.oas.org/TPD/PER_KOR/PER_KOR_Texts_e/PER_KOR_ToC_e.asp,
Art. 20.4.

¹³ Sikina Jinnah and Elisa Morgera, "Environmental Provisions in American and EU Free Trade Agreements: a preliminary comparison and research agenda," *Review of European, Comparative & International Environmental Law* 22, no. 3 (2013): 324.

¹⁴ "The Korea–Australia Free Trade Agreement (KAFTA)," Korea-Australia.

¹⁵ "Trade, Development and Cooperation Agreement (TDCA)," EU-South Africa, Oct. 11, 1999, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM%3Ar12201>, Art. 84.

¹⁶ "EU-Central America Association Agreement," EU-Central America, June 29, 2012, http://trade.ec.europa.eu/doclib/docs/2011/march/tradoc_147663.pdf, Art. 50.

¹⁷ "Implementation Agreement between the Government of Japan and the Government of the Republic of Indonesia," pursuant to Article 13 of the Agreement between Japan and the Republic of Indonesia for an Economic Partnership, Japan-Indonesia, Art. 39.

¹⁸ EU-Georgia PTA, Article 231(c).

¹⁹ EU-Georgia PTA, Article 308.

²⁰ Implementing Arrangement For Economic and Technical Cooperation Activities in Agreed Areas Pursuant To Chapter 16 (Economic and Technical Cooperation) of The Malaysia-Australia Free Trade Agreement, Malaysia-Australia, Sept. 22, 2014.

²¹ Peru - Korea Free Trade Agreement (KPFTA), art. 19.8.

²² Association Agreement between the European Union and the European Atomic Energy Community and their Member States, of the one part, and the Republic of Moldova, of the other part, EU-Moldova, June 2014, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22014A0830%2801%29&from=EN>, art. 93.

²³ Costa Rica-China Free Trade Agreement, Costa Rica-China, April 8, 2010, http://www.sice.oas.org/Trade/CRI_CHN_FTA/Texts_Apr2010_e/CRI_CHN_ToC__PDF_e.asp, art. 123.

²⁴ “The Korea–Australia Free Trade Agreement (KAFTA),” Korea-Australia.

²⁵ EU-Montenegro Stabilisation and Association Agreement, EU-Montenegro, September 21, 2007, <http://register.consilium.europa.eu/doc/srv?l=EN&f=ST%2011566%202007%20INIT>, art. 111.

²⁶ “Trade Agreement between the European Union and Colombia and Peru,” EU-Colombia-Peru, June 26, 2012, http://trade.ec.europa.eu/doclib/docs/2011/march/tradoc_147704.pdf, art. 270.4.

²⁷ “Trade Agreement between the European Union and Colombia and Peru,” EU-Colombia-Peru.

²⁸ “Association Agreement between the European Union and the European Atomic Energy Community and their Member States, of the one part, and Georgia, of the other part,” June 27, 2014, [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22014A0830\(02\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22014A0830(02)&from=EN), Annex XXX to Chapter 6; Association Agreement between the European Union and the European Atomic Energy Community and their Member States, of the one part, and the Republic of Moldova, of the other part, Annex XII to Chapter 17 of Title IV.

²⁹ “Treaty of Lisbon,” EU member states, December 13, 2007, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A12007L%2FTXT>, art. 188j.

³⁰ Kenneth Abbott, Robert Keohane, Andrew Moravcsik, and Anne-Marie Slaughter, “The Concept of Legalization,” *International Organization* 54, no. 3 (2000): 401.

³¹ Association Agreement between the European Union and Georgia, art. 307.

³² “The China-Korea Free Trade Agreement,” China-South Korea, 2015, http://fta.mofcom.gov.cn/korea/annex/xdzw_en.pdf, art. 16.8 and 16.9.

³³ Framework Agreements on Enhancing ASEAN Economic Cooperation, Indonesia-Malaysia-Philippines-Singapore-Thailand, January 28, 1992, https://www.asean.org/wp-content/uploads/images/2012/Economic/AFTA/Common_Effective_Preferential_Tariff/Framework%20Agreements%20on%20Enhancing%20ASEAN%20Economic%20Cooperation%200.pdf, art. 2 (B) (3).

³⁴ United States International Trade Commission, “U.S.-Korea Free Trade Agreement: Passenger Vehicle Sector Update,” Investigation No. 332-523, USITC Publication 4220, (March 2011), C-9.

³⁵ Wybe Douma, “The Promotion of Sustainable Development Through EU Trade Instruments,” *European Business Law Review* 28, no. 2 (2017): 193-212.

³⁶ Jinnah and Morgera, “Environmental Provisions,” 331.

³⁷ Allee and Elsig, “Contents of International Treaties,” 3.

³⁸ For this comparison, we consider the eight categories of “climate related provisions.” We considered as biodiversity provisions those related to endangered species, invasive species, migratory species, protected areas, genetic resources, biosafety, and genetically modified organisms.

³⁹ We looked for various translations of “climate change” and “global warming.”

⁴⁰ Degree centrality is based on the number of ties per node. Closeness centrality measures, for each node, the distance to all other nodes. Betweenness centrality is based on the location of a node in the path that links other nodes. As a central actor, the EU has the highest number of PTAs with at least one climate provision (degree centrality), is connected to other countries in this network by the fewest number of PTAs (closeness centrality), and appears as a step in most paths connecting two other actors in this PTA network (betweenness centrality).

⁴¹ Jinnah, “Strategic Linkages.”

⁴² We used 2011 CO₂ emissions *per capita* provided by the World Bank.

⁴³ We evaluated vulnerability of a country to climate change according to the *Notre-Dame Global Adaptation Index*.

⁴⁴ “Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP),” AUS-Brunei-CN-Chile-Japan-Malaysia-Mexico-NZ-Peru-Singapore-Vietnam, February 21, 2018, <https://www.mfat.govt.nz/assets/Trans-Pacific-Partnership/Text/20.-Environment-Chapter.pdf>, article 20.15.

⁴⁵ Comprehensive Economic and Trade Agreement (CETA), Canada-EU, September 21, 2017, http://trade.ec.europa.eu/doclib/docs/2014/september/tradoc_152806.pdf, article 24.9.

⁴⁶ Jinnah, “Strategic Linkages.”

⁴⁷ Jinnah and Morin, “Trading the Environment.”

⁴⁸ Rafael Leal-Arcas, “Trade Redemption: How Trade Agreements Can Help Decarbonize the Economy,” Research Paper No. 271/2018, Queen Mary University of London, School of Law Legal Studies, (2018).