

## Research Note

# Mapping the Trade and Environment Nexus: Insights from a New Data Set

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### Abstract

Environment and trade are increasingly linked through preferential trade agreements. Despite the encompassing nature of environmental provisions in trade agreements, studies on causes and consequences of the trade and environment linkage are scarce. A main cause hindering research in this area is the lack of data. In this research note, we introduce an original data set (TREND) on environmental provisions found in 630 trade agreements signed between 1947 and 2016—the most comprehensive data set in terms of both variables coded and agreements covered. We illustrate the data set's usefulness by assessing the question of why countries include environmental provisions in trade agreements. Are trade negotiations opportunities to promote stringent environmental standards? Or are environmental provisions window dressing covering protectionist interests? We find evidence that democracies, countries that face import competition, and countries that care about the environment are more likely to include environmental provisions in trade agreements. The database is of particular relevance for research on international institutional design, policy innovation, regime complexity, policy diffusion, and regime effectiveness.

While environmental negotiations progress slowly in UN fora, roughly twenty new trade deals with detailed environmental provisions are concluded every year. The recently signed Comprehensive Economic and Trade Agreement between the EU and Canada, for example, has a full-fledged chapter on the environment, covering a wide variety of issue areas, such as fisheries conservation, endangered species, forest governance, trade in environmental goods, and corporate social responsibility. Some of these environmental commitments are more precise and enforceable than those found in multilateral environmental

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agreements (Jinnah and Lindsay 2016). Yet, trade agreements' environmental provisions remain highly controversial. Recent agreements are simultaneously celebrated for being environmentally conscious (US Department of State 2015, 55) and condemned for being an ecological disaster hidden under a green cover (*Inside US Trade* 2016).

These policy debates echo broader academic discussions on the relationship between trade and environmental regimes. Some scholars argue that the trade regime has dismantled “three decades of global environmental rule making” and sold “important dimensions of the global commons” (Conca 2000, 492). Other analysts reason that the trade regime does not always “prioritize trade over environmental protection” (DeSombre and Barkin 2002, 13). Johnson (2015, 207), for example, argues that the “international trade regime offers various instruments by which states can pursue environmental policies, even at the expense of freer trade.”

Until now, these debates have been limited by their empirical scope. Most studies focus exclusively on the World Trade Organization, although the trade regime's current developments are clearly located on bilateral and regional fronts. A number of recent studies have pioneered the analysis of preferential trade agreements' (PTAs) environmental provisions, but they have only analyzed a relatively small number of agreements (Jinnah and Morgera 2013; Jinnah and Lindsay 2016), have not systematically coded their provisions (Anuradha 2011; Chaytor 2009; Gehring et al. 2013; OECD 2007; Monteiro 2016), or have looked at nontrade issues in general rather than environmental provisions specifically (Lechner 2016; Milewicz et al. 2017).

This research note contributes to this literature by introducing a novel data set of 308 environmental items coded in 630 post-1947 trade agreements. Using these original data, we assess the objectives that governments pursue when including environmental provisions in trade deals. The next sections present this data set and some general trends. We then provide an empirical illustration of its usefulness based on the expected frequency of environmental provisions in different agreements. We examine the plausibility of three hypotheses derived from the literature using bivariate analyses. The research note concludes with a discussion of the relevance of the newly introduced database for various streams of literatures.

## Introducing the Trade and Environment Database (TREND)

With the publication of this research note, we make an original data set on environmental provisions in trade agreements, part of the TREND project, publicly available.<sup>1</sup> By making this data set public, we hope to help the research community move beyond the analysis of a few trade agreements toward a systematic analysis of trade–environment interplay.

1. The data set itself and its detailed codebook, including definitions and examples for every variable, can be freely downloaded from [www.trend.ulaval.ca](http://www.trend.ulaval.ca).

The TREND data set has remarkable breadth. It covers no fewer than 630 trade agreements signed between 1947 and 2016. The full texts of nearly all bilateral and plurilateral custom unions, free trade agreements, and partial trade agreements are provided by the Design of Trade Agreements data set (Dür et al. 2014). For the purpose of the data set, we consider annexes, protocols, side agreements, and side letters signed at the same time as the main trade agreement as integral parts of that agreement.

The data set is the result of manual coding, based on a detailed codebook that covers a large number of environmental norms that appear in trade agreements. The codebook was elaborated in two stages, combining deductive and inductive approaches. We started from existing typologies, in particular, the detailed survey conducted by the OECD (2007). This OECD study identifies several categories of environmental provisions found in trade agreements, such as key principles of international environmental law, mechanisms of public participation, commitments related to environmental standards, and references to environmental agreements. Each of these categories can be detailed in subcategories of specific norms. Then, in a second stage, we identified in our set of 630 PTAs environmental provisions that do not fit the main categories in the original OECD report, such as the commitment to enhance coherence between gender and environmental policies. We created additional norms in our codebook for these newly found items.

The final codebook covers fourteen broad areas: principles, level of environmental protection, lawmaking and policy-making, interaction between environmental and nonenvironmental issues, enforcement of domestic measures, means to promote environmental protection, cooperation on environmental matters, specific trade-related measures, assistance to developing countries, specific environmental issue areas, implementation of the agreement, institutions created, dispute settlement mechanisms, and references to multilateral environmental agreements.

These fourteen broad areas cover a total of 308 different environmental norms. Among these norms are articulations of the precautionary principle (e.g., the 2012 agreement between the EU, Peru, and Colombia provides that, “where there are threats of serious or irreversible damage, the lack of full scientific certainty should not be used as a reason for postponing protective measures” [Article 267.4]), measures to prevent subsidies harmful to the environment (e.g., the 2016 Transpacific Partnership calls for the “eventual elimination of all subsidies that contribute to overfishing and overcapacity” [Article 20.16]), exclusions of environmental measures from investor–state dispute settlements (e.g., the 2015 agreement between Australia and China makes clear that “measures of a Party that are non-discriminatory and for the legitimate public welfare objectives of public health, safety, the environment, public morals or public order shall not be the subject of a claim under this Section” [Article 9.11]), pledges to provide technical assistance for environmental protection (e.g., a joint statement adopted with the 2000 agreement between the United States and Jordan provides that, “to protect the fragile coral reef ecosystems in the Gulf of Aqaba, the United States is providing support for improved

management and monitoring of the Binational Red Sea Marine Peace Park in the Gulf of Aqaba" [Annex 1]), requirements to liberalize environmental goods and services (e.g., the 2013 agreement between New Zealand and Taiwan states that parties shall "eliminate all tariffs on environmental goods upon entry into force of this Agreement" and "facilitate the movement of business persons involved in the sale, delivery or installation of environmental goods and the supply of environmental services" [Article 17.03]), and commitments to implement certain multilateral environmental agreements (e.g., in their 2012 agreement, Korea and Turkey "reaffirm their commitment to reaching the ultimate objective of the United Nations Framework Convention on Climate Change and its Kyoto Protocol [and] commit to cooperation on the development of the future international climate change framework in according with the Bali Action Plan" [Article 5.5]).

We call these coded items *norms* rather than "provisions," "clauses," or "rules." This is not a reflection of their level of obligation, as some norms are merely aspirational, whereas others are highly enforceable. Instead, we use the term *norms* to make it clear that they refer to codebook items and are independent from the treaty structure. One norm, such as the affirmation of state sovereignty over natural resources, can be repeated in several chapters of the same agreement. These multiple occurrences would still count as only one norm for that agreement. Conversely, a single treaty article calling for greater cooperation on renewable energy and energy efficacy would count as two different norms, as our codebook identifies these items as two distinct norms.

With the help of the resulting codebook, human coders manually screened all PTAs. Although computers can automatically identify environmental provisions, we believe manual coding remains more appropriate for interpreting ambiguous treaty provisions. In contrast to bilateral investment treaties or double-taxation agreements, PTAs are not standardized. Similar commitments can be expressed in various ways, depending on the period, the language, and the parties involved. The polluter-pays principle, for example, is articulated in different manners and can hardly be identified by the co-occurrence of certain keywords. Moreover, certain norms can only be identified by the combined reading of different provisions. The coverage of environmental provisions by the agreement's main dispute settlement mechanism can usually only be identified by the combined reading of different chapters of the agreement. Considering these challenges and our codebook's level of detail, we felt that manual coding was more appropriate.

This coding was conducted with the qualitative software NVivo 11. Coders were asked to enter into the software the full text of provisions matching norms described in the codebook. This qualitative approach allowed for the easy retrieval of coded items, identification of false positives, and subdivision of norms, if necessary. To facilitate a quantitative treatment of this qualitative data, the NVivo file was then converted into an Excel spreadsheet, indicating whether a norm appears (coded as 1) or does not appear (coded as 0) in a trade agreement.

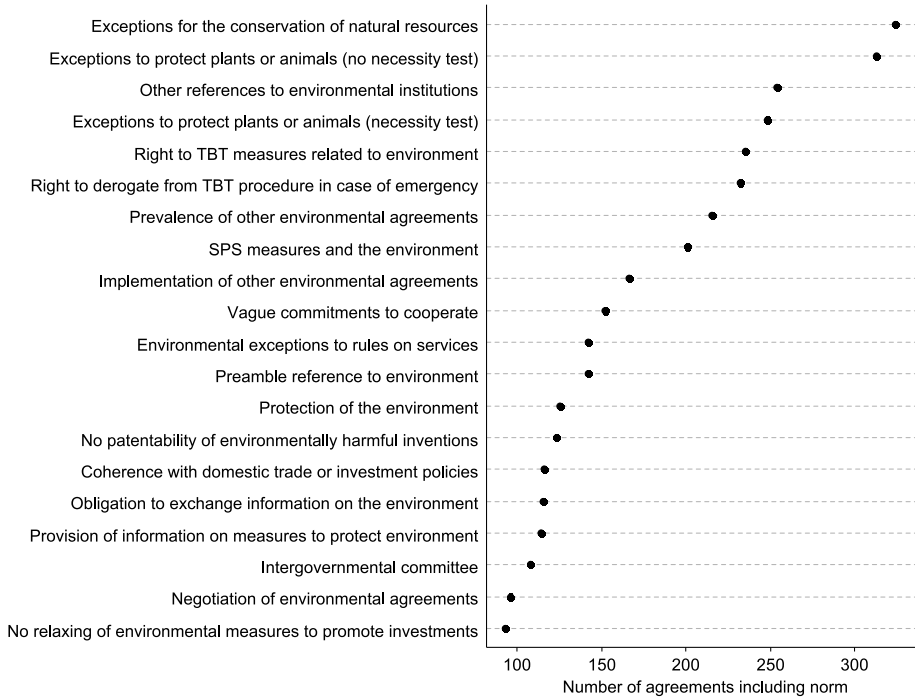
Each agreement was coded by two researchers, and discrepancies were arbitrated by a third person. Then, a randomly selected sample of 10 percent of trade agreements was coded by a fourth person, to assess the reliability of the data set. This fourth person did not participate in the initial coding round and could not communicate with the original coders, so she could not develop a shared tacit understanding of the data set beyond the explicit instructions in the codebook. Interrater agreement for this double coding as measured by Cohen's kappa is 0.77, which is considered to be a substantial level of agreement (Landis and Koch 1977). Individually, nearly all variables score higher than 0.6, which is viewed as the lower bound for substantial agreement. Variables that fell into lower categories were further examined, leading us to conduct ex post codebook clarifications to improve reliability. Finally, we performed crosschecks with the data set of Lechner (2016), which shares eighteen variables with the TREND data set. We arrived at a Cohen's kappa index of 0.66.

## Trends in TREND

Using the resulting data, Figure 1 shows which environmental provisions appear particularly frequently in PTAs. Most frequent is an exception to trade commitments for domestic measures related to the conservation of natural resources, followed by a similar exception for the protection of the health and life of plants or animals. These norms, duplicated from Article XX of the 1947 General Agreement on Tariffs and Trade (GATT), appear in nearly half the PTAs included in the TREND data set. Other frequent norms relate to technical barriers to trade and to the relationship between the trade agreement and environmental agreements. Only very few norms, however, are really widespread. The twentieth most frequently mentioned norm appears in ninety-three agreements, or 15 percent of all agreements coded. No fewer than fifty-six norms appear in five or fewer trade agreements. Among them are the use of geographical indications to protect biodiversity, the commitment to invest in climate adaptation, the explicit exclusion of water from trade commitments, and the requirement to ratify the Rotterdam Convention on hazardous chemicals and pesticides. The fact that so many norms appear in so few agreements reflects the diversity and fragmentation of these norms.

Figure 2 shows that, over time, the number of environmental provisions included in trade agreements has increased considerably. Before the 1970s, hardly any trade agreements made reference to the environment. Only from the 1990s onward do environmental provisions feature prominently in trade agreements. This trend is particularly strong in agreements between industrialized and developing countries (North–South PTAs).

This rise of environmental provisions might have been triggered by the US–Mexican dispute over dolphins. At the time, the United States was restricting imports of tuna products from countries that did not meet specific dolphin protection standards. Mexico considered this restriction an unnecessary protectionist

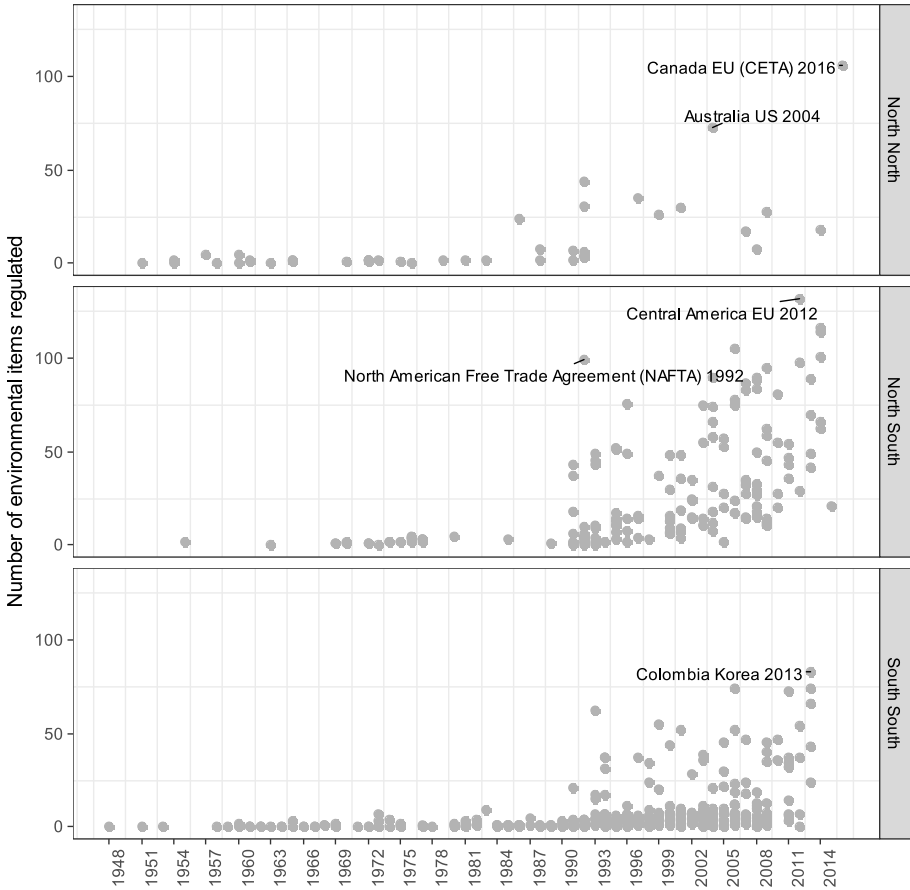


**Figure 1**

The Most Widely Used Environmental Norms in Trade Agreements

measure and filed a complaint under the GATT dispute settlement procedure in early 1991. Although the GATT panel's report has never been formally adopted, this dispute crystallized broad public opposition to further trade agreements that do not include sufficiently comprehensive environmental measures. It is already well documented that the emergence of this trade-related environmental activism had a profound impact on the North American Free Trade Agreement (NAFTA) and its environmental side agreement (Gallagher 2004; Strange 2015). The TREND database suggests that it may also have had an indirect impact on the entire trade regime.

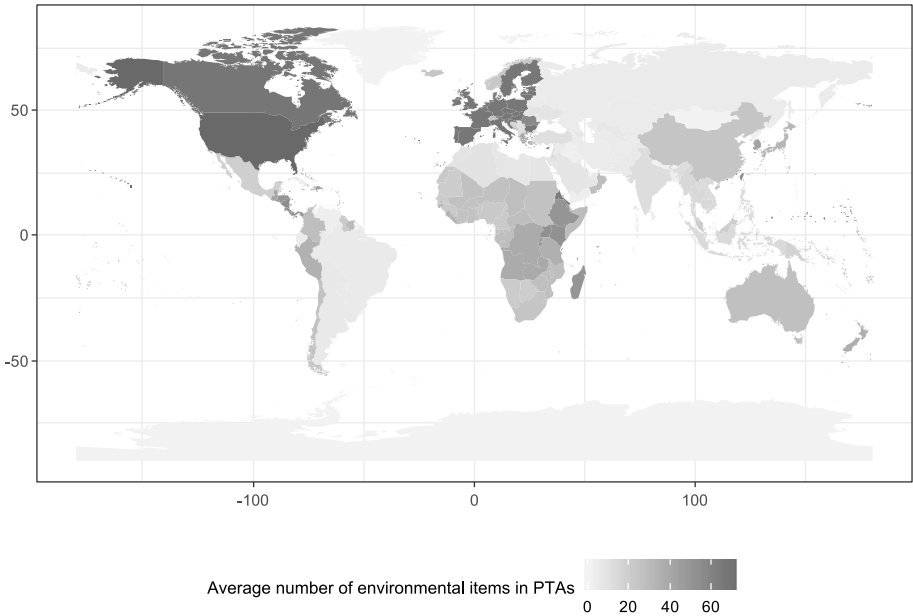
The TREND database also reveals that North–South PTAs are frontrunners in the inclusion of environmental norms. On average, North–South agreements include thirty-two norms from our data set, as compared to twelve for North–North agreements and eight for South–South agreements. For example, we find no fewer than 171 environmental norms in the 2012 agreement between Central America and the EU. Yet, some South–South agreements also include an exceptional number of environmental norms. The 2006 agreement between Nicaragua and Taiwan, for example, covers more than eighty environmental items. Certain provisions are even more frequently included in South–South



**Figure 2** Environmental Norms in Trade Agreements Over Time and by Level of Development

than in North–South agreements, such as the requirement to obtain prior informed consent before accessing genetic resources and the protection of indigenous communities’ traditional knowledge related to biodiversity.

In terms of countries, the United States appears as the most important proponent of environmental protection in trade agreements (see Figure 3); its trade deals cover an average of sixty-six environmental norms. But other countries also commit to PTAs with strong environmental protection language. Canada includes on average fifty-seven and the EU fifty-four environmental norms. Asian countries have included provisions on ecological issues only recently. Still, Hong Kong, for instance, covers on average forty-seven environmental clauses in its trade deals.



**Figure 3**  
Environmental Norms in Trade Agreements (in Force) by Country

### What Explains the Inclusion of Environmental Provisions in Trade Agreements?

We illustrate the value of the TREND database by using it to examine the plausibility of some explanations for the inclusion of environmental provisions in PTAs. Our comprehensive and detailed database is particularly well suited to addressing this research question. An OECD study (George 2014) attempted to answer the same question by circulating an anonymous survey. The questionnaire asked trade negotiators to rank their jurisdictions' main objectives for including environmental provisions. However, not only did this specific survey have a very low response rate (only ten delegations responded) but more generally, a survey is unlikely to lead to sincere responses. Governments and negotiators are unlikely to reveal their true objectives, especially if the aim of environmental provisions is to shield producers from foreign competitors. In contrast, the TREND database and its detailed quantitative data can shed light on this issue. The empirical analysis that follows does not fully exploit the richness of the data in this regard, as discussed further in the conclusion. Given that this is a research note that has as its purpose to introduce a new data set, we rely only on bivariate tests rather than including multivariate regression models to examine the plausibility of the various arguments. Nevertheless, what follows serves as a good illustration of the database's usefulness.



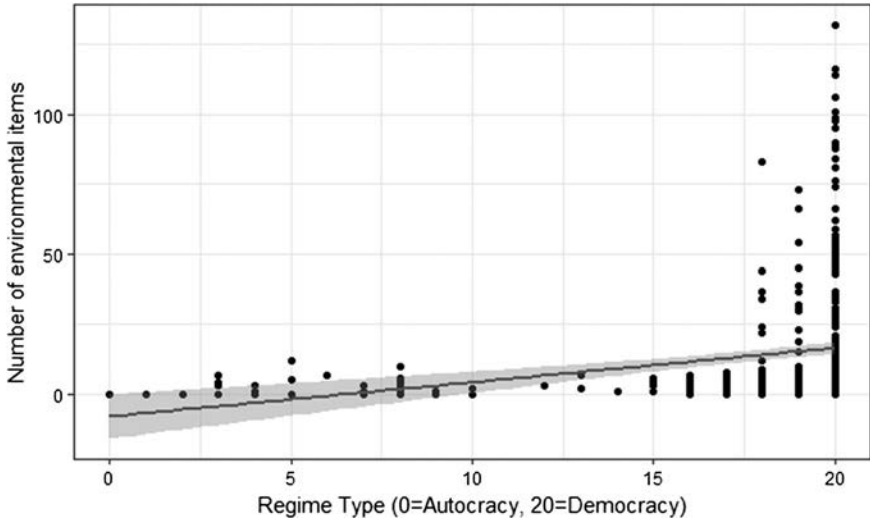
Governments can include environmental provisions in trade agreements for diverse reasons. In this illustration, we focus on three rationales commonly found in the literature. First, including environmental provisions in trade agreements might be a response to electoral pressures from citizens who value environmental protection. In most countries, a large portion of the population believes that the benefits from environmental protection outweigh the costs (e.g., Bättig and Bernauer 2009). In fact, Bernauer and Nguyen (2015) found that citizens in developing countries favor the inclusion of environmental clauses in trade agreements, just as do citizens in developed countries. The preferences of these citizens can be electorally relevant not least because of the political activities of environmental NGOs (Böhmelt et al. 2015). Environmental NGOs can alert citizens to the possibility that trade agreements undermine environmental standards in their own country, unless they include environmental provisions. It is well known, for example, that US environmental NGOs, including the National Wildlife Federation, the World Wildlife Fund, and the Natural Resources Defense Council, played a key role in pressuring the US government at the time of the 1992 presidential election to include environmental provisions in NAFTA (Gallagher 2004; Strange 2015, 82).

To the extent that electoral pressures explain the inclusion of environmental provisions in trade agreements, we should see that democratic countries are more willing to commit to environmental protection in trade agreements than are autocracies (Midlarsky 1998; Neumayer 2002; Roberts et al. 2004; Carbonell and Allison 2015). In democracies, after all, the link between citizen preferences and political outcomes should be tighter than in autocracies. The first hypothesis that we examine thus reads:

**H1:** Democratic countries include more environmental clauses in trade agreements than autocratic countries.

We explore this relationship in a bivariate analysis. To account for regime type, we use the maximum Polity2 score across all signatories of the agreement (Marshall et al. 2015). To ease interpretation, we have recoded the index to range from 0 (full autocracy) to 20 (full democracy). In line with the expectation of the electoral-pressure argument, democracies (polity score greater than 16) include on average six times more environmental clauses in their trade agreements than autocracies (see Figure 4). An increase of ten points on regime type is associated with an additional twelve environmental provisions in trade agreements. Nevertheless, even for democratic countries, we find much variation, with some trade agreements including fully democratic countries not covering the environment at all.

Second, governments may use environmental provisions to placate protectionist pressures, as ensuring high environmental standards in other countries can reduce competition for their firms (Bhagwati 1995; Runge 1990; Subramanian 1992). At least some environmental provisions have the potential to restrict trade. For example, a provision that asks for higher levels of environmental standards in a developing country reduces the competitiveness of industry in the latter. This, in turn, might reduce import competition in a developed country that signs up to a



**Figure 4**  
Regime Type and Environmental Norms

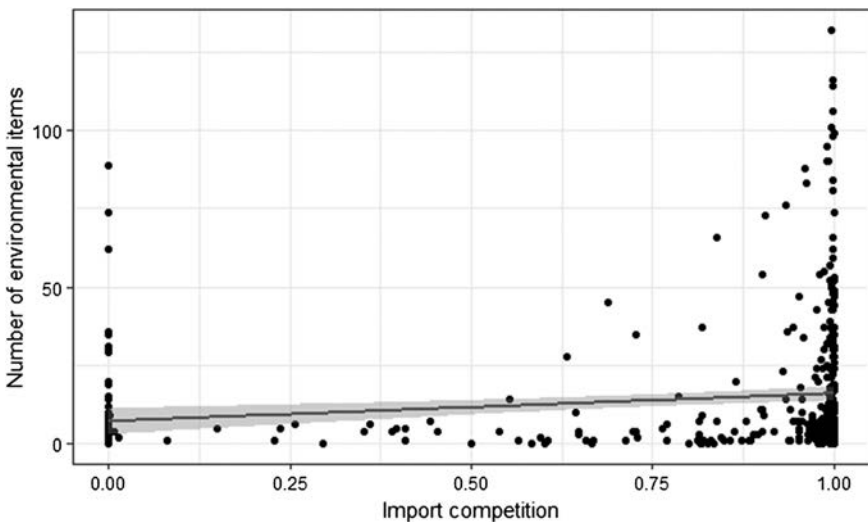
trade deal with that developing country. Environmental provisions may even have a more direct protectionist impact when they restrict trade in specific goods, such as genetically modified organisms. Environmental provisions in trade agreements are a second-best tool to restrict trade in a situation in which other instruments, such as tariffs, are no longer available. They also have the potential to “obfuscate” the protectionist motivation (Kono 2006).

Protectionist motives should be more intense when trade has large distributional effects in a country. Such distributional effects are strongest when countries that differ in their endowments with factors of production trade with each other. This is typically the case when a developed country, which has an advantage in the production of capital-intensive goods, signs a trade agreement with a developing country, which is most competitive in the production of labor-intensive goods. In such a situation, trade will be of an interindustry type. Such interindustry trade leads to large distributional effects, with firms in import-competing sectors of the economy being pushed out of the market. As a result, environmental provisions are often presented by developed countries as necessary conditions to level the playing field for their domestic industries, while being simultaneously condemned by developing countries for being merely sophisticated nontariff barriers to trade. The second expectation, thus, is for countries to include more environmental provisions in trade agreements when trade competition is high. Our second hypothesis hence is:

**H2:** Trade agreements with greater distributional effects include more environmental clauses than trade agreements with less distributional effects.

To assess this correlation, we use a measure of import competition built on data retrieved from the COMTRADE database. Concretely, we calculate a measure of interindustry trade, because competition is lower in situations of intraindustry trade. For this, we use the Grubel–Lloyd index, which is a commonly employed measure of intraindustry trade (Kucik 2012). We subtract the Grubel–Lloyd index value, which ranges from 0 (low intraindustry trade, meaning high competition) to 1 (high intraindustry trade, meaning low competition), from 1 to arrive at a measure for interindustry trade capturing import competition. In line with the protectionist-motivations expectation, on average, the number of environmental clauses is higher for PTAs with member states that experience high rather than low levels of competition (see Figure 5). Whereas at an interindustry trade level of 0, the mean number of EP clauses is seven, at an interindustry trade level of 1, the number of EP clauses averages out at sixteen.

Finally, low costs of compliance may be a driver of the inclusion of environmental provisions in trade agreements. The reasoning here is that countries are unlikely to commit to international obligations that are costly to them (Sprinz and Vaahoranta 1994; Downs et al. 1996; Milewicz et al. 2017). Domestic opposition to international agreements is likely to grow in parallel to the costs that they impose on domestic constituencies. A country that exports goods that are produced under conditions that harm the environment, therefore, is unlikely to favor the inclusion of environmental provisions in trade deals (Copeland 2000); rather, it will stress the need to keep trade and the



**Figure 5**  
Import Competition and Environmental Norms

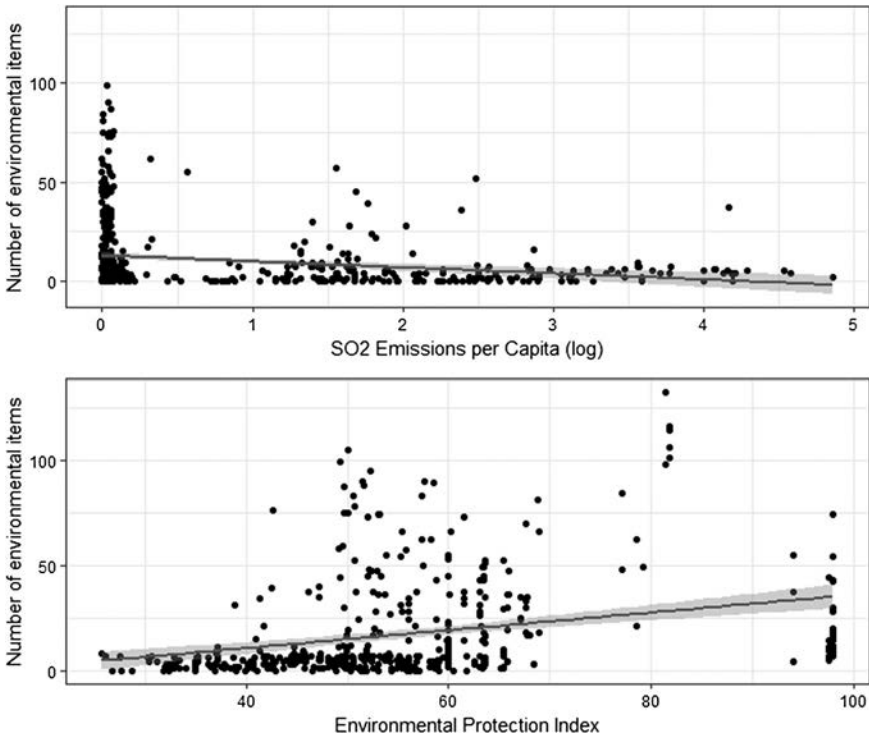
environment separate. Conversely, a country with stringent domestic regulations has little to lose by diffusing its standards globally. Recent case studies have found that the US and EU commitments to include environmental provisions in their respective trade agreements derive from their interest in spreading their domestic norms internationally (Jinnah and Lindsay 2016; Poletti and Sicurelli 2015). The third expectation, hence, is that leaders in domestic environmental protection will want to include more environmental provisions in trade agreements than laggards will. The third hypothesis that we assess reads as follows:

**H3:** Governments with higher levels of environmental protection include more environmental provisions in trade agreements than governments with weaker levels of protection.

Again, we present a bivariate analysis to explore the relationship between environmental protection and sustainability provisions in PTAs. To capture compliance costs, we use two variables: sulfur dioxide (SO<sub>2</sub>) emissions per capita (Stern 2005) and the Environmental Protection Index (EPI) (Hsu et al. 2016). SO<sub>2</sub> emissions have a major adverse effect on the climate, the population's health, and vegetation (Stern 2005). SO<sub>2</sub> emissions per capita thus capture environmental pollution more broadly than carbon dioxide (CO<sub>2</sub>) emissions, which are mainly problematic as contributors to climate change. Furthermore, data on SO<sub>2</sub> emissions per capita cover a wide range of countries over a long period. Complementary to the measure of SO<sub>2</sub> per capita emissions, the EPI is calculated from twenty indices covering inter alia water resources, agriculture, fishery, forests, biodiversity, climate, and energy. For SO<sub>2</sub> emissions per capita, we take the minimum value across all members of a trade agreement as the value for that trade agreement; for the EPI, we take the max (in both cases, the environmentally best-performing member state).

Figure 6 shows that the results are in line with the expectation set out in H3. Higher pollution levels correlate with a lower number of environmental clauses, and a higher EPI score goes along with a greater number of environmental clauses. Moving from zero SO<sub>2</sub> emissions per capita to 1.7 emissions per capita is associated with a reduction in the number of environmental items by three. For the EPI, an increase of 10 points is associated with four additional environmental items in a trade agreement.

The three expectations put forward are not mutually exclusive. They may be at work at the same time or even reinforce each other (e.g., democracies tend to be more sensitive to the distributional effects of trade agreements and tend to have more stringent environmental regulations). In this section, we have shown some tentative relationships. Future research could tease out different mechanisms explaining the large variation in environmental norms in PTAs. Beyond this aspect, the data set allows for tackling a large set of research questions. The following section provides suggestions on future scholarly projects using TREND.



**Figure 6**  
Pollution and Environmental Norms

## Future Research

This research note introduces a novel data set, called TREND, covering 308 environmental norms in 630 PTAs. This data set is particularly timely, as environmental negotiations are increasingly taking place outside of traditional environmental fora. Other influential databases have recently documented the contribution of city networks and transnational partnerships in global environmental governance (e.g., Bulkeley and Betsill 2005; Andonova et al. 2009; Biermann et al. 2009; Green 2013; Abbott 2012). Similarly, some recent trade agreements are at the forefront of environmental diplomacy and include provisions that are more precise and more enforceable than those found in multilateral environmental agreements. Breakthroughs in environmental diplomacy are not necessarily made where they are most expected. This data set contributes to exploring the role of unconventional institutions in global environmental governance.

We demonstrate the value of the data set by addressing the question of why governments include environmental provisions in PTAs. The results provide initial support for several expectations derived from the literature. We find

that democracies include a greater number of environmental provisions in trade agreements than autocracies do, suggesting that electoral pressures may be important. We also find a positive correlation between import competition and the inclusion of environmental provisions, supporting the idea that these provisions may also serve protectionist purposes. Finally, greater levels of environmental protection in the member countries of a trade agreement are positively associated with a greater number of environmental provisions in these agreements. The empirical analysis that we presented was only suggestive. On the basis of our data set, it will be possible to study the determinants of these provisions in much more detail, relying on multivariate models rather than just bivariate relationships.

Given TREND's breadth and detailed coding, researchers can use it to tackle many other questions. It can contribute more particularly to six major streams of literature. First, TREND can contribute to the literature on the rational design of international institutions by revealing which countries include which provisions under which circumstances (Koremenos et al. 2001). Is there, for example, a trade-off between the number of environmental provisions and their enforceability? What is the relationship between the number of member states and the number of environmental provisions?

Second, when environmental norms are computed as independent variables, TREND can contribute to the literature on the effectiveness of environmental institutions. Which provisions are most likely to be implemented domestically, and which are associated with reduced rates of pollutant emissions? More broadly, what are the consequences of these provisions—are they mainly window dressing, or do they have real bite?

Third, research on the consequences of environmental provisions in trade agreements can assess their effect on trade and investment flows. A priori, it is not clear whether environmental provisions hamper or foster trade and investment. They may hamper trade and investment if they are used for protectionist purposes. If they result in higher environmental standards in the member countries of the trade agreement, they may also foster trade in environmental goods and investments in environmentally friendly industries.

Fourth, TREND can contribute to the policy diffusion literature by revealing how specific norms travel from one agreement to another (Simmons et al. 2006). Which norms are the most likely to be copy-pasted? Who adopts which norms from whom? How does this process result in model agreements (Baccini et al. 2015)? Also, when do governments rely on their own templates for these trade agreements, and when do they adopt new norms from third countries?

Fifth, the TREND data set can contribute to the policy innovation literature by pointing to breakthrough agreements and pioneering countries (Berry and Berry 1999). Which agreements are associated with the first introduction of a given norm in the trade regime, and what characteristics are shared by innovative agreements and innovative countries?

Finally, given the fragmented nature of the trade regime in hundreds of agreements, TREND can contribute to the literature on regime complexity (Alter and Meunier 2009). Is increased fragmentation at the agreement level associated with inconsistencies, standardization, or innovation at the norm level? Are PTAs used in forum-shifting strategies when multilateral environmental settings face deadlocks?

To respond to these research questions, TREND allows customized data for diverse academic interests. The 308 norms constituting the data set can be aggregated in different ways or used only partially. Some academics might be interested only in norms related to climate change or only in norms related to public participation. Other researchers might want to group norms into categories. For example, one can distinguish norms according to their apparent objective (such as leveling the playing field with competitors or protecting regulatory sovereignty), their likely impact (such as enhancing environmental protection, promoting trade, or assisting developing countries), or their legal status (such as principles, substantive commitments, exceptions, or procedural arrangements). Likewise, trade agreements can be grouped for analytical purposes. Some researchers might be interested in comparing EU and US agreements. Because TREND is interoperational with the Design of Trade Agreements Database (DESTA), it is easy to include DESTA information in the analysis, such as the depth of economic integration, the strength of dispute settlement mechanisms, and dyadic information for each agreement.

Beyond academics, the TREND data set might be informative for a wide range of policy actors.<sup>2</sup> Using TREND, negotiators and interest groups lobbying on ecological aspects of trade policy can find progressive norms in little known agreements, identify patterns in the agreements of a given country, and compare a draft under negotiation with the greenest agreements ever signed. TREND can also prove useful at the implementation stage. As an OECD (2007, 4) study has put it, policy makers face the “increasingly complex problem of managing various levels of environmental commitments and different types of environmental co-operation programs under a range of [regional trade agreements].” TREND provides a first step for mitigating this complexity problem and revealing the normative diversity in the interplay between trade and environment.

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2. The website [www.TRENDanalytics.info](http://www.TRENDanalytics.info) was developed for this purpose.

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## References

- Abbott, Kenneth W. 2012. The Transnational Regime Complex for Climate Change. *Environment and Planning C: Government and Policy* 30 (4), 571–590.
- Alter, Karen J., and Sophie Meunier. 2009. The Politics of International Regime Complexity. *Perspectives on Politics* 7 (1): 13–24.
- Andonova, Liliana B., Michele Betsill, and Harriet Bulkeley. 2009. Transnational Climate Governance. *Global Environmental Politics* 9 (2): 52–73.
- Anuradha, R. V. 2011. Environment. In *Preferential Trade Agreement Policies for Development: A Handbook*, edited by Jean-Pierre Chauffour and Jean-Christophe Maur, 407–425. Washington, DC: World Bank Publications.
- Baccini, Leonardo, Andreas Dür, and Yoram Z. Haftel. 2015. Imitation and Innovation in International Governance: The Diffusion of Trade Agreement Design. In *Trade Cooperation: The Purpose, Design and Effects of Preferential Trade Agreements*, edited by A. Dür and M. Elsig, 167–194. Cambridge: Cambridge University Press.
- Bättig, M. B., and Thomas Bernauer. 2009. National Institutions and Global Public Goods: Are Democracies More Cooperative in Climate Change Policy? *International Organization* 63 (2): 281–308.
- Bernauer, Thomas, and Quynh Nguyen. 2015. Free Trade and/or Environmental Protection? *Global Environmental Politics* 15 (4): 105–129.
- Berry, Frances Stokes, and William D. Berry. 1999. Innovation and Diffusion Models in Policy Research. In *Theories of the Policy Process*, edited by Paul A. Sabatier, 169–200. Boulder, CO: Westview Press.
- Bhagwati, Jagdish. 1995. Trade Liberalisation and “Fair Trade” Demands: Addressing the Environmental and Labour Standards Issues. *World Economy* 18 (6): 745–759.
- Biermann, Frank, Philipp Pattberg, and Harro Van Asselt. 2009. The Fragmentation of Global Governance Architectures: A Framework for Analysis. *Global Environmental Politics* 9 (4): 14–40.
- Böhmelt, Tobias, Thomas Bernauer, and Vally Koubi. 2015. The Marginal Impact of ENGOs in Different Types of Democratic Systems. *European Political Science Review* 7 (1): 93–118.
- Bulkeley, Harriet, and Michele Betsill. 2005. *Cities and Climate Change: Urban Sustainability and Global Environmental Governance*. London: Routledge.
- Carbonell, Joel R., and Juliann E. Allison. 2015. Democracy and State Environmental Commitment to International Environmental Treaties. *International Environmental Agreements: Politics, Law and Economics* 15 (2): 79–104.



- Chaytor, Beatrice. 2009. *Environmental Issues in Economic Partnership Agreements*. Geneva: ICTSD.
- Conca, Ken. 2000. The WTO and the Undermining of Global Environmental Governance. *Review of International Political Economy* 7 (3): 484–494.
- Copeland, Brian R. 2000. Trade and Environment: Policy Linkages. *Environment and Development Economics* 5 (4): 405–432.
- DeSombre, Elizabeth R., and J. Samuel Barkin. 2002. Turtles and Trade: The WTO's Acceptance of Environmental Trade Restrictions. *Global Environmental Politics* 2 (1): 12–18.
- Downs, George W., David M. Rocke, and Peter N. Barsboom. 1996. Is the Good News About Compliance Good News About Cooperation? *International Organization* 50 (3): 379–406.
- Dür, Andreas, Leonardo Baccini, and Manfred Elsig. 2014. The Design of International Trade Agreements: Introducing a New Dataset. *Review of International Organizations* 9 (3): 353–375.
- Gallagher, Kevin P. 2004. *Free Trade and the Environment: Mexico, NAFTA and Beyond*. Palo Alto, CA: Stanford University Press.
- Gehring, Markus, Marie-Claire Cordonier Segger, Fabiano de Andrade Correa, Patrick Reynaud, Alexandra Harrington, and Rodrigo Mell. 2013. *Climate Change and Sustainable Energy Measures in Regional Trade Agreements*. Geneva: ICTSD.
- George, Clive. 2014. *Environment and Regional Trade Agreements: Emerging Trends and Policy Drivers*. Paris: OECD.
- Green, Jessica. 2013. *Rethinking Private Authority: Agents and Entrepreneurs in Global Environmental Governance*. Princeton, NJ: Princeton University Press.
- Hsu, Angel, et al. 2016. *2016 Environmental Performance Index*. New Haven, CT: Yale University. Available online at: <http://epi.yale.edu/reports/2016-report>, last accessed November 27, 2017.
- Inside US Trade*. 2016. TPP Critics Pitch New Template for Trade Deals, Blast Past Agreements. October 7.
- Jinnah, Sikina, and Abby Lindsay. 2016. Diffusion Through Issue Linkage: Environmental Norms in US Trade Agreements. *Global Environmental Politics* 16 (3): 41–61.
- Jinnah, Sikina, and Elisa Morgera. 2013. Environmental Provisions in American and EU Free Trade Agreements: A Preliminary Comparison and Research Agenda. *Review of European Community and International Environmental Law* 22 (3): 324–339.
- Johnson, Tana. 2015. Information Revelation and Structural Supremacy: The World Trade Organization's Incorporation of Environmental Policy. *Review of International Organizations* 10 (2): 207–229.
- Kono, Daniel Y. 2006. Optimal Obfuscation: Democracy and Trade Policy Transparency. *American Political Science Review* 100 (3): 369–384.
- Koremenos, Barbara, Charles Lipson, and Duncan Snidal. 2001. The Rational Design of International Institutions. *International Organization* 55 (4): 761–799.
- Kucik, Jeffrey. 2012. The Domestic Politics of Institutional Design: Producer Preferences Over Trade Agreement Rules. *Economics and Politics* 24 (2): 95–118.
- Landis, J. Richard, and Gary G. Koch. 1977. The Measurement of Observer Agreement for Categorical Data. *Biometrics* 33 (1): 159–174.
- Lechner, Lisa. 2016. The Domestic Battle Over Non-trade Issues in Preferential Trade Agreements. *Review of International Political Economy* 23 (5): 840–871.

- Marshall, Monty, Ted Robert Gurr, and Keith Jagers. 2015. Polity IV Project: Political Regime Characteristics and Transitions, 1800–2014. Available online at: <http://www.systemicpeace.org/polity/polity4.htm>, last accessed December 7, 2017.
- Midlarsky, Manus. 1998. Democracy and the Environment: An Empirical Assessment. *Journal of Peace Research* 35: 341–361.
- Milewicz, Karolina, James Holloway, Claire Peacock, and Duncan Snidal. 2017. Beyond Trade: The Expanding Scope of the Nontrade Agenda in Trade Agreements. *Journal of Conflict Resolution*. First Published September 23. doi:10.1177/0022002716662687.
- Monteiro, José-Antonio. 2016. Typology of Environment-Related Provisions in Regional Trade Agreements. Working Paper ERSD-2016-13, World Trade Organization.
- Neumayer, Eric. 2002. Do Democracies Exhibit Stronger International Environmental Commitment? A Cross-Country Analysis. *Journal of Peace Research* 39 (2): 139–164.
- OECD. 2007. Regional Trade Agreements and Environment. Document COM/ENV/TD (2006)47/FINAL.
- Poletti, Arlo, and Daniela Sicurelli. 2015. The European Union, Preferential Trade Agreements, and the International Regulation of Sustainable Biofuels. *Journal of Common Market Studies* 1: 1–18.
- Roberts, J. Timmons, Bradley C. Parks, and Alexis A. Vásquez. 2004. Who Ratifies Environmental Treaties and Why? Institutionalism, Structuralism and Participation by 192 Nations in 22 Treaties. *Global Environmental Politics* 4 (3): 22–64.
- Runge, C. Ford. 1990. Trade Protectionism and Environmental Regulations: The New Nontariff Barriers. *Northwestern Journal of International Law and Business* 11: 47–61.
- Simmons, Beth A., Geoffrey Garrett, and Frank Dobbin. 2006. Introduction: The International Diffusion of Liberalism. *International Organization* 60 (4): 781–810.
- Sprinz, Detlef, and Tapani Vaahoranta. 1994. The Interest-Based Explanation of International Environmental Policy. *International Organization* 48 (1): 77–105.
- Stern, David I. 2005. Global Sulfur Emissions From 1850 to 2000. *Chemosphere* 58 (2): 163–175.
- Strange, Michael. 2015. Implication of TTIP for Transnational Social Movements and International NGOs. In *The Politics of Transatlantic Trade Negotiations: TTIP in a Globalized World*, edited by Jean-Frédéric Morin, Tereza Novotna, Frederik Ponjaert, and Mario Telò, 81–92. Farnham, UK: Ashgate.
- Subramanian, Arvind. 1992. Trade Measures for Environment: A Nearly Empty Box? *World Economy* 15 (1): 135–152.
- US Department of State. 2015. *Standing Up for the Environment: Trade for a Greener World*. Available online at: <https://tinyurl.com/lrp92rv>, last accessed November 27, 2017.