


RESEARCH NOTE/NOTE DE RECHERCHE

The Federated Entities in Environmental Treaties (FEET) Dataset: Questioning Conventional Wisdom on Green Paradiplomacy

Jean-Frédéric Morin^{1*} , Véronique Fournier² and Stéphane Paquin³

¹Université Laval, Canada Research Chair in International Political Economy, 2325 rue de l'Université, Québec, QC, G1V 0A6, Canada, ²Université Laval and KU Leuven, 2325 rue de l'Université, Québec, QC, G1V 0A6, Canada and ³École nationale d'administration publique, 5039 rue Garnier, Montréal, QC, H2J 3T1, Canada

*Corresponding author. E-mail: jean-frederic.morin@pol.ulaval.ca

Abstract

The existing literature underestimates the contribution of federated entities to international environmental agreements. This research note introduces a novel dataset on the role of federated entities in 2,077 environmental agreements. We demonstrate the value of this dataset by revisiting unexamined assumptions that stem from the literature. According to conventional wisdom, (1) federated entities' participation in environmental agreements is a recent phenomenon, (2) this phenomenon is led by federated entities in Western democracies, (3) it has accelerated as a response to the climate crisis and (4) it is driven by the same movement that favours the participation of diverse stakeholders. This research note questions these preconceived ideas and illustrates how the new dataset sheds light on the role of federated entities in environmental governance.

Résumé

La littérature existante sous-estime la contribution des entités fédérées aux accords internationaux sur l'environnement. Cette note de recherche présente une nouvelle base de données sur le rôle des entités fédérées dans 2 077 accords environnementaux. Nous démontrons la valeur de cette base de données en révisant certaines idées reçues découlent de la littérature. La littérature existante présume souvent que 1) la participation des entités fédérées aux accords environnementaux est un phénomène récent ; 2) ce phénomène est mené par les entités fédérées des démocraties occidentales ; 3) il s'est accéléré en réponse à la crise climatique ; et 4) il est mené par le même mouvement qui favorise la participation de divers acteurs non-étatiques. Cette note de recherche remet en question ces idées préconçues et illustre comment la nouvelle base de données permet d'éclairer le rôle des entités fédérées dans la gouvernance environnementale.

Keywords: federated entities; paradiplomacy; international environmental governance

Mots-clés : paradiplomatie; accords internationaux sur l'environnement; États fédérés

How do federated entities, such as Canadian provinces, US states, German Länder, Mexican *estados* and Swiss cantons, contribute to international environmental institutions? Given their proximity to citizens and local stakeholders, federated entities are in a unique position to adopt and implement environmental policies. In some cases, their country's constitution provides them with exclusive or shared jurisdiction over the environment and natural resources. At the same time, environmental protection often requires international co-operation, and an increasing number of international environmental agreements (IEAs) govern the environment. How have federated entities participated in these IEAs?

In some ways, federated entities are the missing piece of the global environmental governance puzzle. Whereas studies on multilevel governance rarely consider the design of IEAs, the literature on IEAs pays little attention to the contribution made by federated entities. Apart from a few limited case studies, we know little about the scope of their participation in IEAs.

This research note sets out to introduce the Federated Entities in Environmental Treaties (FEET) dataset. This novel dataset documents the role of federated entities in 2,077 IEAs concluded between 1945 and 2017. We present the key features of this novel dataset by questioning four unexamined assumptions regarding federated entities and IEAs. In contrast to the ideas that arise from scholarship on federated entities and global environmental governance, we suggest (1) that federated entities' participation in IEAs is not an increasingly frequent phenomenon, (2) that it does not primarily concern federated entities in Western democracies, (3) that it has not been accelerated by the climate crisis and (4) that it does not seem to be driven by the same movement that favours the participation of other stakeholders. By challenging these misconceptions, this research note argues that we should expand the research agenda on federated entities in global environmental governance. Their participation in IEAs is more frequent, deeply rooted, diverse and specific than previously thought. By considering a wide variety of cases from diverse regions of the world, at different time periods and related to several environmental issues, the FEET dataset aims to encourage and facilitate the study of federated entities in IEAs.

The Design of IEAs, Paradiplomacy and Multilevel Governance

The proliferation of treaties is such that some scholars argue that there is a "treaty congestion" (Anton, 2013). Interestingly, these treaties are not restricted to areas under the exclusive jurisdiction of central governments. All spheres of governance come within the purview of treaty negotiations, including issues under the jurisdiction of subnational governments.

However, the literature on international institutions rarely discusses the role of federated entities (Grant, 2020). For example, studies on the design of international institutions (Koremenos *et al.*, 2001) and delegation to international organizations (Hawkins *et al.*, 2006) typically assume that sovereign states are the only parties to international negotiations.

The scant attention paid to federated entities and their role in international lawmaking is particularly striking regarding IEAs. More than 2,000 IEAs have been concluded since 1945 (Mitchell, 2002–2021), and the importance of local governance is well recognized for addressing environmental problems (Ostrom,

2010). The 1992 Rio Declaration, for example, encourages actors from all governance levels to become actively involved in dealing with environmental issues. In this context, we might have expected the literature on global environmental governance to have uncovered the various ways in which federated entities contribute to IEAs' negotiations and to their implementation. However, apart from a few exceptions (Chaloux et al., 2015; Moore, 2017), the literature on IEAs rarely discusses federated entities. Yet the literature on global environmental governance is by no means state-centric. Several scholars in the field have investigated the role of non-governmental organizations (NGOs), scientific associations, Indigenous communities, cities, and business organizations (Andonova et al., 2009). These non-state actors interact with sovereign states to design or implement IEAs (Böhmelt et al., 2014; Green and Colgan, 2013) in the framework of so-called transnational regime complexes (Abbott, 2012). However, few studies focus on the specific role of federated entities in relation to IEAs.

Whereas the literature on IEAs rarely acknowledges the role of federated entities, the literatures on paradiplomacy and multilevel governance barely mention IEAs. The concept of paradiplomacy refers to subnational governments' international actions (Soldatos, 1990). In particular, federated entities implement "a 'foreign policy' that runs in parallel, complements, or is sometimes in conflict with their central governmental counterpart" (Criekemans, 2010: 37). The concept of multilevel governance builds on the observation that power is often distributed across several levels of governance, including local, regional, national and international levels (Hooghe and Marks, 2003). In federations, federated entities constitute a level of governance that cannot be ignored by other levels of governance.

Federated entities have a unique position on the international stage because they are hybrids that lie between "sovereignty-bound" and "sovereignty-free" actors (Rosenau, 1990: 36). On the one hand, like sovereign states, they can independently express their position to foreign leaders and interact with them directly on behalf of their population. Despite considerable variation among federated entities, some can have a high degree of autonomy, legitimacy and control over several issue areas. In federations, their engagement is often necessary to achieve effective and legitimate outcomes because federal and federated governments are interdependent (Kerremans and Beyers, 1996; Bolleyer, 2018). On the other hand, like non-state actors, federated entities do not have all the privileges of sovereign states and are often excluded from formal intergovernmental settings. In international negotiations, they cannot speak on behalf of the sovereign state unless they are granted full powers by the central government (Grant, 2020: 151). Thus, federated entities often rely on indirect channels to have an impact on international negotiations (Tatham, 2018). They can influence the federal government's negotiating position through intergovernmental mechanisms and multilevel governance. They can also be part of their country's delegation and participate in meetings between international organizations. In other words, federated entities have an independent and legitimate voice even if they do not have an independent seat at the negotiation table.

A rich and prolific body of literature has investigated the specificities of federated entities' international actions. Numerous aspects of their action have been explored, including federated states' range of policy tools (Schiavon, 2018), conflicts with federal governments (Mingus, 2006), access to intergovernmental organizations

(Tatham, 2018), implications for national identity (Ouimet, 2015), involvement in trade negotiations (Paquin, 2021) and agreements concluded among federated entities (Schiavon, 2018). However, the literatures on paradiplomacy and multilevel governance have paid relatively little attention to the design of IEAs. This is surprising since federated entities are clearly legitimate actors in IEA negotiations and they may play an essential role when it comes to the effective implementation of IEAs.

Given the lack of dialogue and productive synthesis between these different literatures, we can only make tenuous inferences regarding the participation of federated entities in IEAs. These inferences are emergent patterns that arise from these literatures and are left unexamined by scholars studying IEAs or federated entities. More specifically, four unexamined assumptions about the role of federated entities in IEAs require serious investigation.

The first assumption is that the involvement of federated entities in IEAs is a recent and growing phenomenon (Aldecoa and Keating, 1999; Cornago, 2000; Michelmann, 2009; Schiavon, 2018: 6; Tavares, 2016). For example, according to Criekemans, “Regional sub-state diplomacy has come of age during the past decade” (2010: 37). This idea is consistent with the observation that the number of countries in the world with federal systems or decentralized structures of government has grown significantly (Tatham *et al.*, 2021). Moreover, intergovernmental and transnational initiatives are increasingly empowering local and regional authorities and calling for their involvement in international policy making (Setzer, 2017). One can infer from these trends that federated entities are playing a recent and growing role in IEAs.

The second assumption is that the participation of federated entities in IEAs mainly involves Western democracies. At least, we may have this impression given that the early literature on paradiplomacy and multilevel governance focuses disproportionately on cases in Europe and North America (see Soldatos, 1990). For example, studies on the involvement of federated entities in treaty making have looked at Canadian provinces (Kukucha, 2005; Lecours, 2002) and Belgian regions and communities (Paquin, 2021; Schiavon, 2018). In comparison, fewer studies examine the Global South. Although there are some studies on paradiplomacy in developing countries, including Brazil, Argentina, South Africa and India (Setzer, 2017; Schiavon, 2018; Tavares, 2016), paradiplomacy in developing countries has been relatively understudied despite the number of federations in these countries (Di Gregorio *et al.*, 2019). Arguably, authoritarian regimes, which are more frequent in the Global South, may prefer maintaining strict control over international affairs and blocking the participation of federated entities in international institutions. Schiavon (2018) notes that Mexican states’ paradiplomacy grew as Mexico democratized. If the Mexican case is representative of other middle-income countries, we might expect that the participation of federated entities in IEAs is largely driven by democracies.

The third assumption is that the climate crisis has increased the participation of federated entities in IEAs (McEwen and Bomberg, 2014; Eatmon, 2009). Several federated entities have constitutional powers over activities that are crucial for reducing greenhouse gases, including public transport, urban planning, agriculture and construction. They are also among the first respondents in the case of extreme weather events, which is a major incentive for them when it comes to investing in climate adaptation (Di Gregorio *et al.*, 2019). Consequently, the United Nations

Development Programme (2010–2011) has formally recognized the importance of subnational governments in addressing climate change. Several subnational authorities have responded and made substantial investments to mitigate greenhouse gas emissions and adapt to climate change (Alter, 2016). Considering these observations, one might expect climate change to have encouraged federated entities to take part in more IEAs. In line with this expectation, most studies that examine federated entities in global environmental governance focus on climate negotiations (Chaloux et al., 2015; Di Gregorio et al., 2019; Bechtel and Urpelainen, 2014; Hale et al., 2021; Chan et al., 2021; Hsu et al., 2019).

The fourth assumption is that the growing involvement of federated entities in IEAs is part of the same movement that favours the increasing participation of various non-state actors in global environmental governance. The rise of these non-state actors, both in terms of numbers and influence, is well documented in the literature on global environmental governance (Andonova et al., 2009; Bulkeley et al., 2012). Non-state actors have created transnational networks and institutionalized partnerships. Some have also been formally or informally involved in the negotiation of IEAs and their implementation (Böhmelet et al., 2014). This is reflected by the fact that a growing number of IEAs are delegating responsibilities to non-state actors (Green and Colgan, 2013). As federated entities are also non-sovereign actors, we might expect them to take advantage of this opportunity to become more involved in IEAs. For example, recent studies on climate governance examine substate and non-state actors' initiatives and underline what the two groups share, rather than how they differ (Hsu et al., 2019; Hale et al., 2021; Chan et al., 2021). The following section presents a dataset that allows us to empirically examine these four unexamined assumptions.

Introducing the FEET Dataset

This research note introduces the Federated Entities in Environmental Treaties (FEET) dataset. It contributes to the growing body of literature that seeks to map the diverse set of actors in global environmental governance. For example, Bulkeley and her colleagues (2012) identified 60 transnational climate initiatives, while Green and Colgan (2013) found 31 IEAs that delegate authority to private actors. FEET is the first dataset that documents IEAs' provisions relating to federated entities. It is publicly available on the journal's website with the publication of this research note, along with the detailed codebook.

The FEET dataset borrows most of its 2,077 IEAs from the International Environmental Agreements Database Project (IEADB) collection (Mitchell, 2002–2021). All IEAs included in the FEET dataset have four defining criteria: (1) they are binding treaties under international law; (2) they were concluded by two or more sovereign states; (3) their primary purpose is the protection of the natural world or the sustainable exploitation of natural resources; and (4) they were signed between 1945 and 2017, although some have yet to enter into force. These IEAs cover a wide variety of environmental issue areas, including fisheries, freshwater, biodiversity, agriculture, energy, and pollution emission. Many of them are stand-alone agreements, but 16 per cent are actually protocols linked to a framework convention.

We examined the 2,077 IEAs for provisions relating to federated entities. For the purpose of this dataset, we define federated entities as substate entities that are partially self-governing with a high degree of constitutionally guaranteed autonomy. They include Swiss cantons, Australian states, South African provinces, Russian federal subjects, Indian states, and many other entities. They also include autonomous regions, such as Greenland, Scotland and Catalonia, even though the sovereign states to which they are related are not federations. However, our definition of federated states excludes free cities, Indigenous communities' traditional territories, and colonies, as they typically have a lower degree of autonomy. If a sovereign state later becomes part of a federation or if a federation secedes into different sovereign states, we only consider their status at the time when the agreement was signed.

The FEET dataset documents the occurrence of three broad types of clause relating to federated entities in IEAs. We instructed a team of trained research assistants to read each of the 2,077 IEAs and identify any provisions that fit our criteria, using a detailed codebook (see Appendix II). The analysis is based on the following three categories of clauses (see Appendix II for details): (1) federated entities are authorized to sign, ratify or access the IEA; (2) federated entities must comply with obligations in the agreements, even if they do not sign or ratify; and (3) the IEA favours the participation of federated entities in its implementation. In addition to these clauses, the FEET dataset also documents all the federated entities that are signatories to IEAs, even though no provision explicitly authorizes them to sign.

Clauses from the first category state that federated entities are authorized to sign, ratify or access the IEA. These clauses are rare, with only four occurrences in the dataset. An example is the 2002 International Agreement on the River Maas/Meuse, which was concluded between France, Germany, Luxembourg, the Netherlands, and the federated entity of Wallonia, Brussels and Flanders.

The second category refers to federated entities that must comply with obligations in the agreements, even if they do not sign or ratify the treaty. The wording of this second category of clauses varies across IEAs. It encompasses obligations for federated entities, which are required to implement any of the agreement's provisions that fall under their jurisdiction. Federated entities must also adopt laws in compliance with the agreement if the laws in question relate to the IEA's domain of application. This type of clause also obliges federal governments to bind their federated entities under the IEA. In this case, federated entities are informed of the provisions that affect their jurisdiction, and a list of federated entities that agree to comply with the agreement is provided. For example, the 1994 Energy Charter Treaty provides that "each Contracting Party . . . shall take such reasonable measures as may be available to it to ensure such observance by regional and local governments and authorities within its Area" (art. 23(1)).¹ The FEET dataset includes 34 IEAs that include compliance provisions of the second type. Eighteen IEAs include a "Berlin clause." The Federal Republic of Germany introduced the Berlin clause in some of the IEAs that it concluded during the Cold War in order to specify that the treaty applies to Berlin.

The third category encourages federated entities to take part in treaty implementation. While provisions of the second type create additional constraints for federated entities, provisions of the third type provide new opportunities. We identified

48 IEAs in the third category. Thirty-one IEAs state that federal states should consult, co-operate or inform their federated entities during the different stages of IEA implementation. Although actions performed may be similar to the second category of provisions, they differ in terms of their intended purpose (by encouraging participation instead of ensuring compliance). Eleven IEAs state that an intergovernmental council or committee created by the IEA should consult, co-operate or inform federated entities. Thirteen IEAs favour direct interaction between federated entities from different states. For example, the 1992 Canada-Russia Agreement on Cooperation in the Arctic and the North provides that “the Parties will promote, facilitate and support the development of cooperative and direct contacts and exchanges between provincial (republican), regional and local governments. . . based on their own working arrangements in accordance with the present Agreement” (art. 3(2)).

The dataset also includes IEAs that were signed by federated entities, regardless of whether the text of the treaty explicitly authorizes such signature by federated entities. For example, Brussels, Wallonia and Flanders signed the 2002 International Agreement on the River Maas/Meuse. We found 100² IEAs with at least one federated entity among the signatories, even though the treaty does not include a provision of type 1 that authorizes them to sign the treaty.

Overall, we found 170 IEAs³ that include clauses relating to federated entities or were signed by federated entities: 32 per cent were bilateral, and 59 per cent had more than five parties (compared to 66 per cent and 21 per cent, respectively, for the total set of 2,077 IEAs). In addition, 30 per cent were concluded solely between developed countries, 6 per cent were concluded between developing countries, and 64 per cent unite developed and developing countries (compared to 19 per cent, 37 per cent, and 44 per cent, respectively, for all IEAs). [Figure 1](#) presents the distribution of these IEAs from 1945 to 2015.⁴

Each category of provisions has an independent code. Therefore, one or more of the three types of provisions coded in the 2,077 IEAs can be coded in the same agreement. This explains why we found 170 agreements that refer to federated entities or were signed by at least one federated entity (when the number of clauses from all three categories that refer to a federated entity is added to the number of IEAs signed by a federated entity, we reach a total of 186 occurrences).

We applied rigorous quality control procedures to attest the FEET dataset’s reliability. First, coders analyzed the selected provisions to weed out false positive results. Then, a different coder coded 10 per cent of the agreements a second time in order to assess the frequency of false negatives. Intercoder reliability for double coding is 0.653, as measured by Cohen’s kappa. This is considered to be a substantial level of agreement (Landis and Koch, 1977).

Lastly, it should be noted that federated entities from the USSR are included in FEET. While this interpretation is contested (Kuznetsov, 2015), some scholars have recognized that Soviet republics were practising a form of paradiplomacy (Cornago, 2000; Tavares, 2016). As Jervis (1976) underlines, experts tend to overestimate the degree of centralization in authoritarian regimes. FEET encourages further research in order to determine how autonomous the Soviet republics were under the USSR. Scholars that use FEET can exclude these cases from the dataset in order to grasp how they drive results, as we discuss below.

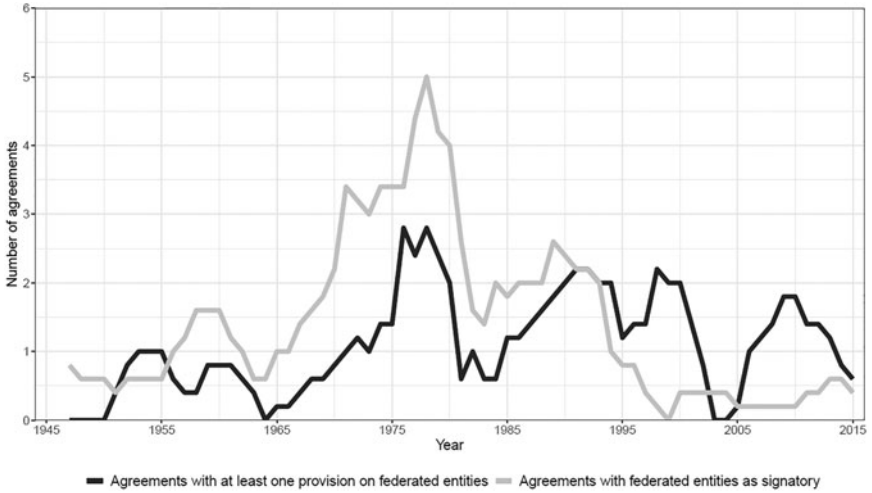


Figure 1. Number of IEAs with federated entities among their signatories and number of IEAs with at least one of the three types of provisions relating to federated entities, 1945–2015 (moving average \pm 2 years)⁵

A Long-Standing Practice

As discussed above, the literature often assumes that paradiplomacy is on the rise and that federated entities are increasingly involved in international affairs. However, the FEET dataset suggests otherwise. Assertions of temporal acceleration by scholars miss an important trend of long-standing engagement in international institutions. The inclusion of provisions that refer to federated entities is not a recent phenomenon. As early as 1857, an IEA was signed by federated entities: the Agreement Respecting the Regulation of the Flow of Water from Lake Constance, concluded by Austria-Hungary, Switzerland and three German Länder (Bavaria, Wurtemberg and Baden).

To measure the activity of federated entities in IEAs over time, we use the ratio of IEAs that refer to federated entities or were signed by at least one federated entity over the total number of IEAs signed for each year. This ratio allows us to control for the number of IEAs signed in a given year. As [Figure 2](#) shows, the ratio of IEAs that refer to federated entities or were signed by at least one federated entity was relatively high from 1945 to 1980. This is largely due to Russia's international activities. In the period from 1945 to 1961, Russia, as a federated entity of the USSR, appears in over 80 per cent of the IEAs referring to or signed by a federated entity. Nevertheless, if we exclude the IEAs signed by the USSR's federated entities, the variation over time is significantly reduced. This suggests that the participation of federated entities in IEAs is not a recent phenomenon or a growing trend (see [Figure 2B](#) in Appendix I).

The share of IEAs that refer to or were signed by federated entities rose again in the 1970s. This corresponds to the period when federal and federated governments created environmental agencies, departments or ministries (Meyer *et al.*, 1997). It was also a period of intense treaty making on environmental matters. The 1972

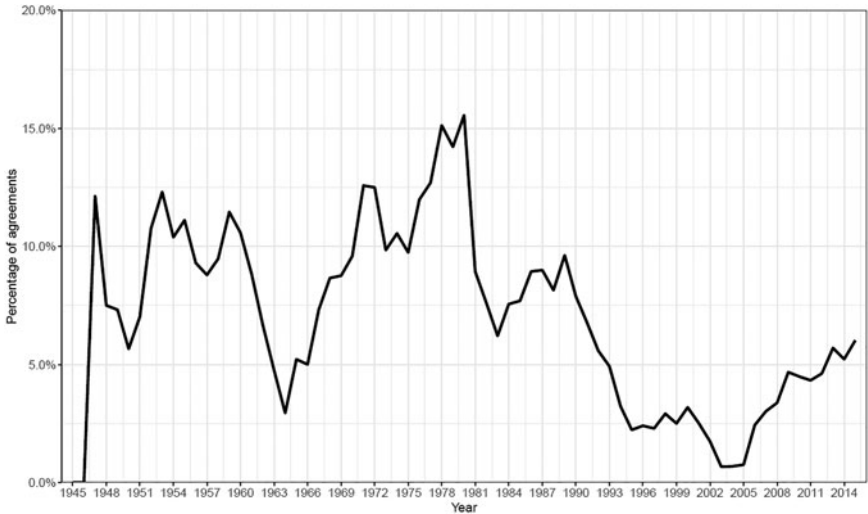


Figure 2. Share of IEAs that include federated entities among their signatories or with at least one of the three types of provisions relating to federated entities (moving average ± 2 years)

Stockholm Declaration echoes the growing concerns of the time and acknowledges that “local and national governments will bear the greatest burden for large-scale environmental policy and action within their jurisdictions.”

Since the late 1990s, few federated entities have been signatories to IEAs. In addition, few recent IEAs create obligations for federated entities. This can be partly attributed to the overall decline in the number of IEAs. After a peak in the 1990s, the number of new IEAs concluded every year has declined constantly, from over 122 new IEAs in 1997 to 21 in 2015. Yet, as [Figure 2](#) shows, even when controlling for the varying number of agreements concluded for each year, the FEET dataset indicates that federated entities are now less involved in IEAs than previously. This is partly related to the collapse of the USSR in 1991 and to the fact that the former USSR included its federated entities in its IEAs more often than is the case for the current Russian Federation.

The modest rise in the participation of federated entities in the 2000s is linked to a number of North American IEAs. The federal governments of Canada and the United States signed these agreements but formally involved their federated entities in their implementation. Despite these recent agreements, the FEET dataset shows that, overall, the participation of federated entities in IEAs is a well-established phenomenon.

A Global Phenomenon

The literature on paradiplomacy and multilevel governance focuses disproportionately on Western countries. As a result, we may assume (wrongly) that the participation of federated entities in IEAs is mainly a Western phenomenon. The FEET dataset provides a more nuanced picture of the geographical distribution of environmental paradiplomacy. As [Figure 3](#) illustrates, Western democracies do not

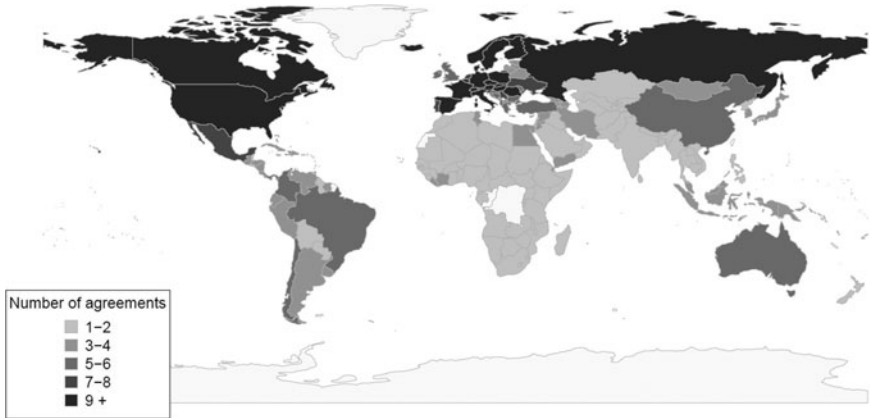


Figure 3. Number of IEAs signed by a federated entity or that include at least one clause relating to a federated entity

dominate the agreements that refer to or are signed by federated entities. Approximately 85 per cent of all IEAs signed by a federated entity were signed by at least one USSR republic. In addition, 50 per cent of all IEAs that explicitly refer to federated entities were signed by the USSR. Presumably, the inclusion of Soviet republics in IEAs was partly driven by geostrategic reasons in order to give the USSR more weight in intergovernmental fora.⁶

Nonetheless, the FEET data support the idea that paradiplomacy is primarily a high-income country phenomenon. Despite the existence of a number of federations in South America, East Africa and South Asia, few developing countries have signed several IEAs that refer to or are signed by a federated entity. These conclusions remain valid even when the USSR's federated entities are excluded from the analysis. After the collapse of the USSR, Russia signed 11 IEAs that include a reference to federated entities' participation or were signed by a federated entity.

Interestingly, the autonomous regions of the Faroe Islands and Greenland (considered as analogous to federated entities in FEET) signed eight IEAs. This can be explained by their high degree of autonomy. While Danish authorities retain jurisdiction over foreign policy, both the Faroe Islands and Greenland control their domestic affairs, including their natural resources and environmental protection.

The Faroe Islands and Greenland have exclusive powers, which contrasts with the constitutional arrangement in several federations. In the United States, for example, the Supreme Court has interpreted the Constitution and recognized the federal government's limited powers over environmental matters. While the federal government can adopt laws and ratify treaties related to the environment, federated states are often jointly responsible for their administration and implementation. This constitutional arrangement is apparent in the FEET dataset. While IEAs signed by the United States are not typically co-signed by federated entities, many IEAs explicitly refer to the opportunity that federated entities have when it comes to implementing the treaty.

In Canada, the federal government and provinces have different powers over environmental issues. For instance, the federal government is responsible for fisheries and can adopt laws relating to fish habitats. Provinces retain power over local

affairs and can adopt laws regarding integrated management of water resources. This division of power explains why 88 per cent of the IEAs signed by Canada that include provisions on federated entities also allow the latter to take part in treaty implementation. Federated entities are expected to take part in the IEA's implementation because they are responsible for regulating issues under their jurisdiction. Overall, the participation of federated entities in IEAs seems to depend less on the degree of democracy/authority exercised by the central government than on their economic capacity and constitutional rules.

Diverse Environmental Issues

Climate change calls for action from federated entities. Yet according to the FEET dataset, federated entities are not particularly involved in IEAs related to climate change.⁷ These IEAs include the main multilateral agreements on climate, such as the Kyoto Protocol and the Paris Agreement. The FEET dataset also includes regional agreements on climate change, as well as agreements focusing on specific aspects of climate policy, such as energy efficiency. However, according to the FEET dataset, these climate-related IEAs do not appear to generate a particularly high degree of participation among federated entities.

As [Figure 4](#) shows, federated entities are particularly active in IEAs linked to fisheries and freshwater. In some cases, they are signatories to agreements specifying fisheries rights and restrictions. They are also involved in some IEAs related to pollution, although most of them are not related to the emission of greenhouse gases. Instead, several of these IEAs concern water pollution, dangerous waste and radioactive pollution. Unsurprisingly, federated entities are not usually involved in environmental issues pertaining to the impact of military activities because this is not generally within their jurisdiction.

Although most media coverage and political attention regarding environmental degradation focus on climate change, only a small fraction of IEAs address the climate. By extension, few IEAs related to climate change involve federated entities. The FEET dataset suggests that other areas of environmental co-operation can provide insightful illustrations of the contributions made by federated entities. Further studies should examine the distinction between federated entities' integration in IEAs and their actions to support the implementation of IEAs. The FEET dataset highlights the need to clarify federated entities' engagement across issue areas, as well as the institutional contexts pertaining to global environmental governance.

A Specific Participation

In the literature on global environmental governance, federated entities are often included in the broader group of non-sovereign-state actors. Therefore, one could assume that the involvement of federated entities in IEAs contributes to the movement that favours the greater participation of non-state actors. However, the FEET dataset does not support this assumption. [Figure 5](#) shows the number of IEAs from 1945 to 2015 that include clauses similar to type 1 (allowing signatures), type 2 (imposing obligation) and type 3 (favouring participation) that are coded in FEET but which designate non-sovereign actors other than federated

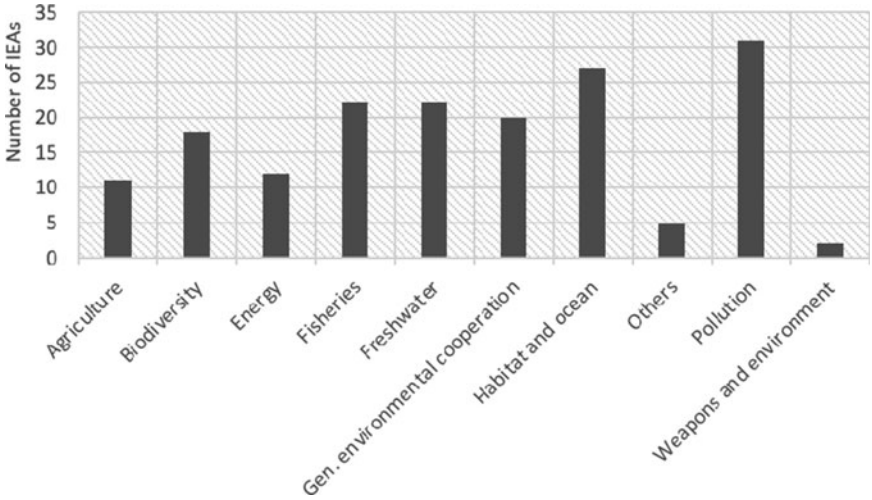


Figure 4. Number of IEAs that are either signed by or that refer to federated entities (including at least one type of provision) by issue area⁸

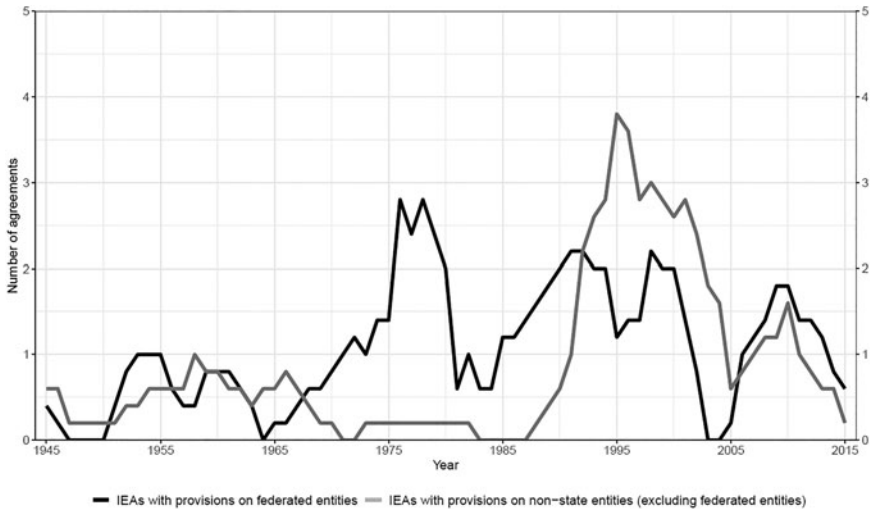


Figure 5. Number of IEAs with provisions on federated entities and number of IEAs with clauses on non-state actors (moving average ± 2 years)

entities. These actors include businesses, cities, Indigenous groups, NGOs and intergovernmental organizations. Figure 5 provides evidence that the inclusion of other non-sovereign actors in IEAs only took off in the 1990s, long after federated entities were included in IEAs. Thus, in terms of IEA participation, federated entities appear to be precursors compared to other non-sovereign actors.

There is little overlap between the IEAs that refer to federated entities and those that refer to other non-sovereign actors. Few IEAs that include a clause on federated entities also include a clause on non-sovereign actors.

Moreover, IEAs that refer to federated entities have different characteristics. They are more likely to be multilateral (67 per cent) compared to IEAs that refer to other non-sovereign actors (54 per cent). IEAs referring to federated entities are more likely to concern pollution issues (18 per cent, compared to 9 per cent for IEAs referring to other non-sovereign entities). IEAs that refer to other non-sovereign actors are more likely to concern freshwater issues (22 per cent, compared to 13 per cent for IEAs referring to federated entities). This suggests that federated entities have a specific role and evolution, one which cannot be reduced to that of other non-sovereign entities, such as NGOs and business organizations.

Conclusion

Around 8 per cent of IEAs concluded between 1945 and 2017 refer to federated entities or were signed by at least one federated entity. By analyzing the characteristics of these 170 agreements, this research note has contributed to clarifying and adding nuance to four assumptions about federated entities in environmental governance. First, despite some recent enthusiasm for multilevel governance, the participation of federated entities in international environmental governance is a long-standing phenomenon. Second, while the literature on paradiplomacy has mainly focused on federated entities in Western democracies, paradiplomacy is by no means limited to Western democracies. Third, even if federated entities are crucial actors for climate mitigation and adaptation, federated entities are more likely to be involved in IEAs relating to water governance and fisheries, two areas that have not yet been explored in depth in the literature on paradiplomacy. Lastly, despite federated entities being non-sovereign actors like NGOs and business organizations, their participation in IEAs has its own distinct characteristics. In short, the participation of federated entities in IEAs is more frequent, deeply rooted, diverse and idiosyncratic than previously thought.

Together, these findings encourage an increased dialogue between the fields of environmental politics, comparative federalism and paradiplomacy as a means of developing more accurate, synthetic and meaningful understandings of federated entities' participation in global environmental governance. Federated entities contribute to global environmental governance through various instruments, including transnational networks, arrangements, clubs and initiatives. This research note provides evidence that federated entities can also be important participants for treaty making and treaty implementation.

Moreover, this research note opens the door to more sophisticated and inclusive research on federated entities in global environmental governance by making the FEET dataset publicly available. The IEAs in the FEET dataset are identified by their IEADB number, which means that users can easily combine the FEET dataset with another IEADB-related dataset. Thus, users are able to explore the design features of IEAs that covary with the inclusion of provisions related to federated entities. The FEET dataset can also help researchers identify case studies and assess

their scope of generalization. Considering that the literature on paradiplomacy is largely based on case studies with uncertain scope of generalization (Kuznetsov, 2015), the FEET dataset provides a new research tool that can improve the contextualization of both qualitative and quantitative research. It can help shed new light on the contribution of federated entities to IEAs, as distinct from the contribution of non-state actors.

However, it is unclear whether the findings reported here can be generalized to other fields of international relations. Global environmental governance is characterized by three conditions that favour the inclusion of federated entities: (1) federated entities often have jurisdiction over natural resources and environment, at least in part; (2) multi-stakeholder participation is a key principle of environmental regimes; and (3) there are numerous and diverse IEAs, which provide opportunities for institutional experimentation. Moreover, this research note studies only federated entities that have been formally included in IEA provisions or that are IEA signatories. Federated entities' actions in environmental governance may be implicit, especially in terms of implementation and compliance. Therefore, future research could draw on this dataset to compare how the explicit inclusion of federated entities in formal agreements relates to their actual involvement in the decisions pertaining to IEA implementation.

Supplementary material. To view supplementary material for this article, please visit <https://doi.org/10.1017/S0008423921001001>.

Endnotes

- 1 The obligations of federated entities in IEAs may also give them some power with regard to the federal government, since they are expected to ensure that agreements can be implemented at the national level.
- 2 When the USSR is excluded, there are 15 IEAs with at least one federated entity among their signatories.
- 3 When the USSR is excluded, 85 IEAs had clauses related to federated entities or were signed by federated entities.
- 4 See Appendix II for definitions of “developed” and “developing” countries.
- 5 Refer to Appendix I for figures that exclude IEAs signed by the USSR.
- 6 For similar reasons, under the USSR, the Ukrainian and Byelorussian republics had their own seats at the United Nations.
- 7 See the codebook in Appendix II for a detailed definition of each issue area.
- 8 Refer to the graph in Appendix I that excludes the USSR's federated entities.

References

- Abbott, Kenneth. 2012. “The Transnational Regime Complex for Climate Change.” *Environment and Planning C: Government and Policy* 30 (4): 571–90.
- Aldecoa, Francisco and Michael Keating. 1999. *Paradiplomacy in Action: The Foreign Relations of Subnational Governments*. London: Cass.
- Alter, Rolf. 2016. “Investing in ‘Voice’ to Implement Global Agendas.” Chapter 5 in *OECD Regional Outlook 2016*. Paris: OECD.
- Andonova, Liliana, Michele Betsill and Harriet Bulkeley. 2009. “Transnational Climate Governance.” *Global Environmental Politics* 9 (2): 52–73.
- Anton, Donald. 2013. “‘Treaty Congestion’ in Contemporary International Environmental Law.” In *Routledge Handbook of International Environmental Law*, ed. Shawkat Alam, Md Jahid Hossain Bhuiyan, Tareq M. R. Chowdhury and Erika J. Techera. New York: Routledge.

- Bechtel, Michael and Johannes Urpelainen. 2014. "International Environmental Policy Making with Strategic Subnational Governments." *British Journal of Political Science* 45 (3): 559–82.
- Böhmelt, Tobias, Vally Koubi and Thomas Bernauer. 2014. "Civil Society Participation in Global Governance." *European Journal of Political Research* 53 (1): 18–36.
- Bolleyer, Nicole. 2018. "Challenges of Interdependence and Coordination in Federal Systems." In *Handbook of Territorial Politics*, ed. Klaus Detterbeck and Eve Hepburn. Cheltenham: Edward Elgar.
- Bulkeley, Harriet, Liliana Andonova, Karin Bäckstrand, Michele Betsill, Daniel Compagnon, Rosaleen Duffy, Ans Kolk, Matthew Hoffmann, David Levy, Peter Newell, Tori Milledge, Matthew Paterson, Philipp Pattberg and Stacy VanDeveer. 2012. "Governing Climate Change Transnationally." *Environment and Planning C: Government and Policy* 30 (4): 591–612.
- Chaloux, Annie, Stéphane Paquin and Hugo Séguin. 2015. "Canada's Multiple Voices Diplomacy in Climate Change Negotiations." *International Negotiation* 20 (2): 291–318.
- Chan, Sander, Idil Boran, Harro Van Asselt, Paula Ellinger, Miriam Garcia, Thomas Hale, Lukas Hermwille, Kennedy Liti Mbeva, Aysem Mert, Charles B. Roger, Amy Weinfurter, Oscar Widerberg, Paulette Bynoe, Victoria Chango, Ayman Cherkaoui, Todd Edwards, Malin Gutschow, Angel Hsu, Nathan Hultman, David Leväi, Saffran Mihnar, Sara Posa, Mark Roelfsema, Bryce Rudyk, Michelle Scobie and Manish Kumar Shrivastava. 2021. "Climate Ambition and Sustainable Development for a New Decade: A Catalytic Framework." *Global Policy* 12 (4): 245–259.
- Cornago, Noé. 2000. "Exploring the Global Dimensions of Paradiplomacy: Functional and Normative Dynamics in the Global Spreading of Subnational Involvement in International Affairs." Paper presented at the Forum of Federations, Workshop on Constituent Units in International Affairs, Hanover, Germany.
- Criekemans, David. 2010. "Regional Sub-State Diplomacy from a Comparative Perspective: Quebec, Scotland, Bavaria, Caralonia, Wallonia and Flanders." *Hague Journal of Diplomacy* 5 (1–2): 37–64.
- Di Gregorio, Monica, Leandra Fatorelli, Jouni Paavola, Bruno Locatelli, Emilia Pramova, Dodik Ridho Nurrochmat, Peter H. May, Maria Brockhaus, Intan Maya Sari and Sonya Dyah Kusumadewi. 2019. "Multi-Level Governance and Power in Climate Change Policy Networks." *Global Environmental Change* 54: 64–77.
- Eatmon, Thomas D. 2009. "Paradiplomacy and Climate Change: American States as Actors in Global Climate Governance." *Journal of Natural Resources Policy Research* 1 (2): 153–65.
- Grant, Tom. 2020. "Who Can Make Treaties? Other Subjects of International Law." In *The Oxford Guide to Treaties*, ed. Duncan B. Hollis. Oxford: Oxford University Press.
- Green, Jessica and Jeff Colgan. 2013. "State Delegation to International Organizations and Private Actors in Environmental Politics." *Governance* 26 (3): 473–97.
- Hale, Thomas, Sander Chan, Angel Hsu, Andrew Clapper, Cynthia Elliott, Pedro Faria, Takeshi Kuramochi, Shannon McDaniel, Milimer Morgado, Mark Roelfsema, Mayra Santaella, Neelam Singh, Ian Tout, Chris Weber, Amy Weinfurter and Oscar Widerberg. 2021. "Sub- and Non-State Climate Action: A Framework to Assess Progress, Implementation and Impact." *Climate Policy* 21 (3): 406–20.
- Hawkins, Darren, David Lake, Daniel Nielson and Michael Tierney. 2006. *Delegation and Agency in International Organizations*. Cambridge: Cambridge University Press.
- Hooghe, Liesbet and Gary Marks. 2003. "Unraveling the Central State, but How? Types of Multi-level Governance." *American Political Science Review* 97 (2): 233–43.
- Hsu, Angel, Niklas Höhne, Takeshi Kuramochi, Mark Roelfsema, Amy Weinfurter, Yihao Xie, Katharina Lütkehermöller, Sander Chan, Jan Corfee-Morlot, Philip Drost, Pedro Faria, Ann Gardiner, David J. Gordon, Thomas Hale, Nathan E. Hultman, John Moorhead, Shirin Reuvers, Joana Setzer, Neelam Singh, Christopher Weber and Oscar Widerberg. 2019. "A Research Roadmap for Quantifying Non-State and Subnational Climate Mitigation Action." *Nature Climate Change* 9 (1): 11–17.
- Jervis, Robert. 1976. *Perception and Misperception in International Politics: New Edition*. Princeton: Princeton University Press.
- Kerremans, Bart and Jan Beyers. 1996. "The Belgian Sub-national Entities in the European Union: Second or Third Level Players?" *Regional & Federal Studies* 6 (2): 41–55.
- Koremenos, Barbara, Charles Lipson and Duncan Snidal. 2001. "The Rational Design of International Institutions." *International Organization* 55 (4): 761–99.
- Kukucha, Christopher. 2005. "Evaluating the Constitutional Legitimacy of the Provinces in Canadian Foreign trade and Environmental Policy." *Canadian Journal of Political Science* 38 (1): 129–52.

- Kuznetsov, Alexander. 2015. *Theory and Practice of Paradiplomacy*. London: Routledge.
- Landis, Richard and Gary Koch. 1977. "The Measurement of Observer Agreement for Categorical Data." *Biometrics* 33 (1): 159–74.
- Lecours, André. 2002. "Paradiplomacy: Reflections on the Foreign Policy and International Relations of Regions." *International Negotiation* 7 (1): 91–114.
- McEwen, Nicola and Elizabeth Bomberg. 2014. "Sub-state Climate Pioneers: The Case of Scotland." *Regional & Federal Studies* 24 (1): 63–85.
- Meyer, John, David John Frank, Ann Hironaka, Evan Schofer and Nancy Brandon Tuma. 1997. "The Structuring of a World Environmental Regime, 1870–1990." *International Organization* 51 (4): 623–51.
- Michelmann, Hans. 2009. *Foreign Relations in Federal Countries*. Montreal and Kingston: McGill-Queen's University Press.
- Mingus, Matthew S. 2006. "Are Governance Networks Perforating Sovereignty?" *International Journal of Public Administration* 29 (8): 577–94.
- Mitchell, Ronald B. 2002–2021. International Environmental Agreements Database Project (Version 2020.1). <http://iea.uoregon.edu/> (July 17, 2021).
- Moore, Scott. 2017. "Decentralization and Water Politics at the Subnational Level." *Water International* 42 (2): 222–39.
- Ostrom, Elinor. 2010. "Polycentric Systems for Coping with Collective Action and Global Environmental Change." *Global Environmental Change* 20 (4): 550–57.
- Ouimet, Hubert Rioux. 2015. "The Development and Institutionalization of Commercial Paradiplomacy in Scotland and Quebec." *Regional & Federal Studies* 25 (2): 109–28.
- Paquin, Stéphane. 2021. "The Inclusion of Quebec and the Exclusion of Wallonia in CETA Negotiations." *New Political Economy* 26 (6): 1–12.
- Rosenau, James. 1990. *Turbulence in World Politics: A Theory of Change and Continuity*. Princeton: Princeton University Press.
- Schiavon, Jorge A. 2018. *Comparative Paradiplomacy*. London: Routledge.
- Setzer, Joana. 2017. "How Subnational Governments Are Rescaling Environmental Governance." *Journal of Environmental Policy & Planning* 19 (5): 503–19.
- Soldatos, Panayotis. 1990. "An Explanatory Framework for the Study of Federated States as Foreign-Policy Actors." In *Federalism and International Relations*, ed. Hans J. Michelmann and Panayotis Soldatos. Oxford: Oxford University Press.
- Tatham, Michaël. 2018. "The Rise of Regional Influence in the EU—from Soft Policy Lobbying to Hard Vetoing." *Journal of Common Market Studies* 56 (3): 672–86.
- Tatham, Michaël, Liesbet Hooghe and Gary Marks. 2021. "The Territorial Architecture of Government." *Governance* 34 (3): 607–20.
- Tavares, Rodrigo. 2016. *Paradiplomacy: Cities and States as Global Players*. Oxford: Oxford University Press.
- United Nations Development Programme. 2010–2011. *Down to Earth*. New York: UNDP.