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BSG-WP-2015/001

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How Do Domestic Politics Shape Participation in Transnational Climate Governance?

June 01, 2015

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Abstract

Why do sub- and non-state actors participate in transnational climate governance? Existing explanations tend to focus on international processes of diffusion and the micro-incentives facing individual actors. These approaches frequently assume, often implicitly, that the domestic contexts in which cities, NGOs, firms, and other actors are embedded do not shape their engagement in transnational governance. Often, this is because scholars have restricted their analyses to wealthier, liberal democratic countries. Here, we argue that national context plays a pivotal role in actors' decisions to participate in transnational governance schemes. The paper uses a new dataset of cross-national participation by sub- and non-state actors in transnational climate governance to evaluate this argument. We find substantial cross-national variation in actor participation in transnational climate initiatives, and robust evidence that both domestic institutions and policies systematically shape patterns of such engagement. The findings suggest that domestic politics "matter" for transnational governance, and indicate that participation in TCG will be greatest in countries with strong civil liberties, decentralized government, and pro-climate policies.

Keywords: climate, transnational governance, sub- and non-state actors, institutional interaction

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1. Introduction

Despite two decades of negotiation, countries have yet to agree on a binding international treaty that would substantially restrict emissions of greenhouse gases (GHGs), the pollutants that cause climate change. At the same time, a host of governance initiatives have arisen at the regional, national, and sub-national levels, and in the private and non-profit sectors.⁴ Examples include “unilateral” reductions by municipalities, voluntary reductions by firms, and various rules and means for pricing and trading carbon credits. Many of these actions are linked across borders via transnational governance arrangements, which we understand as “the processes and institutions, formal and informal, whereby rules are created, compliance is elicited, and goods are provided in the pursuit of collective goals” when the actors involved are sub- and non-state actors from at least two different countries.⁵ In this way, climate change resembles other global issue areas in which transnational governance plays an important role, including global health, trans-border commerce, global financial regulation, and policing.

The diverse array of actions that constitute transnational climate governance (hereafter TCG) have extraordinary potential. To cite just one example, the New York Declaration on Forests, agreed between 30 multinational companies and dozens of tropical countries in 2014, could eliminate 8 billion tonnes of CO₂ if fully implemented, equivalent to the annual emissions of the USA. For this reason, some observers have suggested that transnational climate governance might hold some promise for mitigating the worst consequences of climate change and filling the “governance gap” left by the lackluster multilateral process.⁶

However, whether these non-multilateral actions are able to provide a meaningful complement or catalyst to a “global deal” depends to a significant extent on whether or not they come to include meaningful participation by a sizeable number of emitters, especially those in the rapidly developing countries of the Global South. It is from these countries that future emissions will come. Yet, at present, we still have little understanding of the prevalence of TCG initiatives across countries and societies. Existing studies have examined patterns of participation in individual countries or across small groups of countries, but offer no comprehensive picture of the scale, scope and robustness of participation.⁷ How many actors are actively involved in TCG across different countries? Do we see significant penetration of TCG in the rapidly industrializing emerging economies?

This crucial policy question turns around a deeper theoretical lacuna in the study of global politics: we have, at present, only a partial understanding of how and why actors participate in transnational governance more generally. Research has primarily focused on when we can expect different forms of transnational governance to arise, leaving aside questions about why actors adhere to transnational rules after they are created. Insofar as they exist, prevailing explanations have primarily focused on transnational “diffusion” processes through which social and material pressures to participate are transmitted.⁸ Participation in transnational governance, on this view, is largely determined by the extent to which sub-state and non-state actors are culturally, economically or politically linked into international networks, whether through supply chains, epistemic communities, or other means. It is through these channels that different kinds of actors become socialized or incentivized to adhere to transnational rules.

⁴ See Bulkeley et al. 2014; Pattberg and Stripple 2008; Toly 2008; Hoffmann 2011; and Green 2013.

⁵ Hale and Held 2011, 12.

⁶ Au et al. 2011.

⁷ See Zhang 2004; Heggelund and Buan 2009; and Hale and Roger 2012.

⁸ See Betsill and Bulkeley 2004; Garcia-Johnson 2000; Prakash 2001; Baron 2009; Perkins and Neumayer 2010; Dauvergne and Lister 2010; Slaughter 2004; Lee 2013.

Such explanations tend to abstract from the domestic contexts in which sub- and non-state actors operate.⁹ But, given the widespread understanding that domestic politics condition state involvement in global governance, it would be reasonable to expect that the propensity of actors to engage in transnational governance is not only a matter of global connectedness but also of local conditions.¹⁰ In line with the insights from this past research, then, as well as more recent research on how transnational governance operates across different political and institutional contexts,¹¹ the present paper considers how country-level variables systematically condition sub- and non-state actors' participation in transnational governance. In particular, we show how two crucial political variables dampen or boost participation in TCG: domestic political institutions and the policies of national governments toward climate change. Together, these factors shape the domestic "opportunity structures" that sub-national and non-state actors face.¹²

The paper employs a new dataset that measures how many sub- and non-state actors from each country participate in TCG initiatives. Scholars of transnational governance have recently pieced together a comprehensive picture of TCG at the global level, allowing for analyses that stretch beyond individual cases and can identify broader patterns and trends.¹³ This data gathering effort has uncovered a wide variety of TCG schemes (75 are recorded in our database), composed of different types of actors (e.g. cities, companies, NGOs), addressing many different issues related to climate change. Building on previous efforts, we have coded levels of participation in TCG by country. This new, cross-sectional dataset allows us to assess, for the first time, the cross-national patterns of involvement in TCG.

The paper proceeds as follows. Section two describes the nature, distribution, and evolution of TCG, explaining the patterns identified in the database. Section three then considers existing explanations of participation in TCG, and develops hypotheses about how these mechanisms are conditioned by domestic institutions and national policies. Sections four and five present our statistical analysis, and section six concludes. Overall, the paper demonstrates that participation in TCG varies widely across countries, and that this variation is driven in large part by country-level factors such as the civil liberties that non-state actors enjoy, the level of institutional centralization, and the climate policies that national governments adopt. It also finds that some kinds of international linkages enhance participation. However, in general, these factors matter less than the domestic-level variables, a result that departs from the prevailing emphasis in the literature on transnational networks and markets.

2. Mapping Participation in Transnational Climate Governance

Transnational climate governance occurs when cities, companies, NGOs, and other sub- and non-state actors cooperate across borders to govern climate change. We term each instance of TCG a "TCG initiative" or "TCG scheme." This paper presents a new dataset of participation in the known universe of 75 TCG initiatives across 191 countries from 1990-2012. The database is an extension of the one used by Hale and Roger, which in turn builds upon those by Hoffmann and Bulkeley et al.¹⁴ Additional discussions of selection and coding can be found in those sources and

⁹ Bartley 2011.

¹⁰ See Milner and Keohane 1996; Milner 1997; Martin 2000; Moravcsik 1998; Mansfield and Pevehouse 2006; and Evans et al.1993.

¹¹ See Kollman and Prakash 2001; Bartley 2010; Büthe and Mattli 2011; Andonova 2014 and Berliner and Prakash 2014 .

¹² Sikkink 2005.

¹³ See Hoffmann 2011; Bulkeley et al. 2014; and Hale and Roger 2014.

¹⁴ See Hale and Roger 2014; Hoffmann 2011; and Bulkeley et al. 2014.

online.¹⁵ We undertook further coding of participation in the 75 TCG initiatives by individual actors (municipalities, private entities, civil society organizations, research institutions, units of government, etc.) across countries. Unlike previous studies, this allows us to focus on the extent of participation by a variety of sub-state and non-state actors and thus make a more accurate assessment of the variable patterns of engagement across jurisdictions. Data were obtained primarily from initiatives' mission statements or similar documents available online.

To be included in the database an initiative had to meet several criteria. First, of course, initiatives had to address climate change; they could be intended to govern a variety of different aspects of the problem, from mitigation to adaptation, from deforestation to energy efficiency, from regulating carbon offsets to channeling funding to carbon offset projects, etc. Initiatives that simultaneously address issues not related to climate change were included as well. For example, ICLEI was established in order to govern a broad range of sustainable development problems; climate change is only one of its main concerns.

Second, an initiative needed to qualify as an instance of governance. This is, admittedly, at times difficult to determine given that the concept itself is subject to considerable interpretation.¹⁶ We argue that governance occurs when networks of actors explicitly seek to authoritatively steer constituents, be they individuals, firms, governments or otherwise, towards ostensibly "public" goals.¹⁷ This may or may not occur through the explicit setting of regulations, standards or rules, whether voluntary or mandatory. A TCG initiative may also seek to steer behavior by providing collective goods such as capacity building services, technical assistance, and financing, or specific kinds of information. Its primary purpose in doing so must, however, be explicitly public in nature and intended to change behavior. Borderline cases exist, of course, and initiatives may or may not be effective in meeting their goals.

Third, in keeping with the literature on transnational actors in world politics, an initiative needed to include at least one sub-state or non-state actor, either as a member, participant, user or partner.¹⁸ This was determined, typically, by analysis of membership lists, participant registries, etc. Intergovernmental treaties and organizations that did not include such participants, such as several bilateral and multilateral climate change memoranda of understanding (for example, the US-China Memorandum of Understanding to Enhance Cooperation on Climate Change, Energy and the Environment), or "mini-lateral" fora such as the Major Economies Forum were excluded.

Fourth, to be included initiatives must have members, participants, users or partners from at least two different states. Again, this was determined by analyzing membership lists. The Western Climate Initiative, which includes participants (provinces and states) from the United States and Canada, is transnational. Refrigerants, Naturally!, which includes participants such as Coca-Cola, an American multinational corporation (MNC), and Unilever, a British-Dutch MNC, among others, also qualified. By contrast, the Regional Greenhouse Gas Initiative and the National Association of Counties' Climate Protection Program, whose governance activities are entirely confined to the United States, were excluded.

Fifth, we did not include single organizations. Although they may sometimes engage in governance-like activities (providing information, awareness-raising, etc.) and/or may be directly involved in a number of TCG initiatives, organizations such as PointCarbon, the World Business

¹⁵ See the document entitled "Coding the Transnational Climate Governance Database" available at: <http://link.springer.com/article/10.1007/s11558-013-9174-0>

¹⁶ Chhotray and Stoker 2008.

¹⁷ Here, we follow the definition put forward by Andonova, Betsill, and Bulkeley 2009.

¹⁸ See Risse-Kappen 1995; and Andonova et al. 2009.

Council for Sustainable Development, the Red Cross/Red Crescent Climate Centre, which were included in other databases, were excluded. Similarly, although a case can be made for regarding corporate social responsibility schemes (CSR) as a form of global governance, we did not include single CSR schemes within our database. In each case, we did not consider these to be our primary unit of analysis, which is the “initiative,” “scheme” or “standard,” involving a network of actors.

The initiatives included in the database were identified by reviewing academic and policy-related literature on transnational climate governance, scanning the agendas of international conferences where TCG initiatives were likely to be noted (e.g. meetings of the UNFCCC or the Commission on Sustainable Development) and by discussions with a wide range of experts and practitioners. We are, ultimately, unable to claim it exhausts the total universe of TCG, but it certainly captures the vast majority of such initiatives, and all those that are regarded as meaningful by academics and practitioners. Possible bias results from the fact that larger and well-resourced initiatives are more likely to be overrepresented in the sample, since they tend to last longer and attract more attention. Initiatives involving less prominent actors, or actors on the periphery of central climate governance networks, are likely to be underrepresented as well. This will possibly lead to a bias in the sample towards initiatives created by actors in the global North. However, we are confident that the database is a representative sample of all key initiatives that are active and visible at the global level.

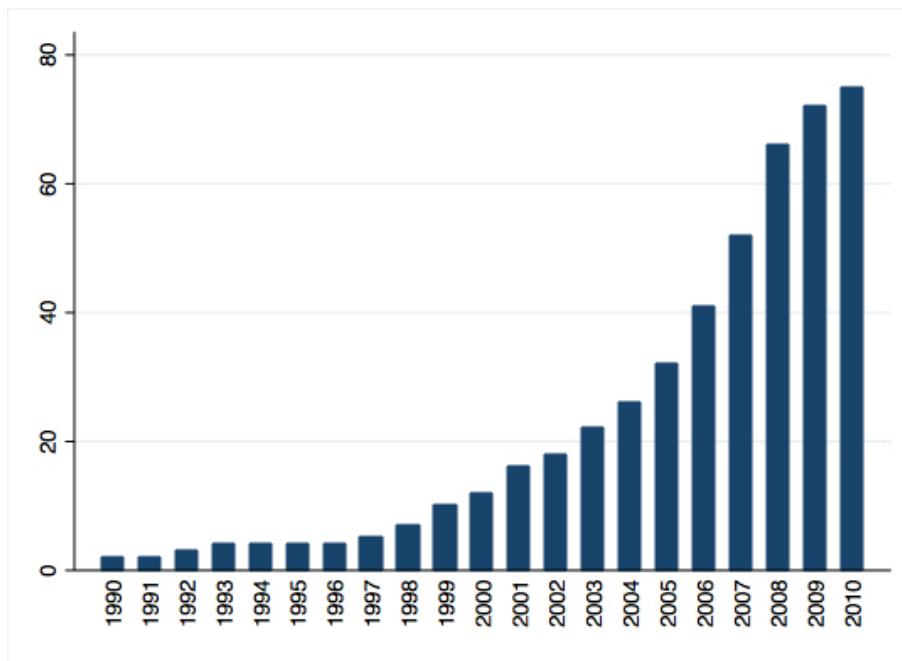
Why focus on this aggregate level? TCG initiatives have engaged in a wide variety of governance activities, including the provision of information sharing and networking services, setting standards and enforcing commitments, specific operational activities, and financing.¹⁹ They include varying mixes of sub/non-state actors, such as companies, cities, provinces and regions, and civil society groups, and seek a variety of objectives. While this heterogeneity offers fruitful avenues for future research, in this paper we are curious about whether and how macro-features of domestic political contexts (specifically, climate policy and domestic institutions) shape participation in TCG. Because we do not expect these features to co-vary systematically with certain sub-types of TCG (see below), the aggregate level of participation in TCG is the appropriate dependent variable for this article.

The database reveals many fascinating trends. TCG has grown tremendously since efforts to govern climate change began in earnest in the late 1980s and early 1990s. It initially emerged rather haltingly, with only a few initiatives appearing around the time of the 1992 Rio “Earth Summit,” such as Energie Cities (created in 1990) and the E8 (created in the wake of the Earth Summit, and now known as the Global Sustainable Electricity Partnership). More, and more diverse, schemes began to appear around the time of Kyoto. Then, as Hoffmann has observed, TCG “exploded” in the 2000s. This exponential growth can be seen in Figure 1.²⁰

¹⁹ Here, we employ the typology developed by Abbott 2012.

²⁰ Hoffmann 2011.

Figure 1: Number of TCG Initiatives, Cumulative Total, 1990-2010



Where are the actors that participate in these 75 TCG schemes located? Hoffmann and Bulkeley et al. have collected data on the different regions that participants are “active” in, revealing an “uneven geography” of TCG.²¹ However, it is challenging to make valid inferences about the variables that shape the uneven pattern of activity without delving below the regional level. We therefore collected data on the locations of all the actors that publicly claim to participate in the 75 schemes in our dataset.²² This was possible for a total of 71 schemes that included some kind of online registry that publicly recorded actors’ participation. Using United Nations state membership as a baseline, we then went through each registry and recorded the political jurisdictions within which these actors operate. By summing the total number of actors involved across the 71 initiatives, we obtained a measure of the number of sub- and non-state participants from each country. In total, the database records over 14,000 instances of participation in TCG. The average number of participants in a country is 76, with a standard deviation of 282. Figure 2 shows the 20 countries with the largest number of actors participating in TCG. Interestingly, over 10,000 of these actors come from just 10 countries (in declining order: Italy, US, Spain, Austria, UK, Germany, India, China, France and Australia). Italy, with 2,555 participants, has the largest number of actors involved in TCG, while a total of 31 countries have 0 and another 29 have just 1.²³ The top 100 countries have at least 5 participants, and this group includes a diverse mix of

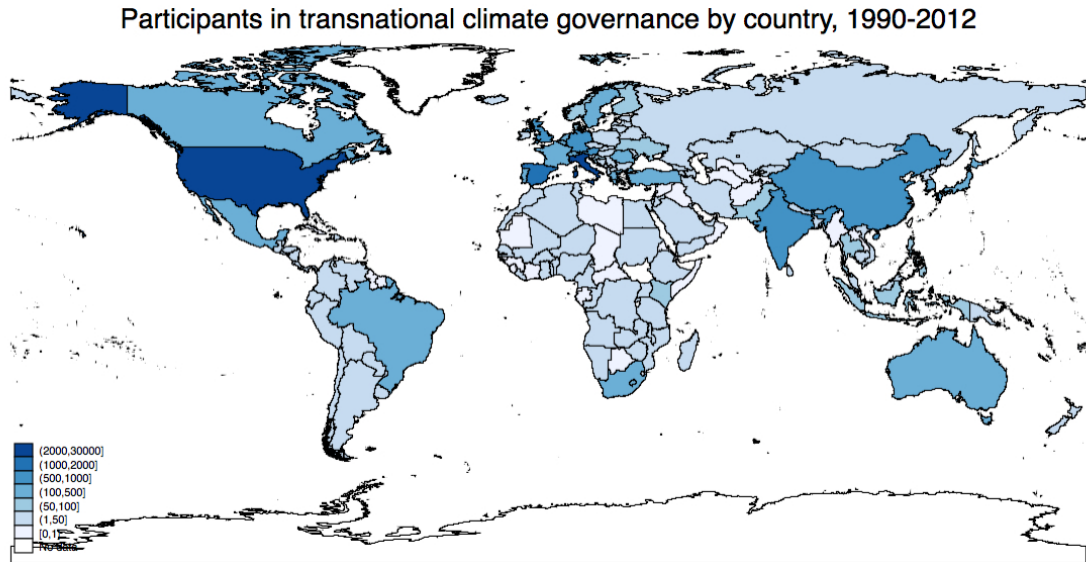
²¹ See Hoffmann 2011; and Bulkeley et al. 2014.

²² Lists of participants (usually a list of members, rule-adopters or users) were often available through the initiatives’ websites, but occasionally data was collected via email or secondary sources. Only four initiatives were dropped because of inadequate data. The authors hold copies of these lists of participants. In most cases, the “locations” of members were relatively easy to determine since most website provided a “national” designation for each member. Where this was not the case, the location of an actor was determined via a web search. Typically, the location of an organization’s headquarters was used to determine the state that the organizations is based in, except in cases where it was clear that only a local subsidiary or branch of the organization participated.

²³ The fact that Italy’s participation appears to be so high may seem odd at first glance. Its high level of participation is driven by just one outlier initiative—the Covenant of Mayors—that includes an unusual number (2338) of Italian municipalities as members. If this initiative is removed from the dataset, Italy is no longer a significant player. Recognizing this fact, we have also constructed an “adjusted” measure of TCG, as well as a restricted sample that includes only developing countries. Both are used in our empirical analysis in order to mitigate any concerns that our results are unduly influenced by a few outlier cases. The

developed and developing and democratic and undemocratic countries from all major regions of the world.

Figure 2: Countries with the largest number of sub-state and non-state actors participating in TCG, 2012.



analysis shows the choice of measure actually makes no major difference to the paper's overall conclusions.

This measure of cross-national variation in TCG merits several caveats. First, it treats each instance of participation as equivalent. In reality, initiatives vary significantly in effectiveness, exigency, ambition, and cost. The potential “impact” of participation is also likely to vary depending on the actor involved (for example, the C40 is a network of mega-cities, while ICLEI is a network that includes both large and small municipalities, though both mega-cities and smaller municipalities are counted equally in the dataset). While our data cannot differentiate the “quality” of different actors’ participation, our premise is that meaningful inferences can be made about the scope of cross-national variation in actor engagement with TCG. Second, it is important to note that the database counts instances of participation, rather than the number of non- or sub-state actors that participate in any TCG initiative. In other words, a company that participates in 10 initiatives would be counted 10 times in the database. This characteristic of the data is important in practice but unlikely to introduce a bias in the data because, anecdotally, individual non- and sub-state actors tend to participate in only a handful of initiatives at most, and the number of initiatives is small compared to the instances of participation.

With these caveats in mind, the comparative mapping of TCG across countries reveals highly variable engagement in TCG across countries that does not prima facie appear to follow a neat regional or North-South divide as might be anticipated by the existing literature on transnational actors and governance. It therefore prompts further comparative analysis of the causal factors that may account for participation in TCG to better understand the larger implications of such initiatives for managing climate change.

3. Domestic Politics and Participation in Transnational Climate Governance

What accounts for the variable participation in transnational initiatives for climate change that our database reveals? Prevailing theories of participation in transnational governance frequently emphasize the importance of variables that structure payoffs and socialize non-state and sub-state actors. Actors adhere to transnational rules, on this view, when they materially benefit from doing so, or when doing so is deemed to be morally or normatively appropriate.²⁴ The material incentives to adhere to transnational rules that scholars have identified include product differentiation, risk management, improved reputations and popularity, and greater access to resources and information.²⁵ Moral or normative motivations, by contrast, include “other-regarding” concerns about the welfare or rights of other humans, animals and the environment, or desires to conform to organizational norms.²⁶ Most scholars of transnational governance (in the climate realm and beyond) have emphasized the international aspects of these variables, looking at actors’ levels of cultural, political or economic “connectedness” to the rest of the international system. It is through channels such as international trade, foreign direct investment and supply chains,²⁷ networks of NGOs,²⁸ and the actions of intergovernmental organizations²⁹ that material and social pressures to adhere to transnational rules are transmitted.

²⁴ Baron 2009; Baron 2010; Engel and Orbach 2008.

²⁵ See Baron 2009; Lee 2013; Engel and Orbach 2008.

²⁶ Baron 2010; Dunlap and York 2012; Rivera and de Leon 2004; King and Lenox 2000. Of course, moral motivations and material incentives are not completely independent of one another, because morally motivated consumers and voters can create incentives for other non-state and sub-state actors to adhere to transnational rules for non-morally motivated reasons, either through their buying power or voting power or through public sanctioning. Individuals may also have “dual utility” functions that combine both self-regarding and other-regarding motivations, see Margolis 1990.

²⁷ Prakash and Potoski 2006; Perkins and Neumayer 2010; Garcia-Johnson 2000.

²⁸ Baron 2010; Portney and Berry 2014.

²⁹ Hale and Roger 2014.

Such explanations often assume, implicitly, that sub- and non-state actors, when they act transnationally, are somehow transported out of the domestic political contexts in which they are embedded.³⁰ This assumption is often a useful one, as it allows scholars to develop general and parsimonious explanations for an increasingly significant dimension of world politics. It is also more justifiable (empirically) when the scope of analysis is restricted to liberal, democratic states or to a single state, as many studies have done, since there will often be little or no variation in institutional quality across or within such states.³¹ But students of IR have, of course, long recognized the importance of domestic politics for foreign policy and international organization.³² Further, one of the chief developments in IR theory in the 1990s was the articulation of more theoretically precise accounts of how domestic politics “mattered” for explaining international cooperation.³³ In much of this work, openness or “connectedness” to the international system is itself endogenous to domestic politics.³⁴ Domestic political structures were also found to be important for explaining patterns of transnational activism and norm diffusion.³⁵ We would, therefore, reasonably expect analogous relationships between domestic political conditions and transnational governance.

To be sure, scholarship has not been ignorant of the role that domestic politics can play. Bartley, for example, has studied how the implementation of corporate certification schemes for forestry and apparel in Indonesia are affected by local conditions.³⁶ He finds, for instance, that quite specific factors, such as the nature of property rights over forests, as well as the government’s dependence on the pulpwood industry, strongly reduced the efficacy of transnational governance programs. Others have looked at China (and Asia, more broadly) and found, generally, that the weakness of civil society under China’s authoritarian system limits participation in ISO 14001, a voluntary standard for environmental management systems.³⁷ Policies seem to matter, too. Espach, for example, has examined how variation in FSC certification and adoption of the Responsible Care standard have been influenced by industrial policies, and Hale and Roger find that the Chinese government’s policies have promoted or obstructed participation in certain TCG schemes.³⁸ Prakash and Potoski also find that the stringency of laws and their enforcement characteristics matter for adoption of the ISO 14001 standard; more recently Berliner and Prakash have extended the analysis to explore how domestic regulations interplay with transnational pressure in explaining the patterns of ISO certification.³⁹ Finally, Bütthe and Mattli and Andonova place emphasis on the relevance of the state and domestic institutional structures for influencing, respectively, power over private regulations and participation in global public-private partnerships, two very different domains of transnational governance.⁴⁰

While the specific findings of such studies may not be immediately generalizable to other cases, they offer compelling evidence that domestic policies and institutions can make a major

³⁰ This assumption is most explicit in Baron 2010. Government (or “public politics”) is “not present” in Baron’s private politics model of credence standards adoption. See page 46 of Baron 2010. However, see Bartley 2011 for a thorough discussion of this tendency within the literature on transnational governance, as well as illustrations of the importance of taking into account how domestic and transnational rules interact.

³¹ For example, see King and Lenox 2000; Prakash and Potoski 2006; Rivera and de Leon 2004.

³² Schattschneider 1935.

³³ See Evans et al. 1993; Milner 1997; Moravcsik 1998.

³⁴ Milner and Keohane 1996.

³⁵ Risse-Kappen 1995.

³⁶ Bartley 2010.

³⁷ See Drezner and Lu 2009; and Hale and Roger 2012.

³⁸ See Espach 2006; and Hale and Roger 2012.

³⁹ Prakash and Potoski 2006; Berliner and Prakash 2014.

⁴⁰ See Bütthe and Mattli 2011; and Andonova 2014.

difference for participation in transnational governance. Drawing on this literature, we aim to state a more general set of conditions under which domestic politics affects participation in transnational governance. Our theoretical framework starts with the premise or assumption, supported by existing studies on TCG, that a variety of subnational and non-state actors may have incentives to pursue a host of different market-based or environmental objectives, as well as normative agendas, by engaging in TCG initiatives.⁴¹ However, we argue that their ability to do so is fundamentally shaped by the domestic context within which actors are situated. Specifically, we focus on two core explanatory variables that influence direct engagement with climate governance across borders: political institutions and government policies. Together, these constitute the domestic “opportunity structures”⁴² that either enable or constrain the ability of subnational and non-state actors to participate in TCG. We discuss each variable in turn.

First, consider the effect of political institutions. What is of interest here is the set of mechanisms that link the openness of a political system to the ability of sub- and non-state actors to engage in transnational governance. When transnational governance is created “bottom up,” it relies on the initiative and entrepreneurship of domestic as well as transnational actors, as well as their ability to engage in public contestation and deliberation. If a political system allows actors the agency to freely do so, then we should expect relatively high levels of participation, *ceteris paribus*. Yet such agency is likely to be limited in authoritarian regimes in which the central government effectively sets the policy agenda and enforces a “party line” on the private sector, civil society, and other levels of government. For instance, political regimes that curb civil liberties have often imposed explicit limitations on the activities of transnational actors and on the sources of funding for domestic organizations.⁴³ The entry of transnational governance initiatives typically has to pass scrutiny by government agencies.⁴⁴ Bartley documents, for instance, that the entry of the FSC certification in China in 2000-2001 only became possible with the support of the China State Forestry Administration, which in 2003, introduced rules “that require certifiers working in China to meet certain capital, personnel, and location requirements and to have the scope and their activity approved.”⁴⁵ Of course, this does not mean that actors in countries with more authoritarian regimes do not participate in TCG. Historically, transnational association has been a means to circumvent tight government control.⁴⁶ However, such institutional structures imply that the opportunities for societal participation in transnational governance initiatives are more restrictive than they would otherwise be.

The degree of administrative decentralization is another institutional factor likely to influence the agency of sub-state and non-state actors to engage in transnational governance. This feature of domestic institutions may be particularly important for environmental governance, because global issues such as climate change, biodiversity, or transboundary pollution by toxic substances often have place-specific environmental and economic repercussions. Likewise, transnational governance of climate change depends to a great extent on linking global processes to local benefits and concerns, such as reducing air-pollution, counter-acting vulnerability, providing broader sustainability benefits for local communities, or supporting the energy or environmental strategies of municipalities and private actors. The opportunity for cities, sub-national regions, communities or civil society organizations to pursue such global-to-local linkages is likely to be enhanced in systems with greater administrative and/or fiscal decentralization. By contrast, the avenues and resources for participation in transnational networks are more limited when sub-

⁴¹ Bulkeley et al. 2014.

⁴² Sikkink 2005; Andonova 2014.

⁴³ Andonova 2014; Henry 2010.

⁴⁴ Bartley 2014; Hale and Roger 2012.

⁴⁵ Bartley 2014, p. 103.

⁴⁶ Keck and Sikkink 1998.

national governments possess little agency and authority. We should therefore expect decentralization to be strongly correlated with participation in TCG, all else being equal.

In sum, if institutions make it more difficult for sub-state and non-state actors to hold policy preferences at odds with the state (because they are controlled by the central state itself), or if they cannot act on policy preferences that differ from those of the state (because the political system sanctions such actions), then these groups will have less capacity and opportunity to supplement or circumvent official policy by participating in transnational governance initiatives. Hence, we expect:

Hypothesis 1 (H1): when domestic political institutions give sub- and non-state actors greater agency to engage in governance activities, participation in TCG will be greater.

Hypothesis 1 posits an “institutional effect” on participation. Hypothesis 2, by contrast, posits a “policy effect” on the opportunities for transnational governance. Some governments have adopted relatively ambitious policies to reduce emissions; others have done nothing. We argue that ambitious government policies should spur sub-state and non-state actors to become involved in transnational schemes. There are several reasons for this expectation, which may be counter-intuitive from the perspective that sees transnational initiatives as symptomatic of and by implication positively correlated with lack of intergovernmental policy and domestic governmental commitments.

First, when a state is relatively more proactive on climate change, sub-state and non-state actors may voluntarily take action to attain first-mover advantages, information, or other resources that can help them to become more competitive in the new policy environment. In other words, participation in TCG can be a useful tool for firms and industries trying to meet stringent climate policies. When actors face the possibility of more stringent climate policies, for instance, participation in TCG may help them to prepare internally for the changes that are to be expected. Attempts to comply with transnational rules may help to facilitate future compliance with domestic regulations, or to influence the nature of implementing instruments and subsequent regulations. An example is adoption by firms of various corporate carbon accounting tools, such as the Greenhouse Gas Protocol, in order to understand the future implications of carbon pricing. Participation in TCG may also be useful for preempting any further government interventions. By participating in credible TCG initiatives that involve large numbers of firms, as well as environmental NGOs, firms that may be targets of future interventions can burnish their reputation, thereby providing powerful argument for a more flexible regulatory approach.

Second, proactive governments may also promote participation in TCG in order to lower the costs of designing, implementing, and enforcing climate change policies. Over time, traditional command and control policies have fallen out of favor within many governments as a result of opposition from firms and growing doubts within the policymaking community about governments’ abilities to enforce detailed regulations. In their place, governments have frequently promoted the adoption self-regulatory schemes as an important supplement to more coercive policies across a range of environmental issue areas, including climate change.⁴⁷ This approach allows governments to multiply their influence, lower the costs of enforcement and establishes a more cooperative relationship with the industries they regulate.⁴⁸ Similarly, national regulatory authorities have attempted to work closely with sub-national governments on a range of issues with local repercussion, including climate change, watershed management, and forestry.

⁴⁷ Harrison 1999; Baranzini and Thalmann 2004.

⁴⁸ Andonova 2014.

Hale and Roger (2012) identify an example of this dynamic in the Chinese government's embrace of TCG standards for carbon trading. China has been a major source of carbon credits since the Kyoto Protocol created a global emissions trading system (the Clean Development Mechanism), and has now launched a series of city- and region-level carbon markets in anticipation of an expected nation-wide system. To achieve these goals, the Chinese government has embraced transnational carbon offset standards, turning from a "command and control" model to more "orchestrated" forms of governance.⁴⁹ By co-developing carbon standards with transnational actors and encouraging Chinese actors to participate in transnational emissions trading schemes, Chinese bureaucracies were able to build their capacity to design and implement effective domestic carbon markets, and to familiarize key interest groups with such systems.

Third, by participating in transnational governance initiatives sub-state and non-state actors are also likely to have more opportunities to form alliances with units of national governments that seek to advance specific climate change policies and to thereby jointly shape the domestic policy agenda.⁵⁰ Units of government with active environmental agendas often draw on the epistemic and policy resources of transnational networks to advance organizational and policy objectives.⁵¹ And, by actively participating in such networks and gaining experience with voluntary climate change regulations, this provides an opportunity for sub-state and non-state actors to gain access to policymaking circles and shape domestic policies. They may do so in order to reduce the comparative disadvantage of early regulation of GHG emissions or to export policy influence and support the comparative advantage of domestic industries that have invested in climate friendly technologies. The sociological and IR literature has increasingly engaged the question of the interplay between formal governmental policies and informal transnational governance, suggesting that such interplay is rarely unidirectional, but involves, rather, the repositioning of the state in new regulatory environments characterized with multiple claims of authority.⁵² Together, these three mechanisms suggest that, given the stagnation of the international climate regime and the divergent leadership in national approaches to climate change both in the North and in the South, we should expect:

Hypothesis 2 (H2): When governments hold pro-climate policy goals, more sub/non-state actors will participate in TCG.

Compared to arguments that tend to equate transnational governance with the lack of public policies on climate change, Hypothesis 2 stipulates a more complex and reinforcing relation between the two. Our analysis does not ignore the fact that the weakness of the international regime and the lack of meaningful climate policies in many countries may have provided motivation for actors to engage in transnational governance. Indeed, our hypotheses build upon the assumption that the weakness of the intergovernmental regime and variation in domestic policies has created incentives for sub-state and non-state actors to invest and participate in transnational governance. Such incentives may have to do with a desire by certain actors to advance coordination for addressing climate change beyond the state, or, more cynically, with the strategy of actors to forestall more ambitious climate policymaking by attempting to show that credible voluntary actions are being taken. By recognizing that multiple incentives exist for participation in TCG, Hypothesis 1 seeks to identify institutional preconditions that facilitate such engagement. Hypothesis 2 then adds an additional layer to the understanding of domestic

⁴⁹ For example, at the Copenhagen climate summit, China launched the "Panda standard" for carbon accounting, a joint venture of various Chinese governmental agencies and transnational carbon trading schemes.

⁵⁰ Andonova 2014 and Sending and Neumann 2006.

⁵¹ Haas 1989; Slaughter 2004 and Andonova 2010.

⁵² Andonova 2014, Bartley 2014, Bruszt and McDermott 2014; Berliner and Prakash 2014.

opportunity structures for participation in transnational governance by considering how proactive climate policies on the part of some states are likely to provide additional motivations and means for convening transnational initiatives. Thus, overall, we expect that the elements of the domestic opportunity structure—both institutions and policies—can help us to account for the great variety of initiative and agency across national jurisdictions described briefly in section two. The rest of the paper evaluates these core hypotheses.

4. Data and Methods

As noted earlier, this paper employs as its main dependent variable a cross-sectional measure of TCG participation rates across 189 countries in 2012. By necessity, the actual sample used in our statistical analysis is smaller, at roughly 115 countries, since data on key explanatory variables were missing for many states. We also construct an alternative “adjusted” measure of the dependent variable that is identical to the first but with the two largest initiatives removed. We do so in order to account for the fact these two TCG initiatives are considerably larger compared to the average (in terms of the total number of participants involved) and focus on European cities, which may cause our basic measure of TCG to paint a picture of participation that is unduly influenced.⁵³ In practice, as we later show, this makes little difference.

The explanatory variables measure countries’ political institutions and commitments to climate policy, their levels of transnational “connectedness” and, as controls, other country characteristics that may affect variation in rates of participation. Unless otherwise specified, time-varying independent variables are measured as averages across the period 1990-2010. For example, the variable “GDP per capita” for country *j* is *j*’s average annual Gross Domestic Product (GDP) per capita from 1990-2010 (in current terms). Table 1 presents descriptive statistics of all dependent and explanatory variables used in main our analysis, as well as the robustness tests reported in Tables 3 and 4. Table 5 in the appendix, reports the correlations among the explanatory variables used in the main analyses reported in Table 2. The highest correlation (0.657) is between civil liberties and the number of international environmental agreements. In order to determine whether multicollinearity was a problem we also calculated Variance Inflation Factor (VIF) scores for all the variables used in the main analyses. These are reported in Table 6 in the appendix, and are all well within generally accepted boundaries.

⁵³ The outliers are The European Covenant of Mayors and the Climate Alliance of European Cities with Indigenous Rainforest Peoples. These initiatives have substantially more members than any others in the sample (4640 and 1659, respectively).

Table 1: Descriptive Statistics.

Variable	Obs	Mean	Std. Dev.	Min.	Max.	Source
Dep. Variable						
TCG	189	76.45	281.5	0	2555	Authors
TCG (adjusted)	189	32.06	124.7	0	1448	Authors
TCG (non-Annex 1)	149	22.11	78.07	0	702	Authors
Institutions						
Civil liberties	192	3.53	1.77	0	6	Freedom House
Political rights	192	3.51	2.07	0	6	Freedom House
Voice & account.	191	2.43	0.99	0.34	4.10	World Gov. Indic.
Federalism	192	0.12	0.33	0	1	Forum of Federtns.
Polity	129	3.27	6.38	-10	10	Marshall et al. 2002
Policy						
EPI Climate Policy	132	45.06	23.11	1.8	95.7	Emerson et al. 2012
EPI	131	50.08	9.32	25.6	76.2	Emerson et al. 2012
Air Pollution	176	59.46	41.36	7.61	222.1	World Dev. Indctrs.
Int'l Env. Agreem.	191	51.00	24.48	10	144	Mitchell 2014
Vulnerability	177	57.63	12.52	0	81.7	ND-GAIN
Env. Group Member.	51	0.17	0.23	0.01	1.47	W. Values Survey
Connectivity						
Int'l Trade (weight)	181	31930	406146	0	5.45e+6	CoW; authors
ISO 14001	192	1145	5251	0	55316	ISO
NGO Network	149	4.17	6.75	0	51.53	Bernauer et al. 2013
Green aid	173	6.36e+6	1.46e+7	0	1.18e+8	Tierney et al. 2012
FDI	130	1.48e+10	5.19e+7	1.61e+6	5.2e+10	World Dev. Indctrs
Controls						
CO ₂ Emissions (ln)	183	9.10	2.57	3.29	15.51	WRI CAIT
GDP Per Capita (ln)	183	7.88	1.52	4.95	11.04	World Dev. Indctrs.
Population (ln)	183	32.75	123.20	.01	1257.18	World Dev. Indctrs.
GDP (ln)	132	24.50	1.80	20.5	29.66	World Dev. Indctrs.
GHGs (ln)	180	3.44	2.26	-2.30	8.89	WRI CAIT

Our first set of explanatory variables seeks to capture how institutional structures influence the agency of sub- and non-state actors across countries. We expect the agency of non-state actors like NGOs and businesses to be largely related to the freedom these actors enjoy to engage in policy advocacy and to create programs and organizations with “governance” aims (H1). Agency should thus vary with regime type, with more liberal regimes in which civil society flourishes allowing for greater participation in TCG. Here, we rely chiefly on the Freedom House measure of civil liberties to represent this idea,⁵⁴ though measures of political rights (also Freedom House), regime type (Polity IV), and citizens’ voice and accountability (World Governance Indicators) are also considered (the latter two indicators provide data for substantially fewer countries than the Freedom House). To measure the effect of political decentralization on the agency of sub-state actors like cities and regions (H1), we use a binary variable that records whether a country is federal or not.

Second, we seek to measure how ambitious national governments’ policies are, as per H2. To operationalize this concept we use the Environmental Performance Index (EPI) Climate Policy Indicator, which takes into account the ambitiousness of climate policies, and a count of all international environmental agreements (IEAs) ratified by a country.⁵⁵ However, this is the most difficult concept to operationalize because the ambitiousness of climate policies may both cause and be caused by the actions of sub- and non-state actors (i.e. it may suffer from endogeneity problems). It may also seem to correlate with participation in TCG, but actually just be the product of some third variable that drives both national policies and engagement with TCG. We therefore employ a number of measures and testing strategies to mitigate these concerns. First, we only use the pre-2000 data for the EPI climate policy measure, which predates 65 of the 75 TCG initiatives in the database. We can therefore be largely certain that the EPI score for these countries captures their historical commitment to environmental protection, and is not itself driven by participation in TCG. We also make use of the core EPI index, which focuses on a larger range of environmental issues beyond climate change. Second, we use the amount of particulate air pollution (PM10) a country emits as a proxy of its commitment to environmental protection.⁵⁶ PM10 is an effective proxy because this pollutant is relatively easy and inexpensive to control and countries with strong commitments to environmental protection will be very likely to have done so even if they have high emissions (the correlation between PM10 and CO₂ emissions is -0.06). Finally, data on vulnerability to climate change⁵⁷ and data from the World Values Survey measuring citizens’ membership in environmental groups are used to gauge local levels of concern about climate change and local activism on environmental issues, which may underpin any spurious correlation between domestic climate policy and participation in TCG.

Our third set of independent variables aims to assess hypotheses about the role of transnational “connectedness” in decisions by non- and sub-state actors to participate in TCG. To assess theories about the role of international economic incentives we constructed a TCG-weighted

⁵⁴ The original measure is an ordinal scale of 1-7, with 1 representing high levels of civil liberties. To facilitate interpretation, we have subtracted the Freedom House scores from 7, changing the measure to an ordinal scale of 0 to 6, with 6 indicating higher civil liberties. A similar transformation was applied to political rights.

⁵⁵ EPI data is from Emerson et al. 2012. The data on international environmental agreement ratifications is from Ronald B. Mitchell. 2002-2014. *International Environmental Agreements Database Project (Version 2013.2)*. Available at: <http://iea.uoregon.edu/>. Date accessed: 7 January 2014.

⁵⁶ The data are taken from the World Development Indicators. Date accessed: 7 January 2014.

⁵⁷ This data comes from the Notre Dame Global Adaptation Index (ND-GAIN), available at: <http://index.gain.org/ranking>. Date accessed: 1 March 2014

trade flow variable based on the one employed by Prakash and Potoski using trade flow data from the Correlates of War Trade Dataset and our own data on TCG participation.⁵⁸ This indicator measures how much a country trades with all other countries in the world, weighted by its trading partners' participation in TCG. As a proxy, we also consider the number of firms from each country that have received ISO14001 certification, a voluntary transnational environmental management standard. One of the most interesting results that Prakash and Potoski's research has revealed is that ISO14001 certification is driven to a great extent by supply chain-based demand from firms in pro-environmental jurisdictions.⁵⁹ We would therefore expect it to correlate with participation in TCG to the extent supply chain pressures also drive engagement with TCG. Finally, the impact of transnational environmental NGOs on the propensity to engage in TCG is considered by using data developed by Bernauer et al. and Andonova on organizational membership across countries in the International Union for Conservation of Nature (IUCN).⁶⁰

Two additional measures of connectivity are also considered as robustness checks. One, we employ Hick's et al.'s (2012) measure of "green aid" to see how much aid a country receives that is earmarked for green projects.⁶¹ Such green aid might be expected to drive participation in TCGs, particularly in developing countries, since some development agencies have played an active role in promoting uptake of voluntary standards and CSR schemes by businesses.⁶² Two, we consider the amount of foreign direct investment (FDI) a country receives, as recorded in the World Development Indicators database. In doing so, we again follow the work of Prakash and Potoski who find that FDI tends to stimulate adoption of environmental standards in a manner similar to international trade.⁶³

Finally, we also include several control variables that aim to account for underlying country characteristics that may affect the variation in the total number of potential adopters of TCG. In doing so, we follow established conventions in the literature on the adoption of transnational standards by employing variables intended capture differences in national size and wealth. In general, states that are larger or wealthier are *ceteris paribus* expected to have more transnational initiatives. With more potential sub-state and non-state participants, who themselves have more material resources, there is likely a greater probability that we will observe a larger number of actors participating in TCG, independently of any of the factors discussed above. We therefore include a measure of countries' GDP per capita to capture the wealth effect. We also use the amount of CO₂ that a country emits. Because CO₂ emissions are largely a function of population and total GDP,—it is closely correlated with both—this allows us to control for the different sizes of countries' economies and the total number of "emitters." As robustness checks,

⁵⁸ The formula for calculating this variable is:

$$\text{International trade}_i = \sum_j \text{TCG}_j * (\text{Exports}_{ij} / \text{Exports}_i)^2$$

Here, TCG_j is the measure of country j 's participation in TCG, Exports_{ij} is country i 's exports to country j , while Exports_i is country i 's total exports. See Prakash and Potoski 2006, 125, for further details. The Correlates of War Trade Dataset is available at:

<http://www.correlatesofwar.org/COW2%20Data/Trade/Trade.html>. Accessed 1 March 2014.

⁵⁹ Prakash and Potoski 2006.

⁶⁰ See Bernauer et al. 2013; and Andonova 2014.

⁶¹ Hicks et al. 2008.

⁶² Fransen 2012.

⁶³ Prakash and Potoski 2007.

we also use measures of GDP, GHGs and population size.⁶⁴ Data on GDP Per Capita, population and GDP are from the World Bank's World Development Indicators database and the data on CO2 emissions and GHGs are from the World Resources Institute's Climate Analysis Indicators Tools (CAIT) database. We employ the natural log of these variables to facilitate analysis.

5. Empirical Analysis and Findings

Because the dependent variable is a count of the instances of participation in TCG across countries a Poisson or negative binomial regression model is usually considered most appropriate. These models do not assume a normal distribution and accommodate variables bounded at zero. The Poisson model is simpler, but generates inefficient estimates and inflated z-scores when data exhibit "over-dispersion" since it assumes that the dependent variable's conditional variance is equal to the conditional mean.⁶⁵ The negative binomial model, by contrast, is designed to handle data of this sort. Standard tests confirmed that over-dispersion was an issue for the TCG participation data, and we therefore opted to use a negative binomial regression model measured by maximum likelihood to generate out estimates.⁶⁶

The main regression results are reported in table 2. Column one reports the baseline model. Column two shows estimates from an identical analysis in a sample that excludes the two largest initiatives as discussed earlier. Column three then reports estimates for the sub-sample of developing states only.⁶⁷ While considering participation in developing countries reduces substantially our sample (see Table 2), doing so is important for assessing the robustness of our core hypotheses on the role of domestic politics and institutional variables for several reasons. First, by considering the sub-sample of developing countries we take into account the fact that incentives for participation in TCG might vary across groups of states for which the Kyoto Protocol imposes specific emission targets (Annex I, including industrialized countries) and those without such targets (so-called "non-Annex 1" states). Moreover, Annex I countries typically have greater resources to initiate such transnational programs, which in turn may affect sub-national actor participation.⁶⁸ While the model controls for wealth, and thus takes into account by proxy a number of important differences between Annex I and non-Annex I countries, we seek to further substantiate the extent to which domestic political factors shape "bottom up" participation in TCG in the sample of developing countries, independent of their differential engagement in the international climate change regime and the resources they can bring to TCG. Such estimates are also important from a policy perspective, given that international cooperation under the UNFCCC is increasingly likely to depend upon "bottom-up" efforts by developing and industrialized countries alike.

⁶⁴ The measure of GHGs includes CO₂ as well as other GHGs, such as nitrous oxide (N₂O), methane (CH₄), perfluorocarbon (C_xF_y, PFC), hydrofluorocarbon (HFC) and sulfur hexafluoride (SF₆).

⁶⁵ See Long 1997, 216-240.

⁶⁶ To determine the appropriate regression model several tests can be conducted. These include using the Stata's *predict* command after estimating Poisson and negative binomial regressions and comparing the conditional means and variances; using the *estatgof* command to determine the model's goodness-of-fit after a Poisson regression; and a likelihood ratio test of the hypothesis that the over-dispersion parameter, α , is not equal to zero after negative binomial regression. These all confirmed that over-dispersion was present and therefore that the negative binomial regression model is preferred to the Poisson regression model. For further details on determining the appropriate model for count data see Cameron and Trivedi 1998, 77-79.

⁶⁷ We use the UNFCCC's distinction between Annex I and non-Annex I states to restrict the sample. However, alternative ways of doing so (using a sample of only non-OECD states, for example) make no difference to the final results. The non-Annex I sample does not include the two outlier initiatives because they only have European members.

⁶⁸ Held, Roger, and Nag 2013; Bulkeley et al. 2014.

Table 2: Regression Results

Variables	1 TCG	2 TCG-2	3 TCG (non-Annex 1)
Institutions			
Civil Liberties	0.471*** (0.096)	0.233*** (0.088)	0.354*** (0.105)
Federalism	0.577** (0.276)	0.181 (0.254)	0.437 (0.352)
Climate Policy			
EPI Climate Policy	0.029*** (0.007)	0.040*** (0.007)	0.0224*** (0.00835)
Int'l Enviro Agreements	0.012* (0.006)	0.005 (0.005)	0.0127 (0.0104)
Connectivity			
Int'l Trade (spatial weight)	-0.000 (0.000)	0.000 (0.000)	-1.34e-08 (1.73e-07)
ISO 14001	0.000** (0.000)	0.000 (0.000)	3.44e-05* (2.01e-05)
NGO Network	0.000 (0.015)	0.036*** (0.014)	0.0217 (0.0356)
Controls			
GDP Per Capita (log)	-0.039 (0.108)	-0.015 (0.100)	-0.228* (0.118)
CO ₂ Emissions (log)	0.607*** (0.081)	0.741*** (0.077)	0.589*** (0.0984)
Constant	-6.624*** (1.297)	-7.888*** (1.234)	-4.524*** (1.482)
Alpha (log)	-0.205 (0.136)	-0.395*** (0.147)	-0.354* (0.185)
Observations	115	115	79

Notes: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

The empirical results provide strong support for the core hypotheses related to the institutional and policy effects. H1 postulates a positive relationship between agency and participation, and we indeed find that civil liberties are strongly and robustly correlated with participation, achieving statistical significance across all three models. In the first baseline model, for example, increasing civil liberties one standard deviation above the mean (the difference between, for example, India and Italy) results in an additional 9 instances of participation in TCG by state and sub-state actors. Interestingly, the effect is even stronger if only non-Annex I countries are included. Federalism emerge as a significant predictor in our baseline model of sub- and non-state participation, but not in the sample where the two largest initiatives are excluded or for non-Annex I countries. This can be accounted for by the fact that by excluding the two largest initiatives of European cities, the smaller samples lose important variation of participation in TCG by sub-national authorities, whose agency indeed is more likely to be dependent on institutional decentralization.

Turning to the policy hypothesis (H2), we find that the ambitiousness of a government's climate change policies also has a positive effect on participation in TCG. The climate policy variable shows that early, ambitious national climate policies (recall we look only at countries' policies before the bulk of TCG emerged) have a strong and significant effect on TCG participation across all models. In model one, moving one standard deviation above the mean increases TCG participation by 26, suggesting that climate policy is particularly important for TCG participation. The IEA ratifications variable performs less well as an indicator, however, achieving statistical significance only in the first model, and demonstrating a significantly weaker substantive effect (an increase from the mean to one standard deviation above yields only 2 additional instances of participation). These findings highlight the significance of domestic policies related to climate change, which may be related to but not necessarily identical with international commitments under the UNFCCC, and their spillover effect on the participation in transnational governance by sub-state and non-state actors as outlined by H2.

Our other explanatory variables, which are used to evaluate the relevance of transnational "connectedness" in motivating the engagement in transnational governance more broadly, also yield some interesting results. Surprisingly, our measure of TCG-weighted international trade never reaches standard levels of statistical significance, does not consistently point in the expected direction, and shows limited substantive effects.⁶⁹ This suggests that economic interconnectedness is not as important for participation in TCG as it appears to have been for some private transnational standards.⁷⁰ Levels of ISO 14001 certification are, however, positively correlated with participation in TCG, and statistically significant in our first and third models, suggesting that supply chains and business commitment to transnational environmental sustainability standards may play a role. However, as with international trade, the effect is relatively small. These findings suggest that while there may be similarities between the TCG and other fields of transnational environmental governance, the mechanisms that stimulate participation may be quite different.

The measure of the presence of transnational NGO networks in a country also is significant and substantively small in our second model, with a one standard deviation above the mean increase in NGOs leading to five additional participants in TCG. These findings suggest that while transnational advocacy organizations may be important in facilitating the agency of non-state actors domestically and their capacity to engage in transnational initiatives, the extent of such

⁶⁹ Prakash and Potoski 2006.

⁷⁰ See Prakash and Potoski 2006; and Garcia-Johnson 2001.

effect is likely to be influenced by more fundamental opportunity structures associated with domestic institutions and policies.⁷¹

Finally, turning to our control variables, our measure of economic wealth (GDP Per Capita) is insignificant in two of the models. Interestingly, it achieves statistical significance in the model that considers only non-Annex I states, but is negatively signed. Wealth therefore appears to have a highly ambiguous and even possibly negative affect here. By contrast, participation seems to be driven to a far greater extent by the size of an economy as measured by the scale of a country's contribution to climate change. CO₂ emissions are strongly and positively correlated with participation across all models. For instance, in our first model a one standard deviation rise above the mean in the level of CO₂ that a country produces corresponds to an additional 40 instances of participation. The effect is similar in the other models. These results may be interpreted to suggest that large CO₂ polluters are likely targets of transnational climate action, all else equal.

Robustness Tests

To increase confidence in our findings, we undertook a range of robustness tests. Table 3 reports the results of seven specifications of our baseline regression model, using alternative measures or proxies of our core explanatory variables. Each is motivated by important empirical and methodological concerns. With respect to the climate policy variable, for example, we may be concerned about endogeneity problems, as noted earlier in the paper. In our main model, we address this concern by using data on the EPI Climate Policy indicator from year 2000 (see Table 1), keeping in mind that the large majority of TCG initiatives have been started after year 2000. Here, we also substitute the EPI Climate Policy variable with air pollution as a proximate measure of environmental policy that relates to local pollutants and thus is unlikely to be directly or strongly affected by TCG initiatives. This variable produces a significant effect in the expected (negative) direction (Table 3, column one).⁷² Higher levels of air pollution are therefore associated with lower levels of participation in TCG. Column two of Table 3 then reports the regression results, using the wider EPI measure of environmental performance instead (column two). Again, the co-efficient is significant and in the expected direction. All of these tests therefore suggest that a government's exogenous commitment to climate change and environmental issues is what leads to greater participation in TCG, since we would expect no association between participation and these other variables if causality ran in the opposite direction.

We then tested for potential spurious relationship by substituting the main climate policy variable with measures of citizen membership in environmental groups and vulnerability to climate change, which may be expected to drive both TCG participation and climate policy (columns three and four). However, these variables proved to be insignificant predictors of participation and together suggest that it is government policy and not citizen activism or concern about climate change that drives participation.

⁷¹ See Andonova 2014; and Keck and Sikkink 1998.

⁷² It falls just short of standard levels of statistical significance in the second, with a p-value just above the .1 cut off in most specifications.

Table 3: Alternative Specifications of the Baseline Model

Variables	1	2	3	4	5	6	7
Civil Liberties	0.450** *	0.444** *	0.500** *	0.500** *			
	(0.0975)	(0.106)	(0.119)	(0.119)			
Federalism	0.848** *	0.731**	0.777** *	0.777** *	0.730** *	0.574**	0.545**
	(0.0283)	(0.288)	(0.29)	(0.29)	(0.272)	(0.26)	(0.275)
EPI Climate Policy					0.0314* **	0.0284* **	0.0315* **
					(0.0071 9	(0.0067 9)	(0.0067 1)
Int'l Enviro Agreements	0.0199* **	0.0163* *	0.0189* **	0.014	0.0200* **	0.00537	0.0178* **
	(0.0062 2)	(0.0065 4)	(0.0063)	(0.0094 4)	(0.0057 6)	(0.0062 9)	(0.0061 6)
Int'l Trade (spatial weight)	-2.33E- 07	-8.86E- 08	-8.86E- 08	-1.96E- 07	-3.34E- 08	-1.03E- 07	-3.66E- 08
	(1.84E- 07)	(1.88E- 07)	(1.88E- 07)	(1.86E- 07)	(1.70E- 07)	(1.68E- 07)	(1.68E- 07)
ISO 14001	4.40e- 05**	4.87e- 05**	4.87e- 05**	4.80e- 05**	3.97e- 05**	5.20e- 05***	4.14e- 05*
	(2.15E- 05)	(2.21E- 05)	(2.21E- 05)	(2.21E- 05)	(1.96E- 05)	(1.98E- 05)	(2.29E- 05)
NGO Network	- 0.00251	- 0.00068 3	- 0.00068 3	- 0.00215	0.00444	0.00189	0.00667
	(0.0163)	(0.0158)	(0.0158)	(0.0162)	(0.0138)	(0.0138)	(0.0152)
GDP Per Capita (log)	- 0.404** *	- 0.376** *	- 0.376** *	- 0.417** *	0.103	-0.16	0.358** *
	(0.088)	(0.0987)	(0.0987)	(0.143)	(0.101)	(0.111)	(0.133)
CO ₂ Emissions (log)	0.547** *	0.517** *	0.517** *	0.519** *	0.550** *	0.615** *	0.593** *
	(0.0701)	(0.0813)	(0.0813)	(0.0738)	(0.0843)	(0.0784)	(0.0766)
Air Pollution	- 0.00419 *						
	(0.0024 4)						
EPI		0.0278* (0.0161)					
Vulnerability			0.0076 (0.0243)				

Env Group. Membership				0.365			
				(0.757)			
Polity					0.0656*		
					**		
					(0.0192)		
Voice and Accountability						1.164**	
						*	
						(0.186)	
Political Rights							1.261**
							*
							(0.214)
Constant	-	-	-	-	-	-	-
	1.773**	3.099**		6.330**	6.550**	6.015**	
	*	*		*	*	*	
	(0.598)	(0.948)		(1.353)	(1.252)	(1.282)	
Observations	137	115	137	44	106	115	115

Notes: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 3 also presents the results of our main model using a variety of different measures of domestic institutions to ensure that the institutional effect is not simply an artifact of the particular indicator we use. The results show that no matter how we measure the variation in institutional opportunities for agency by non-state or sub-state actors - whether using Polity IV (column five), the World Bank's Governance Indicator (column six) or the Freedom House measure of political rights (column seven) - our results do not change significantly.

Finally, table 4 reports in a summary format the effects of additional control variables (noted as column headings) on the significance of our core explanatory factors. Panel A adds two additional connectivity variables to our main model to ensure that some omitted variables are not driving our results. The first column shows our basic model with FDI added. The second shows our full model with green aid included. The last shows the truncated non-Annex I model with the green aid variable added. None of these variables appear to be significant predictors of participation, nor does their addition affect the core institutional and policy coefficients to any great extent. Finally, Panel B reports estimates of the basic model using measures of GHGs (as opposed to just CO₂), GDP and population size as robustness checks with no major difference in effect or significance level.

Table 4: Robustness Tests: Additional Control Variables

Panel A			
	Connectivity Variables		
	FDI	Green Aid (1)	Green Aid (2)
Civil Liberties	0.469*** (0.121)	0.389*** (0.0958)	0.362*** (0.0990)
Federalism	-0.132 (0.396)	0.377 (0.334)	0.359 (0.335)
EPI Climate Policy	0.0402*** (0.00823)	0.0199*** (0.00760)	0.0220*** (0.00785)
Int'l Enviro Agr.	0.0214** (0.00984)	0.0111 (0.00978)	0.00894 (0.00997)
Observations	75	102	79

Panel B			
	Control Variables		
	GDP (log)	Population (log)	GHGs (log)
Civil Liberties	0.473*** (-0.0896)	0.282** (0.115)	0.541*** (-0.105)
Federalism	0.553** (-0.257)	0.872*** (0.332)	0.564** (-0.281)
EPI Climate Policy	0.0120** (-0.00588)	0.00786 (0.00754)	0.0137** (-0.0067)
Int'l Enviro Agr.	0.00949 (-0.00594)	0.0229*** (0.00776)	0.0144** (-0.00642)
Observations	109	115	114

Notes: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

In sum, the analysis presents consistent evidence that domestic politics influence participation in TCG. The findings show that the agency of sub- and non-state actors, particularly the civil liberties they enjoy, is a powerful driver of TCG participation. Also important, however, are the policies adopted by governments. Countries with governments with that are more proactive on climate change and the environment tend to exhibit greater participation in TCG. Given that the domestic roots of transnational governance have been to a large extent underplayed by the existent literature, the findings suggest that scholarship on transnational governance would benefit from deeper engagement with domestic politics.

6. Conclusion

This paper has presents new data describing how sub- and non-state actors' participation in TCG varies across countries. It posits that domestic politics affect participation in TCG, and tested several hypotheses deriving from these ideas, as well as alternative explanations that focus instead on international-level factors. From a theoretical perspective, the analysis suggests that

greater emphasis should be placed on the interaction between the domestic political environment in different states and transnational governance in the climate realm and beyond. Processes of diffusion through supply-chain, trade and NGO networks may be important, but it seems clear that their effects are crucially mediated by country-level factors.⁷³ Domestic institutions and policies shape the extent to which societies contribute to and benefit from transnational forms of governance, which have proliferated rapidly in the last twenty years and now form an important element of global governance. The paper's argument invites further systematic explorations of how domestic politics interacts with transnational governance mechanisms across issue areas, including standards for social, labor, or environmental protection, commercial standards and dispute-resolution bodies, transgovernmental cooperation, and other areas. As this paper indicates, such analyses would likely benefit from systematic data collection on the participation of actors beyond the nation state.

The implications for policy and cooperation are similarly important, although not unidirectional. The international climate regime is increasingly moving toward a "bottom up" model in which country's commitments are based on national policies rather than an internationally negotiated "burden sharing" treaty, like the Kyoto Protocol, that assigns each country a target. In this context, the relevance of domestic politics and the engagement of sub-national and non-state actors in transnational governance is likely to be of growing importance. Our findings show that participation in TCG is widespread, with over 14,000 cities, companies, civil society groups, and other sub- and non-state actors joining TCG initiatives over the last two decades. Further research is needed on the effects of this participation, but the wide scope of TCG identified in this paper suggests that TCG has at least the potential to make a substantial impact on climate change within the broader regime.

The paper's findings also identify domestic conditions under which TCG is likely to be more or less relevant. The correlation between domestic institutions, national climate policy, and participation in TCG means that TCG will be most prevalent in countries that are already taking the necessary steps to combat climate change. In "leader" countries, e.g. most states in Europe, TCG may reinforce and improve national policies, but national action would likely be strong even in the absence of TCG. By the same token, TCG participation will be low in "laggard" countries with constrictive institutions and weak climate polices. Unfortunately, a number of countries in the top quartile of global emissions, such as Nigeria, Pakistan, Venezuela, Egypt, Saudi Arabia, or Russia, fit one or more of the criteria identified in this paper. At the two extremes, then, TCG participation is strongest in the countries where it is least needed, and weakest in the countries it would be of greatest use in substituting for a lack of national climate policy.

However, it is in the intermediate cases where the role of TCG is likely to be most important. Our analysis suggests that in advanced economies with substantial civil liberties and a degree of decentralization, but rather limited national commitment to climate (for example: the US, Canada and Australia), the agency of non-state and sub-state actors is likely to be a key factor supporting meaningful national engagement. Similarly, in countries taking active steps to address climate, but where limitations to local and non-state agency may exist (e.g. China, Indonesia, or South Africa), TCG provides a mechanism for transnational actors to strengthen climate policy. Because most of the world's current and future emissions are likely to come from countries in these intermediate categories, the paper's findings suggest that TCG will be a crucial element of climate governance. Policymakers should therefore understand the way in which these policy tools will be constrained by domestic level factors, and seek to mitigate these blockages when designing TCG initiatives.

⁷³ See recent articles by Berliner and Prakash 2014 and Bartley 2014 that also engage in this debate, albeit from different perspectives.

Appendix

Table 5: Correlation Matrix

	Civil Liberties	Federalism	EPI Climate Policy	IEAs	Int'l Trade	ISO 14001	NGO Network	GDP Per Capita	CO ₂ Emissions
Civil Liberties	1								
Federalism	0.137	1							
EPI Climate Policy	0.1319	0.1525	1						
IEAs	0.657	0.186	-0.2276	1					
Int'l Trade	0.051	0.2104	-0.1025	0.0182	1				
ISO 14001	0.0228	0.0232	-0.1332	0.2033	0.014	1			
NGO Network	0.3437	0.4109	-0.1519	0.4473	0.0954	0.2363	1		
GDP Per Capita	0.6208	0.17	-0.5924	0.6184	0.0037	0.1556	0.2988	1	
CO ₂ Emissions	0.1065	0.4362	-0.6025	0.4357	0.1242	0.4514	0.5045	0.4246	1

Table 6: Collinearity Diagnostics

Variable	VIF	SQRT VIF	Tolerance	R-squared
Civil Liberties	2.59	1.61	0.38	0.61
Federalism	1.49	1.22	0.67	0.33
EPI Climate Policy	2.74	1.66	0.36	0.63
IEAs	2.66	1.63	0.37	0.62
Int'l Trade	1.07	1.04	0.93	0.07
ISO14001	1.41	1.19	0.71	0.29
NGO Network	1.70	1.31	0.58	0.41
GDP Per Capita	3.26	1.81	0.31	0.69
CO ₂ Emissions	3.69	1.92	0.27	0.73
Mean VIF	2.29			

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