



# Rethinking polycentricity: on the North–South imbalances in transnational climate change governance

Cille Kaiser<sup>1,2</sup>

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## Abstract

The transnational climate change governance (TCCG) landscape, led by sub- and non-state actors including businesses, municipalities, and NGOs, holds legitimate potential for tackling persisting climate injustices, in part by virtue of its polycentric character. However, while in theory polycentric governance systems could serve to correct structural power imbalances, the geography of TCCG remains remarkably uneven. This article explores this puzzle in the context of polycentric governance theory and the allegedly paradoxical relationship between polycentricity and equity. Two interrelated empirical and analytical research questions are addressed: (1) How is TCCG organized geographically along the global North–South divide? And, based on the geography of TCCG, (2) Does its polycentric character contribute toward more equitable governance across the global North and South? Following a large-*N* analysis of a novel dataset containing 174 governance arrangements and 1196 stakeholders with decision-making powers, I argue that the geography of TCCG is remarkably resistant to change, gravitating unmistakably toward the global North and its existing diplomatic hotspots. I argue that the TCCG system currently in place resembles a system of concentrated polycentricity—a product of an overarching system of rules shared with the international regime that could, in turn, potentially explain the persisting North–South inequities in a still seemingly increasingly polycentric climate.

**Keyword** Transnational governance · Climate change · Polycentricity · Equity · North–South divide

## 1 Introduction

While often framed as an issue that naturally transcends sovereign state lines and socio-economic inequalities, the global climate problem is notoriously unbalanced. Due to global asymmetries in global greenhouse gas (GHG) emissions and the associated impacts—a burden carried largely by those least responsible for its cause—tensions between the global North and South have complicated international climate negotiations

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✉ Cille Kaiser  
c.kaiser@uu.nl

<sup>1</sup> Vrije Universiteit Amsterdam, De Boelelaan 1105, 1081 HV Amsterdam, The Netherlands

<sup>2</sup> Utrecht University, Copernicus Institute of Sustainable Development, Utrecht, The Netherlands

from the outset and throughout. As a result, the international system of states, operating under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC), struggles to craft and maintain a one-size-fits-all approach to governing climate change. While attempting to address said imbalances through their principle of “common but differentiated responsibilities and respective capabilities,” the North–South tensions between the 198 parties to the UNFCCC continue to persist to date, resulting, over and over, in “political deadlock” (Castro, 2016, p. 379).

Fortunately, the governance of climate change is not exclusively confined to the UNFCCC regime. Cross-border sub- and non-state climate action has grown exponentially over the last twenty years, resulting in what scholars now call a transnational climate change regime or “regime complex” (Abbott, 2012; Widerberg & Pattberg, 2017). This transnational governance system is highly polycentric, stimulating greater diversity among agents and stakeholders. TCCG therefore presents a promising governance framework from within which to address the equity deficits arising from the asymmetries expressed above. Polycentric (climate) governance has the potential to increase transparency, promote more widespread participation and cooperation across a more diverse demographic, and stimulate competition between different regimes, preventing the accumulation of power (E. Okereke, 2018; Ostrom, 2010; Van Asselt, 2014). In theory, TCCG could therefore allow for marginalized peoples to lay claim to a seat at the table where they otherwise would struggle to.

While this sounds promising, Chukwumerije Okereke (2018) observes that the relationship between polycentric governance and equitable governance is, in fact, puzzling: a polycentric system might well be counterproductive to this end. For instance, polycentricity might place more resourceful agents in a favorable position *vis-à-vis* those who do not have the resources to navigate this complex landscape, and, especially through the adoption of market-based mechanisms in TCCG, provoke freeriding, forum shopping, and exploitation (Okereke, 2018, p. 332; Green, 2013, p. 21; Ostrom, 2010, p. 555). As Okereke argues, the relationship between polycentricity and equity is, therefore, “complex and even seemingly paradoxical” (2018, p. 332). This paper explores this paradox further.

These theoretical considerations all point directly to empirical considerations, which brings me to the puzzles at the heart of this article. In the context of TCCG, two research gaps hinder a more comprehensive understanding of the relationship between polycentric and equitable governance. First, the academy has not kept up with the rapid expansion of TCCG, resulting in reviews of databases that are incomplete or simply outdated. Compounding this problem, available databases vary considerably as they adhere to deviating selection criteria, leaving ambiguous the exact arrangements of TCCG today (Widerberg & Stripple, 2016). Second, because most studies into TCCG have focused on its interplay with the international regime and/or its effectiveness in reducing GHG emissions or advancing climate resilience and adaptation, the *geography*—that is, the spatial distribution of these various governing bodies—of TCCG remains on the margins of contemporary scholarship (Pattberg, 2012; Bulkeley et al., 2014, Chapter 6). Because on the global level equity deficits in climate governance are largely driven geopolitically, understanding the geography of TCCG is imperative to understanding whether its polycentric character has served to amend global equity deficits—particularly between the North and South.

To this end, I address two interrelated research questions. First, how is TCCG organized along the global North–South divide<sup>1</sup>? Secondly, based on the geography of TCCG, does its polycentric character contribute toward more equitable governance between the global North and South?

These questions are addressed through a large-*N* qualitative case study design, based on a two-step mapping approach employed in earlier studies aimed at mapping (T)CCG (Abbott, 2012; Bulkeley et al., 2012, 2014; Pattberg et al., 2014). Step 1 synergizes recent (academic) efforts to mapping the landscape of TCCG, including several available databases, into one coherent dataset and collects complimentary data necessary to uncover the geography of TCCG. This dataset is composed according to stringent and replicable criteria, similar to those employed in earlier studies (Bulkeley et al., 2012, 2014; Hale & Roger, 2014; Pattberg et al., 2014; Roger et al., 2017). Step 2 sees this novel database transformed into a series of geographic maps, depicting the North–South dimensions of contemporary TCCG by revealing not only the geographic locations of all identified headquarters (*N*=174) but also of all agents and stakeholders with decision-making powers (*N*=1196). In doing so, this research contributes to contemporary scholarship by gathering, organizing, and mapping the empirical reality of polycentric climate change governance on the transnational level—a project imperative to further understanding the relationship between polycentric or fragmented governance on the one hand, and equitable governance on the other.

I argue that while TCCG has expanded considerably since the publication of previous large-*N* studies, its geography remains remarkably unaffected, gravitating unmistakably toward the global North and its existing diplomatic hotspots. I therefore liken the TCCG landscape to a system of concentrated polycentricity: a notion that describes systems that are institutionally polycentric, but spatially centralized (Gallemore & Munroe, 2013, p. 1201; Shin et al., 2022, p. 1). Taking into account that TCCG is, in fact, part of an even larger polycentric system that encompasses the international (UNFCCC) regime, I argue that (1) The uneven geography of TCCG, (2) Its tendency to settle in existing centers of international diplomacy, and (3) The large number of TCCG initiatives that involve public actors and/or explicitly endorse the international regime and its mandate(s) all point at a dominant “overarching system of rules” necessary for polycentric systems to function as actual systems. While this largely corresponds with polycentric governance theory, the question that challenges the application of this theory in the context of (T)CCG remains: who gets to write these rules?

This paper is organized as follows. The following section outlines the state of the art on the uneven geography of TCCG. Section 3 introduces the polycentricity-equity paradox identified by Okereke (2018), after which Sect. 4 summarizes the main postulates of polycentric governance theory in more detail. Section 5 outlines the research design, including the measures used for case selection and the overall database compilation

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<sup>1</sup> At its core, of course, this notion posits a false dichotomy: The Earth’s equator does not determine the logic of the socioeconomic world order. Rather, the North–South divide should be understood as an analytical framework within which to juxtapose developed and developing states on a global scale (Uddin, 2017). I therefore follow others in their approach to this dichotomy in that the “global North” is referred to with reference to those countries that are either a member of the Organization for Economic Co-operation and Development (OECD) and/or a high-income economy according to the World Bank (Blicharska et al., 2017, p. 22). Those countries that do not meet either of these requirements are referred to as the ‘global South’ because they are predominantly located in Africa, South America, and South Asia (Blicharska et al., 2017, p. 22).

process, and after presenting the results in Sect. 6, I turn to my second research question in Sects. 7 and 8, where I analyze these findings in light of polycentric governance theory, and suggest some avenues for future research.

## 2 Setting the scene: the uneven geography of TCCG

Transnational climate change governance (TCCG) initiatives, broadly understood as “non-governmental transboundary regimes” aimed at tackling climate change (Pattberg, 2012, p. 97), have rapidly increased in number since the early 2000s.<sup>2</sup> This has resulted in a complex web of (semi-)privately led arrangements aimed at governing climate change-related problems, operating largely independently from one another (Bulkeley et al., 2014, p. 63). Actors engaged in TCCG today include, but are not limited to, municipalities involved in numerous city networks, business actors seeking to formalize their commitment to lowering their carbon footprint through (public-)private networks and/or certification schemes, and large intergovernmental organizations like the World Bank seeking to actively engage sub- or non-state actors in their operations.

This rapid diversification of actors involved in governing climate change has motivated an entire new line of research in GEG studies seeking to understand the dynamics and overall effects of transnational regimes (see Roger & Dauvergne, 2016). Prominent topics of inquiry include institutional interplay (e.g., Oberthür & Stokke, 2011), effectiveness (e.g., Dzebo, 2019; Michaelowa & Michaelowa, 2017), accountability (e.g., Balboa, 2017; Chan & Pattberg, 2008; Widerberg & Pattberg, 2017), and legitimacy (e.g., Di Gregorio et al., 2020; Pattberg & Enechi, 2009). Given the North–South tensions that have pervaded the UNFCCC regime from the outset and throughout (Huggins & Lewis, 2018, pp. 95–96), the geospatial distribution of- and participation in TCCG initiatives has also been a topic of investigation.

Among the first studies to explore the geographical dimensions of TCCG was Bulkeley and colleagues’ book on TCCG, and in particular their chapter on its “uneven geography” (2014, Chapter 6). Based on a database containing 60 initiatives, the authors conclude that “actors from high-income countries have been the primary initiators of the transnational governance of climate change up until now” (Bulkeley et al., 2014, p. 122), but maintain that participation in these initiatives on behalf of the global South remains noteworthy. The Middle East and North Africa are identified as the most marginally represented regions in TCCG, followed by Oceania and Sub-Saharan Africa (Bulkeley et al., 2014, p. 124).

Similar results are presented by Roger and colleagues (2017) in their study into the comparative geography of participation in transnational climate change governance based on a 2012 dataset ( $N=71$ ). Perhaps the most comprehensive and certainly the most contemporary overview of the geospatial dimensions of global climate governance is provided by the CONNECT-project, part of the same research project as Pattberg et al.’s (2014) introduced above (Widerberg & Pattberg, n.d.). The CONNECT-homepage (see Widerberg & Pattberg, n.d.) offers an interactive overview of the global climate regime based on a dataset most recently updated in April 2017 ( $N=89$ ).<sup>3</sup> Striking is that no governance arrangements

<sup>2</sup> Where studies published in 2012 and 2017 (Abbott, 2012; Roger et al., 2017) identified 60 and 71 TCCG arrangements, respectively, this study identifies more than double that ( $N=174$ ) following similar selection criteria.

<sup>3</sup> Including international or state-led initiatives.

are headquartered in Africa or Oceania, but by and large, the results mirror those of the abovementioned studies into TCCG, showing considerable regional differences between Europe and the USA on the one hand, and the rest of the world on the other.

What potentially explains these geographical imbalances is TCCG's institutional make-up. What sets transnational regimes apart from international regimes is that the rules, norms, and standards set by the former are not usually legally binding, relying on voluntary and/or market-regulated involvement instead (Pattberg, 2012, p. 97). Transnational regimes therefore tend to take a “soft,” bottom-up approach to governance, and, consequentially, are more flexible and more easily accessible to a wider demographic (Fogarty, 2007, p. 984). While this appears at first as a considerable advantage vis-à-vis a more centralized, top-down system, this quality has proved to be a double-edged sword. On the topic of an increasingly polycentric climate governance system, Okereke (2018, p. 332) argues that “there is a legitimate concern that some of these [governance] sites have been created or at least usurped by actors with greater resources for their own advantages and operate in ways that exacerbate existing inequalities.” This study explores the uneven geography of TCCG in the context of Okereke's claim concerning the paradoxical relationship between polycentricity and equity. For the purpose of clarity, I outline his argument in the section that follows, after which Sect. 4 outlines the main postulates held by polycentric governance theory in more detail.

### 3 The polycentricity-equity paradox

The institutional features of TCCG have motivated a significant body of the literature on its ethical implications. Researchers have been concerned with, among others, the implications of using market-regulated practices for the provision of public goods, such as carbon offsetting and trading (Aldred, 2012; Caney, 2010), the justice implications of climate voluntarism (Barkay, 2009; Dominelli, 2016; Okereke, 2007), and the rising trend toward “greenwashing”—a deliberate practice of disinformation adopted by organizations who exaggerate their environmental performance, often for the sake of claiming (corporate) legitimacy (Cormier & Magnan, 2015; Torelli et al., 2020). While these dominantly interest-based perspectives on TCCG in themselves open up a plethora of normative concerns, zooming out on the system level complicates the matter even further (Bulkeley et al., 2014, Chapter 3).

One of TCCG's decisive features is its polycentric character, involving “many centers of decision-making that are formally independent of each other” (Ostrom et al., 1961, pp. 831–832; found in E. Ostrom, 2010, p. 552). Elinor Ostrom (2010, 2012), a pioneer on the subject of polycentric systems for the provision of public goods, argues that one of the advantages of polycentric governance is its ability to achieve “more effective, *equitable* and sustainable outcomes at multiple scales” (E. Ostrom, 2010, p. 552, emphasis added). Jordan and colleagues (2018, p. 13) contend that polycentric climate change governance can indeed be “more inclusive and equitable” but, like Ostrom, concede that polycentric systems are also “easily dominated by powerful actors who ‘game’ the system and are unaccountable”.

Hence, Okereke (2018, p. 332) argues that the relationship between polycentricity and equity is “complex and seemingly paradoxical.” While concerns about equity can be considered to have been a decisive factor in shaping the polycentric climate governance system that we know today, and polycentricity might be a necessary condition to that end, Okereke

(2018, pp. 331–332) argues that TCCG is “driven by a neoliberal agenda” and that its polycentric character might “[create] spaces for resource-rich Northern actors—including non-governmental organizations and businesses—to further exploit the poor South under the guise of taking climate action.” Even when there is no ill-intent at play, he argues, polycentric systems are difficult to navigate without the appropriate resources and might therefore favor actors from high-income economies at the expense of actors from developing states.

An important side note is that these arguments pertain to polycentric systems in general, and not TCCG in particular. Whereas the TCCG system is necessarily polycentric, polycentric systems are not necessarily exclusively transnational. This study employs polycentric governance theory, and in particular Okereke’s (2018) observation on the polycentricity-equity paradox, as an explanatory framework to make sense of the empirical problem at the heart of this research: the persistently uneven geography of TCCG. The following section outlines the main postulates held by polycentric governance theory that will be explored in the analysis.

#### 4 Theory: polycentricity, monocentrism, and the in-between

Introduced as a theoretical concept by Michael Polanyi (1951/1998) and introduced to (environmental) governance studies by Elanor and Vincent Ostrom (V. Ostrom et al., 1961; E. Ostrom, 2010, 2012), the notion of polycentric governance has become a key framework within which to study and understand complex, multilayered governance systems (Aligica & Tarko, 2012). As defined in their seminal work on the organization of multilevel governance in metropolitan areas, Vincent Ostrom and colleagues (1961) define polycentric systems as having

many centers of decision making that are formally independent of each other...To the extent that they take each other into account in competitive relationships, enter into various contractual and cooperative undertakings or have recourse to central mechanisms to resolve conflicts, the various political jurisdictions in a metropolitan area may function in a coherent manner with consistent and predictable patterns of interacting behavior. To the extent that this is so, they may be said to function as a “system”. (1961, pp. 831–832; found in E. Ostrom, 2010, p. 552)

As an analytical framework, then, polycentric governance theory is not only useful for studying governance beyond the state-system level, but also for understanding how different systems of governance complement or contradict each other in attaining shared or similar goals.

Crucial to understanding how polycentric systems function is at first to accept that they are not necessarily the opposite of monocentric systems. In fact, monocentrism and polycentricity are mutually dependent (Aligica & Tarko, 2012, p. 244). That is, monocentric systems may display symptoms of polycentricity, and vice versa. After all, recall that we may only speak of a polycentric “system” when individual elements within that system “function in a coherent manner with consistent and predictable patterns of interacting behavior” (V. Ostrom et al., 1961, pp. 831–832; found in E. Ostrom, 2010, p. 552). Accordingly, individual elements in a polycentric system engage in *mutual adjustment*, which suggests that they, while nominally operating independently from one another, have the tendency to “[make] mutual adjustments for

ordering their relationships with one another” (V. Ostrom, 1999, p. 57; found in Jordan et al., 2018a, p. 15). Information sharing and institutional learning are examples of mutual adjustment in polycentric systems (Galaz et al., 2012, p. 23).

However, the idea that monocentrism and polycentricity are not dichotomous but that polycentricity is, rather, a “matter of *degree*”—that is, that systems may be more or less polycentric—has received insufficient attention in the literature (Galaz et al., 2012, p. 22). According to Gallemore and Munroe (2013, p. 1200), “the ability of the Earth system governance and polycentric governance frameworks to answer questions about interaction and accountability... is compromised by conflating spatial and institutional centralization.” In other words, when considering whether a system is mono- or polycentric, scholars have a tendency to fixate on institutional factors at the expense of taking into consideration the spatial distribution (or lack thereof) of governance sites. Gallemore and Munroe explain:

The problem with this assumption is that systems may be centralized spatially without corresponding institutional centralization. In this case, there might be no single hub or authority, but several key organizations might be located in roughly the same area, facilitating access to information and resources for some and raising barriers to others, potentially limiting both the inclusiveness and consequences of participation. (Gallemore & Munroe, 2013, p. 1200)

Systems that correspond with the above description resemble what has been called *concentrated polycentricity* (Gallemore & Munroe, 2013, p. 1201; Shin et al., 2022, p. 1). An example of a concentrated polycentric system in GEG is the cluster of Reducing Emissions from Deforestation and Forest Degradation (REDD+) projects, which Gallemore and Munroe (2013, p. 1208) argue are, “somewhat ironically, given that many core actors... espouse the virtues of decentralization..., predominantly located in just a few cities.” The use of the word *ironically* captures the paradox at the heart of this paper: that polycentricity (or decentralization) is both an institutional feature as well as a virtue, but that neither interpretations of the word are absolutes. This consideration in particular is relevant for the empirical problem under investigation: the paradoxical relationship between polycentricity and equity (Okereke, 2018).

While there is more to polycentric governance theory than outlined above, its main postulates that inform the explanatory framework used in the analysis are therefore:

- (1) That polycentric systems are comprised of various centers of decision-making governing the same or similar problems, across various scales of authority;
- (2) That these centers (henceforth also referred to as *governance sites* or *governance initiatives*) operate independently from each other, and have their own agenda;
- (3) That these centers engage in mutual adjustment, such as information sharing, with the aim of ordering their relationship to other centers within this shared system;
- (4) That we may not speak of a polycentric *system* if criterion #3 is not met;
- (5) That systems may be institutionally polycentric, but spatially centralized.

The section that follows outlines the research design employed in order to gather and map the data necessary to capture and interpret the uneven geography of TCCG.

## 5 Research design

Imperative to better understanding the uneven geography of TCCG and the role of polycentricity therein is to at first reassess how TCCG is organized geographically. To assess how the TCCG landscape has evolved over the years, this research follows a large- $N$  qualitative research design, adopting the two-step mapping approach used by Abbott (2012), Bulkeley and colleagues (2012, 2014) and Pattberg and colleagues (2014; see also Widerberg et al., 2016). The first step (data collection) at first merges and (re)organizes several available (online) datasets into a novel and consistent dataset of TCCG initiatives active today. Complimentary data necessary for the analysis, including the geographic coordinates of all relevant stakeholders, is then collected manually using primary resources. The second step (visualization) transforms this dataset into a series of maps uncovering the North–South dimensions of TCCG.

### 5.1 Data collection

In order arrive at a complete overview of TCCG initiatives active today, I consult multiple open-source databases as well as earlier academic studies into TCCG. On the basis of clear selection criteria that match the empirical boundaries of TCCG, Widerberg and Stripple (2016, p. 489) identify five different databases that capture “cooperative initiatives”<sup>4</sup> for climate change, and in particular GHG-mitigation. Four of these were accessible while this research was being conducted. These include the Non-State Action Zone for Climate Action (NAZCA) database ( $N=149$ ), the Climate Initiatives Platform (CIP) database ( $N=262$ ), the Transnational Climate Change Governance Initiatives (TCCGIs) database—updated into the CONNECT-database which has been consulted in its place ( $N=89$ )—and the Global Aggregator for Climate Action (GAFCA) database ( $N=53$ ).<sup>5</sup> Two out of four databases (NAZCA and CIP) are regularly updated still, meaning they contain the most recently established initiatives as well as the older initiatives included in the academic publications outlined below.

Combined, these databases are challenging to navigate, particularly because they adhere to diverging and, in some cases, even non-disclosed selection criteria, which in turn explains the stark difference in the number of included initiatives (Widerberg & Stripple, 2016, p. 491). More reliable resources in this respect are the academic studies that apply the same selection criteria that this study adheres to. These include Abbott’s (2012) ( $N=68$ ), Bulkeley et al. (2012, 2014) ( $N=60$ ), and Pattberg et al.’s (2014), whose updated dataset corresponds with the CONNECT-database listed above ( $N=69$ ).<sup>6</sup> The datasets used for these studies were consulted complementarily to the online databases listed above.

<sup>4</sup> The notion of *cooperative initiatives* can be replaced with the notion of *transnational climate governance initiatives* (Widerberg & Stripple, 2016, pp. 486–487).

<sup>5</sup> These numbers capture the number of initiatives included in these databases in May 2020. At the time of publication of Widerberg and Stripple’s 2016 study, however, these counted 35, 184, 60, and 53, respectively, (compared to 149, 262, 89, and 53 in 2020), meaning three out of four databases grew significantly over this period. The last database, GAFCA, resulted from a 2014/2015 research project and has not been updated since (2016).

<sup>6</sup> This last count, unlike the aforementioned studies, also includes international arrangements like the UNFCCC, making it not entirely representative for TCCG alone (Pattberg et al., 2014).



The dataset compilation, completed in May 2020, followed five steps. First, where possible, the online databases were filtered according to primary selection criteria (see Sect. 3.2.1), using the online filters provided.<sup>7</sup> Second, these (filtered) databases were merged with the academic datasets using MS Excel. Third, duplicates were removed. All initiatives were then manually reviewed to 1) ensure they are still active today and 2) assess whether these initiatives do or do not meet the selected criteria outlined in the following subsection (primary resources were used to this end). Finally, complementary data necessary to uncover the geography of TCCG was collected, recording the geographic coordinates<sup>8</sup> of the initiatives' headquarters<sup>9</sup> and of all agents actively involved in decision-making.<sup>10</sup> Other data collected included a) whether an initiative involves public actors in decision-making processes and whether an initiative explicitly endorses the international regime (e.g., the UNFCCC) on their on their homepage or in their mission statement.

### 5.1.1 Case selection criteria

In line with earlier research into TCCG (Abbott, 2012; Bulkeley et al., 2012, 2014; Hale & Roger, 2014; Pattberg et al., 2014; Roger et al., 2017), this research employs the following criteria for what initiatives are considered part of the TCCG system:

- (1) All initiatives must operate *transnationally*. That is, they operate across at least two nations, and involve at least one sub-state or non-state actor;
- (2) All initiatives engage in *governance*. That is, they explicitly aim to influence and direct the behavior of others toward a public end;
- (3) All initiatives explicitly seek to govern *climate change* (or GHG emissions) as (one of) their main function(s). They are involved in climate change mitigation, adaptation, or both.

<sup>7</sup> The CIP database, for instance, allows to apply filters such as “are not expired” or “not only in one country.”

<sup>8</sup> The geographic coordinates were recorded using a custom Google Script code in Google Sheets. Coordinates are based on the city in which initiatives and members are located, not their exact addresses. In the case of duplicate locations, the coordinates of all the second, third, and so forth occurrences of these cities were manipulated manually in order to avoid multiple initiatives appearing as one.

<sup>9</sup> The choice to use the location of governance headquarters or secretariats in order to determine the spatial distribution of TCCG initiatives was made to ensure the most accurate representation possible of where TCCG operates from. This decision also corresponds with earlier studies into polycentric environmental governance (e.g., Gallemore & Munroe, 2013, p. 1205; Shin et al., 2022, p.5). Another option would have been to record the geographical data of the initiating actors instead (see for example Bulkeley et al., 2014, p. 26), but this information is not available for all initiatives (many TCCG initiatives are joint initiatives) and would potentially supply misleading information (an initiative initiated by the World Bank but headquartered in Kenya, for example, still operates from Kenya).

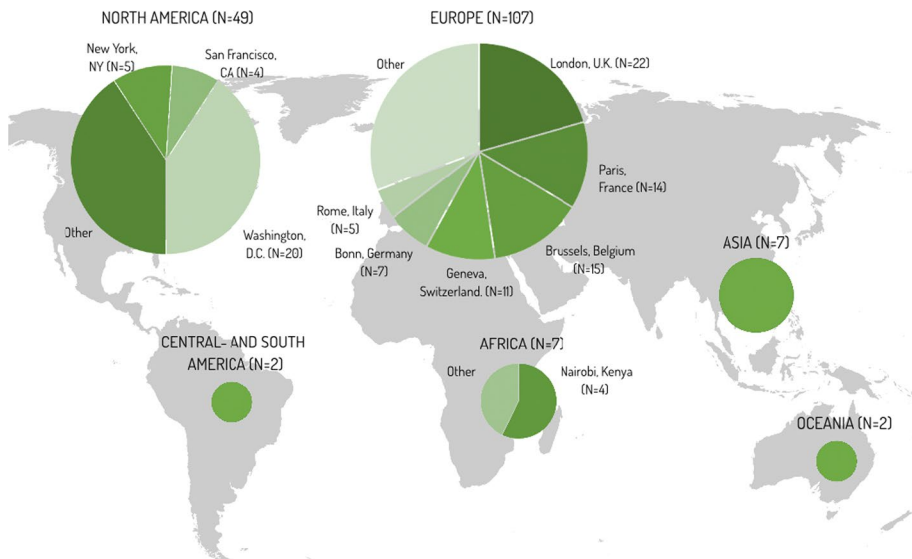
<sup>10</sup> What agents are included depends on the type of governance arrangement in question. In the case of a fund, for example, I included donors, but not recipients. In the case of partnerships, I included only those members that were represented on the board of directors. In the case of NGOs, I included all satellite offices. While this method is not waterproof, I consider it the most realistic approach to mapping decision-making across a very diverse set of organizations.

## 5.2 Visualization

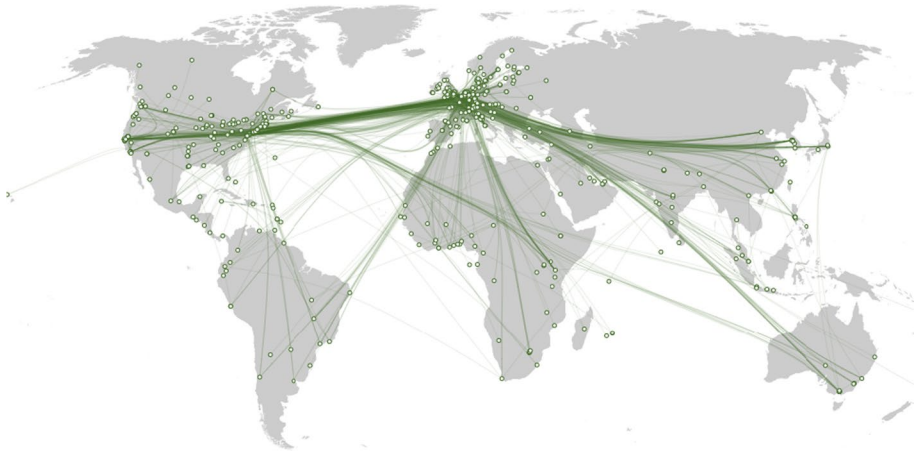
The second step sees this novel database, containing 174 governance arrangements and 1196 relevant agents or stakeholders, transformed into a series of geographic maps using D3.js, a JavaScript library for generating dynamic visualizations on the basis of diverse data sources (see Bostock, 2019). The first view offers an overview of TCCG by displaying the geographic locations of all TCCG headquarters. The second visualization uncovers the comparative geography of *involvement* in TCCG, connecting TCCG headquarters with those agents explicitly involved in decision-making, predominantly involving satellite offices, board members, and/or institutional partners. Note that this approach does not offer a complete overview of TCCG *membership*, as not all members (e.g., endorsers of a certain voluntary climate commitment) have decision-making powers within those initiatives. Because this research primarily concerned with the distribution of power (i.e., where decisions are being made), and not least because some TCCG initiatives have over 10,000 member parties (see for example GCoM. (n.d.)), this study only records those agents that are explicitly involved in decision-making processes.

## 6 Results

How is TCCG organized across the global North-South divide? In response to RQ1, this section outlines the results of the database compilation and -visualization. Figure 1 provides an overview of the geographic locations of all headquarters to the 174 transnational climate change governance arrangements included in this study.



**Fig. 1** Transnational climate change governance headquarters. *Note* The pie charts are sized according to the total number of initiatives headquartered per continent. Cities that host a large number of TCCG headquarters are singled out



**Fig. 2** Transnational climate change governance networks. *Note* The networks displayed in this figure display the connections between all TCCG headquarters ( $N=174$ ) and their relevant stakeholders with decision-making powers ( $N=1196$ ). Code based on Holten and Van Wijk (2009)

At first sight, it is difficult to nuance these results. Of 174 governance arrangements, 139 or 79.9% are headquartered in (Western) Europe and the United States' East Coast alone, and, when incorporating the North American continent as a whole, an overwhelming 89.7% ( $N=156$ ) of governance arrangements are headquartered in Europe, the USA, or Canada. Of the remaining 18 (10.3%), only 11 (6.3% of total) are headquartered in nations that are neither OECD members, nor high-income economies according to the World Bank (OECD, 2020; World Bank, 2020).

Nevertheless, the geography of TCCG is not solely defined by where governance initiatives are headquartered. Because transnational governance is intrinsically characterized by cross-border cooperation, this study also incorporates geographic data off all agents or stakeholders with decision-making powers ( $N=1196$ ) involved in these governance arrangements. Figure 2 provides an overview of TCCG networks between all headquarters and their partners or stakeholders with decision-making powers.

While based on this view TCCG continues to gravitate to and between Europe and North America, it becomes much more apparent that there certainly is transnational climate action beyond the global North. The involvement of actors across the African continent is significantly higher than suggested by maps produced in earlier studies, and the overall involvement of North American actors relative to European actors has decreased (Roger et al., 2017; Widerberg & Pattberg, n.d.). On the other hand, the involvement of South American actors, while in the aforementioned studies appearing slightly more prevalent than Africa-based involvement, is visibly lower than participation in other parts of the global South (Bulkeley et al., 2014, p. 33; Roger et al., 2017, p. 10).

Therefore, while TCCG has expanded considerably since previous large- $N$  analyses were conducted, its geography remains remarkably unaffected. Figure 3, which displays the comparative geography of initiatives established before and during or after 2015—the year the Paris Agreement was adopted—confirms this finding. These maps identify that, while TCCG initiatives indeed multiplied after the historic climate negotiations, the geography of TCCG has remained remarkably similar, with the exception that the growth of initiatives in Europe is considerable, while the momentum of TCCG in North America appears to have



**Fig. 3** TCCG initiatives established before (1) and in or after 2015 (2). *Note* These maps are based on the database constructed and used for this paper (N=174), therefore excluding all transnational governance arrangements that were suspended or nonactive in April 2020, per the selection criteria stipulated in Sect. 5. Therefore, the pre-2015 overview might deviate from the factual TCCG landscapes in history

slowed. All in all, the results from the above analysis are hardly nuanced: the landscape of TCCG remains remarkably asymmetrical, in spite of its significant growth over the years.

Of course, a question in need of addressing is: why is it problematic if 93.7% of TCCG initiatives operate from the global North if they do deliberately and actively involve agents from the global South? In light of climate justice discourse this is and remains debatable, particularly because of the widely-held belief that countries or groups of people ought to “contribute to the solution according to their contribution to the problem”,<sup>11</sup> (found in Roberts & Parks, 2010, p. 66). But from a more critical perspective, reality remains that the norms, standards, and commitments of TCCG are set in the global North, managed by secretariats largely composed of people from the global North, and communicated

<sup>11</sup> Spoken by a Brazilian delegate to the 14th Conference of the Parties to the UNFCCC.

predominantly in the English language. By extension, this means that actual employment opportunities for people in marginalized areas are scarce, leaving Southern actors in positions that are, arguably, more symbolic than they are meaningful. Moreover, as the dense clusters of TCCG initiatives in under more Brussels, Geneva, and Washington, D.C. confirm, the deliberate cultivation of human capital in specific locations might open playing fields elsewhere that could challenge the gravitational force of TCCG and global climate governance at large (see also Bulkeley et al., 2014, pp. 50–52). And while it might appear benign in the grand scheme of the global climate problem, research has identified that the people composing the secretariats managing transnational environmental regimes are in fact highly influential in shaping the norms, values, and mandate of TCCG at large (Bauer et al., 2012; Dingwerth & Pattberg, 2009; Pattberg, 2012, p. 111), meaning that changing the geography of TCCG could, in fact, make a meaningful contribution toward correcting global equity deficits.

But for now, more polycentricity does not necessarily seem to secure more equity. The following section analyzes the stagnant geography of TCCG in light of polycentric governance theory, considering whether the systemic functions of polycentric systems might contribute to this resistance to change.

## 7 Understanding the uneven geography of TCCG

The contemporary TCCG system is unmistakably polycentric and, according to this study's findings, increasingly so. But in spite of the rapid increase in initiatives aimed at governing climate change transnationally, the geospatial distribution of these initiatives appears remarkably resistant to change (see Fig. 3). Recall that polycentric systems are expected to outperform dominantly monocentric systems in that “a political system [with] multiple centers of power at differing scales provides more opportunity for citizens and their officials to innovate and to intervene so as to correct maldistributions of authority and outcomes” (E. Ostrom, 1998; found in Aligica & Tarko, 2012, p. 246). However, insofar the uneven geography of global climate governance sites is considered a “maldistribution of authority”—this, of course, is subject to debate depending on what notion of equity and climate justice one values—the polycentric character of TCCG has not (yet) delivered to this end.

The findings outlined above are consistent with the notion of concentrated polycentricity, which describes systems that are institutionally polycentric, but spatially centralized (Gallemore & Munroe, 2013, p. 1201; Shin et al., 2022, p. 1). Much like the REDD+ regime, analyzed by Gallemore and Munroe (2013), transnational climate change governance operates predominantly from Europe and North America, where 89.7% of initiatives are headquartered. What is more, Fig. 2 reveals that the densest connections between TCCG actors exists between these two regions, and while there is visible traffic between the North and South, South–South collaboration appears marginal. Figure 2 indeed strongly resembles Gallemore and Munroe's (2013, p. 1201) stylization of a concentrated polycentric system, where, while connections do exist outside and without the involvement of North American and/or European actors, these two regions certainly continue to constitute hubs in an increasingly institutionally polycentric landscape.

Even more striking is that this large majority is not only headquartered in the global North, but that a significantly large number of initiatives are located in just a few cities

alone. Of 174 initiatives, 36 (20.7%) are headquartered in the UN's diplomatic hotspots<sup>12</sup> (including the host cities of the FAO-, UNEP- and UNFCCC headquarters); a further 35 (20.1%) are headquartered in Europe's and the United States' diplomatic capitals,<sup>13</sup> and another 14 (8%) in Paris—home, of course, to the 2015 Paris negotiations. Globally, nearly half (85/174 or 48.9%) of TCCG arrangements are headquartered in these nine cities alone.

When brought to bear on polycentric governance theory, this observation is hardly surprising. While this study has treated the TCCG landscape as a polycentric system in its own right, it is imperative to remember that polycentric systems are characterized as having various centers of decision-making at diverging scales of authority (Aligica & Tarko, 2012, p. 246), meaning transnational actors and international actors (e.g., the UNFCCC or the World Bank) are part of an even larger polycentric system all the same. This means, in turn, that transnational actors can be expected to engage in mutual adjustment with the international regime (and vice versa).

That TCCG arrangements interact with international and state-led governance arrangements in this manner has been confirmed in the past (see Roger et al., 2017; Bulkeley et al., 2018). Moreover, Abbott (2018) has demonstrated that polycentric climate governance is in fact marked by a high degree of orchestration on the part of the UNFCCC regime and other (inter)state regimes. The large share in TCCG held by the public sector is unmistakably visible in the dataset developed for this study: 70.7% of analyzed arrangements involve public actors (including IGOs, states, regions, and cities) either as members, partners, or core funders, and 59.2% of analyzed arrangements explicitly refer to- or endorse some part of the UNFCCC- or interstate agenda either on their homepage or in their mission statement.<sup>14</sup> It is, therefore, plausible that mutual adjustment between the transnational- and international regimes carries (partial) responsibility for the uneven geography of TCCG, given that taking up residence in places that are already rich in human- and financial capital may facilitate collaboration and interinstitutional learning. This claim, however, is subject to future research, as it requires studying the international and transnational regimes complementarily and necessitates further research into whether mutual adjustment can have geospatial effects.

The more pressing claim is that the concentrated polycentricity observed in TCCG, and in particular the evidence suggesting that this spatial concentration is a product of transnational and international governance operating within the same overarching system, exposes the Achilles' heel of polycentric systems. Those same mechanisms that are thought to enhance equity (fragmentation, institutional diversity, interinstitutional learning, and innovation) may lead instead to the exacerbation of existing inequities—in this case the North–South disparities in (governing) global climate change. This leads us back, finally, to the polycentricity-equity paradox introduced by Okereke (2018) which, as the results of this study reconfirm, is not as much a theoretical enigma as it is, simply speaking, an empirical observation. “Climate injustices,” Okereke argues, “are both symptoms and magnifiers of broader structures of historical injustice and inequality that characterize

<sup>12</sup> Bonn, Germany ( $N=7$ ), Geneva, Switzerland ( $N=11$ ), Nairobi, Kenya ( $N=4$ ), New York City, USA. ( $N=5$ ), The Hague, the Netherlands ( $N=1$ ), and Vienna, Austria ( $N=3$ ).

<sup>13</sup> Brussels ( $N=15$ ), and Washington, D.C., USA. ( $N=20$ ).

<sup>14</sup> To this end, all TCCG initiatives' websites were analyzed manually. Only the homepage, the “about us”-section, and optionally the “vision and mission”-section were taken into consideration for this part of the analysis. Explicit endorsements of the UNFCCC, the Paris Agreement, a specific COP, the SGDs, REDD+, and/or the EU Green Deal were accepted as endorsements of the interstate climate agenda.

the global system. Hence, unless these fundamental structural injustices are addressed, it is not clear that more or less fragmentation will address climate justice” (Okereke, 2018, p. 332–333).

I have argued that the contemporary TCCG system displays the characteristics of a concentrated polycentric system. Based on the geospatial distribution of governance initiatives involved in TCCG, and in particular their tendency to concentrate in the global North and its existing diplomatic hotspots, I have considered the possibility of mutual adjustments between the transnational and international regimes producing these persisting inequities. Evidence pertaining to the high degree of involvement of the public sector in TCCG and the high number of TCCG initiatives that explicitly endorse the international regime and their mandate emphasizes the considerable degree of overlap between these regimes (see also Castro, 2016; Bulkeley et al., 2018; Pattberg et al., 2018). While these findings are consistent with polycentric governance theory insofar monocentrism and polycentricity are not seen as strictly dichotomous, and spatial polycentricity is not considered a prerequisite for polycentricity in the broader sense, it challenges the notion of institutional polycentricity all the same. The following and final section explores the notion of orchestration against the notion of mutual adjustment, and discusses the need to rethink polycentricity academically and administratively.

## 8 Rethinking polycentricity?

I have argued above that the current TCCG landscape meets the conditions for a polycentric system: it is composed of a large number of independent governance initiatives (or centers) across multiple levels of authority (e.g., public, semi-public and private entities) that mutually adjust in order to secure the “overarching systems of rules” necessary to accept polycentric systems as functional ‘systems’ (Aligica & Tarko, 2012, p. 254). That the TCCG landscape has expanded as much as it has whilst remaining remarkably concentrated geospatially speaking, too, is consistent with the theory, as it resembles a concentrated polycentric system (see Gallemore & Munroe, 2013, p. 1201; Shin et al., 2022, p. 1). All in all, it is unlikely that anyone would argue that TCCG, or the global climate governance system at large, is not polycentric.

However, the observable overlap between the transnational- and international regimes raises some critical questions pertaining to polycentric systems and especially their presumed potential to “correct maldistributions of authority and outcomes” (E. Ostrom, 1998; found in Aligica & Tarko, 2012, p. 246). Theoretically, the expectation is that polycentric systems self-organize and self-correct in a spontaneous manner (Aligica & Tarko, 2012, pp. 245–246). Nevertheless, Jordan and colleagues (2018, p. 16) argue, the extent to which mutual adjustment is naturally and exclusively spontaneous continues to puzzle researchers. The body of literature on polycentric governance, they argue, also considers the possibility of top-down interventions (and even coercion) setting these mutual adjustments in motion. Indeed, in their study into interlinkages in global climate change governance, Pattberg and colleagues (2018, p. 184) have identified the UNFCCC regime, and especially the 2015 Paris Agreement, as an “integrative device” or a “[center] of gravity” in this polycentric system. Top-down interventions on the part of the UNFCCC, a process likened to *orchestration* (see Hale & Roger, 2014; Abbott, 2018), challenges polycentric governance theory as an explanatory device in the context of (T)CCG. Some have even suggested that its analytical value is limited in this context, and suggest “to more openly embrace the

theoretical implication of understanding climate governance as a *system*” instead (Pattberg et al., 2018, p. 184).

What is puzzling, however, is that some degree of monocentrism *is* theoretically understood to be a necessary condition for polycentric systems insofar an overarching system of rules is necessary for them to function as such. This, in turn, might manifest into a system of concentrated polycentricity with an uneven geography as observed in the results of this study. However, if there are indeed intimations of orchestration driving these mutual adjustments, they no longer satisfy the condition of self-organization and spontaneity. Brought back to bear on the notion of concentrated polycentricity, which suggests that systems can be *institutionally* polycentric but *spatially* centralized (Gallemore & Munroe, 2013, p. 1201), this might prompt us to approach *institutional* polycentricity as a matter of degree all the same.

When regarded in light of the polycentricity-equity paradox underlined by Okereke (2018), the ability of polycentric systems to correct maldistributions of authority—across the global North and South, for example—might therefore be contingent on *who writes* the overarching system of rules that pervade polycentric systems. This raises big questions on the subject of (structural) power in polycentric systems—a subject Morrison and colleagues (2019) believe to be a “black box” within the literature on polycentric governance. “While it is axiomatic that all governance (whether monocentric, integrated, decentralised, or polycentric) involves uneven power dynamics,” they argue, “many studies of polycentric governance provide only partial analyses of the initial design or the emergent structure of polycentric systems, ignoring uneven power dynamics or relegating them to being exogenous to the system” (Morrison et al., 2019, p. 2).

Academically, the results of this study point at a need to study polycentric systems within the widest possible context (i.e., to study TCCG as part of the global climate change governance system, not as a solitary system in its own regard), as well as a need to consider other theories as explanatory devices for the paradoxes that polycentric governance theory cannot (yet) account for. It also underlines the importance of accepting structural power dynamics as pervasive in polycentric systems, and consequentially confirms that polycentricity and monocentrism should not be treated as dichotomous. Administratively, the results of this study might point to two rather opposite directions. On the one hand, the apparent inability of polycentric systems to spontaneously self-correct existing imbalances might point at a need for more deliberation on this matter, and therefore welcomes orchestration rather than rejecting it (the potentially positive effects thereof being often rejected in the polycentric governance literature (Morrison et al., 2019, p. 2)). On the other hand, it could also underline a need to rely on the self-organizing function of polycentric systems instead, “[liberating] the ‘error-correcting’ capacity inherent in all mutually adjusting polycentric systems” (Jordan et al., 2018, p. 16; see also McGinnis, 2016, p. 9). In any case, the pervasiveness of structural injustices should remain on the agenda (Okereke, 2018, p. 332–333)—arguably at the top.

## 9 Conclusions

Sub- and non-state climate action has picked up rapidly over the course of the 2000s, resulting in a continuously growing web of transnational governance arrangements aimed at governing climate change (Abbott, 2012; Widerberg & Pattberg, 2017). The TCCG landscape is characterized by the active involvement of sub- or non-state actors across various levels



operating largely independently from each other, and is therefore intrinsically polycentric. The existence of an increasingly polycentric system has important implications for the equitability of governance and climate justice at large. A pressing research problem in GEG scholarship has been to explore the relationship between polycentric or fragmented governance on the one hand, and the overall equitability of the global governance system on the other. Multiple arguments can be made for and against a positive relationship between the two; Okereke (2018) has highlighted that it is fundamentally paradoxical.

This study has explored the apparent North–South disparities in TCCG in the context of this paradox, answering two interrelated research questions: (1) How is TCCG organized geographically along the global North–South divide? And, based on the geography of TCCG, (2) Does its polycentric character contribute toward more equitable governance across the global North and South? A large-*N* analysis involving 174 governance arrangements and 1196 stakeholders with decision-making powers has uncovered that the geography of TCCG, despite the rapid increase in governance arrangements over the years, remains remarkably uneven, gravitating unmistakably toward the global North and its existing diplomatic hotspots. Of 174 governance arrangements, an overwhelming 89.7% ( $N=156$ ) are headquartered in Europe, the USA, or Canada; of the remaining 18 (10.3%), only 11 (6.3% of total) are headquartered in nations that are neither OECD members, nor high-income economies according to the World Bank (OECD, 2020; World Bank, 2020). Moreover, a total of 36 (20.7%) initiatives are headquartered in the UN’s diplomatic hotspots<sup>15</sup> (including the homes to the FAO, UNEP, and UNFCCC). A further 35 (20.1%) are headquartered in Europe’s and the United States’ diplomatic capitals,<sup>16</sup> and another 14 (8%) in Paris—home, of course, to the 2015 Paris negotiations. Globally, nearly half (85/174 or 48.9%) of TCCG arrangements are headquartered in these eight cities alone. A comparative analysis of initiatives launched before and after the 2015 Paris negotiations also underlines that, while TCCG has grown significantly since the publication of previous studies into the landscape of TCCG, its geography proves remarkably resistant to change.

Notwithstanding the apparent contradictions of a highly centralized yet polycentric landscape, these findings are largely in agreement with polycentric governance theory. I have likened the TCCG landscape to a system of concentrated polycentricity: a notion that describes systems that are institutionally polycentric, but spatially centralized (Gallemore & Munroe, 2013, p. 1201; Shin et al., 2022, p. 1). Having taken into account that TCCG is, in fact, part of an even larger polycentric system that encompasses the international (UNFCCC) regime, I have argued that (1) The uneven geography of TCCG, (2) Its tendency to settle in existing centers of international diplomacy, and (3) the large number of TCCG initiatives that involve public actors and/or explicitly endorse the international regime and its mandate(s) all point at a dominant “overarching system of rules” necessary for polycentric systems to function as actual systems.

What leads us to rethink polycentricity, rather, is the following consideration: who gets to write these rules? While monocentric forces are considered integral to polycentric systems (see Aligica & Tarko, 2012), polycentric governance theory also postulates that organizations within polycentric systems mutually adjust in a self-corrective and spontaneous manner, which is inconsistent with the phenomenon of *orchestration*—in the context of TCCG, understood as “a process whereby states or intergovernmental

<sup>15</sup> Bonn, Germany ( $N=7$ ), Geneva, Switzerland ( $N=11$ ), Nairobi, Kenya ( $N=4$ ), New York City, USA. ( $N=5$ ), The Hague, the Netherlands ( $N=1$ ), and Vienna, Austria ( $N=3$ ).

<sup>16</sup> Brussels ( $N=15$ ), and Washington, D.C., USA. ( $N=20$ ).

organizations initiate, guide, broaden, and strengthen transnational governance by non-state and/or sub-state actors” (Hale & Roger, 2014, pp. 60–61). While some consider it “axiomatic” that polycentric systems, too, know of uneven power dynamics (see Morrison et al., 2019, p. 2), the potential absence of a climate that facilitates experimentation, self-correction, and spontaneity does not rhyme with the main conditions for polycentric systems. Having said that, I have stressed on multiple occasions the importance of studying monocentrism and polycentricity as two ends on a scale rather than as strictly dichotomous (see also Galaz et al., 2012, p. 22); the same, thus, holds for my argument. Nevertheless, the findings of this study reconfirm the need to take more seriously the role of structural power asymmetries in polycentric systems (see also Morrison et al., 2019, p. 2). I have suggested that future research explores polycentric systems within the widest possible context (i.e., to study TCCG as part of the global climate change governance system, not as a solitary system in its own regard), and consider other theories as explanatory devices for the paradoxes that polycentric governance theory cannot (yet) account for. While the monocentric tendencies of polycentric systems were written into the very blueprint of polycentric governance theory (see Aligica & Tarko, 2012), there remains a need for a (renewed) recognition for how these structural functions of polycentric systems may exacerbate structural inequities. This requires paying special attention to how (and by whom) the overall mandate, norms, and overarching “rules of the game” of polycentric systems like TCCG are shaped.

By virtue of its design, this research has several limitations. First of all, the exclusive focus on transnational arrangements in the empirical analysis makes it possible to *suspect* mutual adjustment between the transnational and international regimes (and the effect thereof on the geography of TCCG), but this cannot be conclusive until the norms, standards, and mandates of the international- and transnational regimes are compared side by side. What is more, a more comprehensive network analysis could shed light on the precise patterns of interaction between transnational- and international agents, which in turn could uncover whether mutual adjustments in polycentric systems might have structural spatial effects. Third, and on a related note, further research into this subject might benefit from a (complimentary) smaller-*N* approach to also uncover how and where mutual adjustments take place. Fourth, given my primary focus on governance headquarters, it is imperative to underline that, while marginal, the degree of participation in TCCG on behalf of the global South remains significant and should not be downplayed (see also Bulkeley et al., 2014, Chapter 6).

Finally, next to regularly updating existing datasets of TCCG initiatives, I propose that future research into polycentric, fragmented, or complex governance systems take into more careful consideration the naturally synergistic relationship between monocentrism and polycentricity. Even more, extra attention should be paid to the structural inequities that might be exacerbated as a result of these fluctuating centripetal and centrifugal tendencies. If we accept polycentricity as “a necessary condition for achieving “political objectives” such as liberty and justice” (Aligica & Tarko, 2012, p. 245), then the question we must ask next is either “*how much* polycentricity?” or “*justice for whom?*”

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