Received: 1 April 2021 | Revised: 6 April 2022 | Accepted: 6 May 2022

DOI: 10.1002/wcc.791

ADVANCED REVIEW

WIREs CLIMATE CHANGE WILEY

Non- and sub-state climate action after Paris: From a facilitative regime to a contested governance landscape

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Funding information
Svenska Forskningsrådet Formas, Grant/Award Number: 2017-01889; Deutsche Forschungsgemeinschaft (DFG), Grant/Award Number: 434892950

Edited by: James Patterson, Domain Editor and Mike Hulme, Editor-in-Chief

Abstract

The Paris Agreement marks a significant milestone in international climate politics. With its adoption, Parties call for non- and sub-state actors to contribute to the global climate agenda and close the emissions gap left by states. Such a facilitative setting embraces non-state climate action through joint efforts, synergies, and different modes of collaboration. At the same time, non-state actors have always played a critical and confrontational role in international climate governance. Based on a systematic literature review, we identify and critically assess the role of non-state climate action in a facilitative post-Paris climate governance regime. We thereby highlight three constitutive themes, namely different state-non-state relations, competing level of ambition, and a variety of knowledge foundations. We substantiate these themes, derived from an inductive analysis of existing literature, with illustrative examples and propose three paradigmatic non-state actor roles in post-Paris climate governance on a continuum between compliance and critique. We thereby highlight four particular threats of a facilitative setting, namely substitution of state action, co-optation, tokenism, and depoliticization. Future research should not limit itself to an effective integration of NSSAs into a facilitative climate regime, but also engage with the merits of contestation.

This article is categorized under:

Policy and Governance > Multilevel and Transnational Climate Change Governance

KEYWORDS

climate change governance, contestation, environmental politics, non-state actors, Paris Agreement, transformation

1 | INTRODUCTION

After years of negotiations within the United Nations Framework Convention on Climate Change (UNFCCC), the 2015 Paris Agreement[1] was celebrated as a breakthrough in international climate governance. Aiming to limit global warming preferably to 1.5°C above preindustrial levels, states have outlined and updated their efforts to mitigate

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climate change ever since. Yet, their Nationally Determined Contributions (NDCs) do not add up to the emissions reductions required to achieve the overall target set in Paris (UNEP, 2021). Scholars have previously addressed this gap between global emissions trends and insufficient state commitments Blok et al., 2012). But only after Paris have these discussions materialized in a shift from a "regulatory" regime to a "catalytic and facilitative" model that brings non- and sub-state actors (NSSAs) to the forefront of debate in the global fight against climate change (Hale, 2016, p. 12). States explicitly "welcome the efforts of non-Party stakeholders to scale up their climate actions" (UNFCCC, 2015a, p. 17) and in an attempt to institutionalize these efforts, the UNFCCC Global Climate Action Portal draws attention to collaborative climate action by more than 28.000 different NSSAs.[2]

While the 15th Conference of the Parties (COP15) in Copenhagen failed to deliver a top-down successor to the Kyoto Protocol, Paris sets out a facilitative regime context. It rests upon a hopeful outlook that the climate crisis can only be solved through collaborative action, voluntary commitments, win-win solutions, and synergies. Under these terms, NSSAs contribute to climate mitigation and adaptation efforts, either through individual action or by joining collaborative initiatives and partnerships (Hale et al., 2021; Johnson, 2021; MacLean, 2020). Scholars (Chan et al., 2016) and policymakers (Muñoz & Topping, 2021) are hopeful that such an integrative and collaborative governance arrangement enables synergies and steers further climate action. Yet, integrating NSSAs into a facilitative regime is not entirely unproblematic. It tends to leave out nonmeasurable action, marginalize more radical interventions, and blur the boundaries between state-led and non-state climate action.

Governance scholars have studied the facilitative post-Paris climate governance regime by investigating NSSAs' potential to reduce emissions (Hsu, Höhne, et al., 2020). They explore the role of private actors as standard setters, discuss the lack of accountability (Streck, 2020), and reflect on an "era of non-state climate leadership" (MacLean, 2020, p. 21) in a polycentric and voluntary climate regime. Taking stock of these recent debates and shedding light on the multiplicity of roles assumed by NSSAs, this literature review substantiates the risks and promises of a facilitative post-Paris climate regime (Chan et al., 2019). We argue that research on the new facilitative regime character needs to go beyond a focus on compliance and collaboration and engage even more with the role of conflicts, ambiguities, and contestation.

Acknowledging the diverse field of literature dealing with non- and sub-state climate action, we propose a more contested understanding of the climate governance arrangement in contrast to the dominant facilitative account. Our analysis of research published between 2016 and 2020 suggests that a collaborative and facilitative mindset dominates the political discourse and scholarly debates around post-Paris climate governance. Critical perspectives exist but are less prominent in discussions about the regime's character. For example, the majority of the 20 most cited publications on NSSAs and climate governance in political science concentrates on collaborative efforts, voluntary mitigation measures, and joint initiatives within the facilitative governance regime, largely avoiding debates around fundamental conflicts and tensions between state-driven climate action, market forces, and civil society interventions.

We illuminate three constitutive themes that fundamentally shape the roles NSSAs can occupy in post-Paris climate governance: First, the relationship between NSSAs and state actors within the intergovernmental climate regime can differ substantially; second, their ambitions for change toward climate-friendly societies is highly diverse; and, third, their claims rest on competing knowledge foundations. Abstracting these themes from the literature to date allows us to conceptualize paradigmatic configurations of NSSAs in post-Paris climate governance.[3] On a continuum between compliance and critique, they act not only as (1) *constructive facilitators*, lobbyists, and cooperative shapers of a state-led climate change agenda as envisioned by the international community, but they also position themselves as (2) *disruptive confronters* with a critical perspective toward established rules and institutions.[4] In addition, NSSAs increasingly act as (3) *voluntary implementors* that initiate climate action on their own, thereby pushing governments toward more ambitious commitments. Through our review, we highlight that focusing on how these NSSAs navigate through a facilitative setting comes with severe risks such as co-optation, tokenization, the substitution of state action, and the depoliticization of the climate issue.

With this review, we systematize a dynamic and rapidly developing research area. While we do not quantify research to evaluate the field, we develop our argument based on a rich body of conceptual and empirical studies. Empirical snapshots at the end exemplify the shortcomings of the facilitative regime context, but critical empirical studies are needed to substantiate these claims and go beyond the scope of this literature review. In what follows, we first summarize earlier insights into non-state climate action (Section 2), introduce our methodology (Section 3), and present three constitutive themes in post-Paris climate governance (Section 4). We then unpack the limits of a facilitative climate regime (Section 5) and outline areas for future research (Section 6).

2 | NON- AND SUB-STATE ACTORS IN THE GLOBAL CLIMATE REGIME

Scholars have developed a rich body of knowledge about the roles played by a wide range of NSSAs in a complex multi-level governance landscape with new forms of agency and shifts in power and authority from the state to the non-state and private realms (Bäckstrand et al., 2017; Stripple & Bulkeley, 2011). Their importance became evident during the negotiations leading up to the Kyoto Protocol (Enge & Malkenes, 1993) and they have "changed the face of international environmental law" (Tolbert, 1992, p. 108) ever since. For decades, their participation marked "a distinct feature of global climate governance" (Bäckstrand et al., 2017, p. 574) and an increasingly integral part of the formalized global climate regime which they shape by cutting across jurisdictional boundaries and the divisions between public and private authority. Critical organizations and social movements gained relevance by pushing for profound societal transformation (Hess, 2015), undertaking research, monitoring state commitments, acting as critical watchdogs during negotiations, and communicating to global and domestic publics (Raustiala, 1997, p. 724). They contest the state-led system and demand change through modes of confrontation (Blühdorn, 1997; Buechler, 2000). Outside the intergovernmental climate talks, they also "challenge the limitations of the traditional state-centric system" (Princen & Finger, 1994, p. 217). In addition, private actors and the market gained authority in climate negotiations (Jagers & Stripple, 2003) and the international system more broadly (Hall & Biersteker, 2002).

Long before states reached the Paris Agreement, transnational NSSAs have pressured international regimes, and international organizations (IOs) themselves have opened up to regulate the access by observers. These parallel developments point to an important distinction between climate action put forward by a variety of transnational NSSAs and their official role as observers with regulated (and restricted) access to IOs. For the former category, Harriet Bulkeley et al. (2014) have mapped and conceptualized transnational NSSAs and their aim to directly intervene in global governance. These new modes of governance "cut across traditional state-based jurisdictions, operate across public-private divides, and seek to develop new approaches and techniques through which responses are developed" (Bulkeley et al., 2014, p. 1). Similarly, Roger et al. (2017) recognize transnational responses to the complexity of governing climate change, by assessing the potential of domestic conditions to explain stakeholders' engagement in different transnational climate initiatives. In contrast, scholars like Tallberg et al. (2013) have investigated how NSSAs have gained official access to IOs. Pointing at the IOs' "far-reaching institutional transformation" (Tallberg et al., 2013, p. 2), they shed light on what drives the increasing inclusion of NSSAs as observers. While the boundaries between both groups are blurry (with organizations working both inside and outside the UNFCCC negotiations process), they provide a proper functional division of labor between joint forces within the climate regime and pressure from more radical voices outside. Along these lines, scholars have categorized the multiple roles of NSSAs (Nasiritousi, 2016; Nasiritousi, Hjerpe, & Linnér, 2016) and the influence they can have (Betsill, 2015; Betsill & Corell, 2014) on a continuum between cooperation and confrontation.

Today, individual action taken by NSSAs, collaborative initiatives, networks, and partnerships are perceived as essential in advancing state commitments and bridging the "emissions gap" (Hsu et al., 2018) left by states. Often loosely institutionalized joint formats such as business initiatives, city networks, or multi-stakeholder groups contribute with voluntary action, pledges, or roadmaps through new and often experimental forms of governance (Conca, 2019; Hoffmann, 2011). Scholars have developed multiple analytical perspectives to account for these complex interrelations and a "spatial hierarchy, where multiple sites of climate politics nest within one another" (Stripple & Bulkeley, 2011, p. 6). Established frameworks include multi-level environmental governance (Wälti, 2010), polycentric governance (Jordan et al., 2015), networked governance (Tosun & Schoenefeld, 2017), and fragmented climate governance (Zelli, 2011). More recent debates study questions connected to NSSAs and power (Marquardt, 2017), participation (Hsueh, 2017), legitimacy (Nasiritousi, Hjerpe, & Bäckstrand, 2016), accountability (Widerberg & Pattberg, 2017), and effectiveness (Chan et al., 2016), as well as the role of NSSAs vis-a-vis the existing international system (Betsill et al., 2015; Box 1).

Despite the unanimous adoption of the Paris Agreement, Parties formulated their concern in a related decision that the intended NDCs would not be sufficient to achieve the treaty's minimum 2°C target. Such an "explicit acknowledgement of its own ambition gap" (MacLean, 2020, p. 22) brought NSSAs to the forefront of attention in a collaborative post-Paris climate governance system which Bäckstrand et al. (2017) conceptualize as a form of "hybrid multilateralism." While Slaughter (2015) describes the Paris Agreement as "a model for effective global governance in the twenty-first century," Allan (2019) argues that the agreement's incremental design is insufficient to tackle the urgent climate crisis.

BOX 1 Multiple roles taken by non- and sub-state actors in climate governance

Over the last 30 years, non- and sub-state actors have become indispensable in global climate governance (Okereke et al., 2009). Today, more than 2.300 NSSAs divided into eight constituency groups are officially registered as observer organizations at the UNFCCC. Whereas environmental awareness-raising, lobbying, and protest have been launched to pressure governments from the outside of formal political systems, NSSAs are increasingly constituted as partners of governments on "the inside" (Bäckstrand et al., 2017). Through the rise of participatory governance arrangements such as multi-stakeholder dialogues, public-private partnerships, and carbon markets, NSSAs are crafting, monitoring, and even implementing international environmental rules. As the Paris Agreement builds on a collaborative governance arrangement, we demonstrate that NSSAs do not only take on the role of *constructive facilitators* in inter-state negotiations, and *voluntary implementors* with self-motivated mitigation pledges, but they also scrutinize the established climate change regime as *disruptive confronters*. The latter becomes increasingly challenging in a collaborative setting that aims at integrating a multitude of sometimes competing voices.

While the Paris Agreement and its related COP decision imply numerous entry points for NSSA involvement, the key question remains if such a design leads to meaningful participation beyond the status quo of a state-driven international climate regime (Dryzek & Pickering, 2017). This literature review sheds light on how scholars deal with this question and with the underlying conflicts, tensions, and ambiguities that researchers draw attention to.

3 | METHODOLOGY

A systematic literature review is not only descriptive, but also reveals patterns, structures, and forms of contestation (vom Brocke et al., 2009). To categorize, synthesize and discuss these issues for NSSAs in post-Paris climate governance, we draw on data extracted from the *Web of Science* (WOS) database. After screening the literature, we have compiled a comprehensive search string to define the scope and depth of our review. We have scanned through selected exemplary "control articles," which are highly relevant to the field. After several adjustments, the following search string was selected:

> **TOPIC**: (climate change OR global warming OR climate govern* OR climate poli*) AND **TOPIC**: (initiative* OR cooperative initiative* OR network* OR partnership* OR association* OR business* OR corporat* OR firm* OR compan* OR industry* OR civil societ* OR social movement* OR NGO* OR non-government* OR municipalit* OR non-state* OR sub-state* OR multi-stakeholder* OR city OR cities OR indigenous* OR union* OR youth OR farmer* OR women OR media OR religio*)

The systematic search integrated both the contextual aspect of climate change and the phenomenological aspect of governance. Given the high number of initial results, we refined the search to peer-reviewed journal articles written in English and published between 2016 and 2020. Although non-state actor involvement shaped climate governance long before the Paris Agreement, we selected 2016 as the start date to focus on developments under the facilitative post-Paris regime context. Complementing previous reviews (Chan et al., 2019; Kuyper et al., 2018) that discuss the role of NSSAs in post-Paris climate governance in a more forward-looking fashion, we took stock of literature published in the aftermath of the Paris Agreement to better understand how the scholarly debate around the new facilitative regime has responded to the intensified calls for NSSA contributions. It is important to note that some of the articles we included in our sample were written or submitted pre-Paris but published thereafter. While this represents an obvious limitation in the gathering of data, we have ensured manually that all articles included in our sample either explicitly deal with the post-Paris regime, somehow relate to it (even if the scope was on the pre-Paris conditions), or study the future with substantial references to a post-2015 climate change agreement.

While the first re-adjusted selection included articles in the field of political science and its sub-field of international relations (based on the WOS classification), the open search also included articles from other social science areas

(e.g., social movement studies, anthropology, ethnography) which we decided to include to broaden the review's scope and diversity. Based on the search string presented above, we generated a sample of articles with a strong focus on international climate governance. At the same time, we did not exclude work that exclusively focuses on domestic contexts to further enhance our sample's diversity. In a second step, we delimited the number of articles through a thorough screening and evaluation of the abstracts based on whether these truly capture the role of NSSAs in climate governance. In the last step, we established the final number of analyzed articles by choosing publications with a primary focus on NSSAs. These publications range from empirical over conceptual to theoretical contributions. Table 1 illustrates the refinement process.

We analyzed the refined sample (75 articles) in an inductive, open-ended manner (Corbin & Strauss, 2008). Given this review's qualitative nature, we did not search for keywords and similarities via automated software but instead conducted an in-depth analysis via thoroughly reading and coding all articles, identifying and extracting common, constitutive themes and argumentative patterns using the qualitative data analysis software *Atlas.ti*. Following the Gioia methodology (Gioia et al., 2013), we coded the literature to develop new concepts based on a systematic investigation of our material. In a first step, we derived 84 first-order codes related to NSSAs through coding "in vivo" (i.e., capturing the exact wording used in the literature). After that, we scanned through all documents in detail, slightly reframed, and consolidated the first-order codes by synonymizing redundancies and eliminating codes with only one or two mentions. We then identified 12 code groups emerging from these first-order codes, which hinted at patterns. Finally, we derived four aggregated dimensions, which emerged in iteration with a screening of existing literature. The third-order aggregated dimensions hinted at the constitutive themes around the relationship between NSSAs and state actors, their level of ambition, and their knowledge foundations. Table 2 visualizes our data analysis process from raw data to theoretically informed third-order themes. Although we did not explicitly focus on climate mitigation, most articles we analyzed dealt with mitigation as a central theme. A few studies investigated climate adaptation and resilience or referred more generally to climate action as their subject of study.

4 | THREE CONSTITUTIVE THEMES IN POST-PARIS CLIMATE GOVERNANCE

NSSAs navigate through and operate within a dynamic field of multi-level climate governance. Their particular engagement ranges from total compliance with the rules set by the international system to modes of resistance and critique. While Smeds and Acuto (2018, p. 20) call the analytical conflation of sub- and non-state actors "incomprehensible and analytically useless," others capture their diversity by categorizing NSSA roles, strategies, and functions. Hermwille (2018, p. 8) provides an "explicit conceptualization" of the relation between international negotiations and transnational governance; Hadden and Jasny (2019, p. 6) distinguish between different strategies and tactics "as a choice between protest and more conventional forms of action."

As we systematize how scholars conceptualize the role of NSSAs in a facilitative climate regime, we recognize at least three themes that constitute post-Paris climate governance as a contested field. While the first two (state-non-state relations, and levels of ambition) reflect a continuation of the pre-Paris phase and relate to what Betsill (2015) describes as activists, diplomats, and governors in their own right, the contested nature of science and knowledge-making emerges as an increasingly relevant dimension in a state-driven, yet inclusive climate regime (UNFCCC, 2015b).

4.1 | State-non-state relations

The first constitutive theme of 'state-non-state relations' refers to the various relations between NSSAs and the state-led post-Paris climate governance arrangement and the degree to which they support or challenge state-led approaches to

TABLE 1 Refinement process of the literature search

Description	Results
Step 1: Results before any refinement (complete search string)	43,661
Step 2: After the first refinement (focus on political science and international relations literature)	945
Step 3: After the second refinement (screening and evaluation of titles and abstracts)	75

TABLE 2 Coding tree for NSSAs in post-Paris climate governance

Core themes	Code groups	Codes
Overview NSSA roles in global climate governance (35 codes in 37 articles)	0.1 Compliance (8 codes in 17 articles)	Comply with the rules of the game Demonstrate unity at the UNFCCC Enhance accountability Enhance legitimacy through participation Formal interventions, side events, and so on at the UNFCCC Integrated into the UNFCCC system (facilitative regime character) NSSAs as implementors NSSAs as sincere, honest brokers
	0.2 Pressure and criticism (18 codes in 30 articles)	Act as watchdog and evaluator Create an alternative to the UNFCCC regime Criticize the climate change regime Global North dominance and neo-colonialism Governance fragmentation Influence agenda and policymaking Mobilize emotions, hope, faith for ambition, and collective action Moral reminder and ethical responsibility Peer pressure and social cohesion Protests and campaigning Raise awareness and increase attention Represent a wide range of interests and opinions Represent marginalized groups Restricted/unequal access and exclusion (language barriers, protectionism) Seek to influence views and norm-building processes Shape discourses Silent observer, lack of recognition Support and speak for the Global South
	0.3 Complex governance arrangement (9 codes in 12 articles)	Climate leadership Exploiting windows of opportunity Foster governance experimentation Incidental and unstable climate advocacy Ineffective governance and high transaction costs Innovative transnational governance Multi-level governance architecture Overcome traditional governance shortcomings Pioneers by example
Constitutive theme 1 Relation to state actors (28 codes in 60 articles)	1.1 Cooperation and collaboration (16 codes in 53 articles)	Alignment of NSSA and state ambitions Cities link state and non-state actors Climate solidarity and partnership Contribute to state-led climate mitigation Cooperation among cities and municipalities Cooperation among NSSAs Create networks and build alliances Embrace NSSA engagement in post-Paris climate governance Foster collaboration and integration of non-state action Galvanize non-state action to close the emissions gap NSSAs as diplomats NSSAs share information, knowledge, expertise Orchestrate state-led action Productive interaction with state governments/multilateralism States participating in/supporting non-state action Strong neo corporatist rationale
	1.2 Confrontation (6 codes in 21 articles)	Challenge state power in negotiations Confrontation within the industry sector Pressure states into climate action and increase ambition

TABLE 2 (Continued)

Core themes	Code groups	Codes
		Naming and shaming NSSAs as activists Resistance to climate policies and regulation
	1.3 Co-optation and substitution of state action (6 codes in 13 articles)	Action through coercion Complement insufficient state action NSSAs coopted by the state Stand-alone initiatives Substitute state ambitions and rule-making Tokenism
Constitutive theme 2 Level of ambition (16 codes in 37 articles)	2.1 Reformist (5 codes in 20 articles)	Corporate climate action Incremental change and institutional reforms Influence changes in legislation Provide legalistic advice and technical solutions (apolitical) Regulatory framework and stringent policy influence
	2.2 Transformative (8 codes in 18 articles)	Contest established worldviews Framing strategy Mobilize alternative ways of living Multinational corporations confronted by NSAs Promote climate justice Reframing and issue-linkage (e.g., justice, human rights, class) Repoliticize climate change Scaling action
	2.3 Resistance, keep the status quo (3 codes in 12 articles)	Conflict of interest (fossil fuel industry participation) Hedging strategies Weak influence or failure to make a significant contribution
Constitutive theme 3 Knowledge foundations (11 codes in 10 articles)	3.1 Dominance of science (5 codes in 6 articles)	Acknowledge and make use of science Address the politics behind climate science making Discredit climate science Scientific expertise contribution to distributional climate justice Science to highlight conflicts in interests and values
	3.2 Alternative knowledge (4 codes in 5 articles)	Bring in indigenous perspectives Foster traditional beliefs and coping strategies Indigenous knowledge to tackle climate change Religious and faith-based arguments
	3.3 Multiple sources (2 codes in 2 articles)	Combine traditional knowledge and modern science Linking religious beliefs to science

governing climate change. Our review highlights that this relationship not only varies from non-challenging to disruptive modes of engagement, but that there is also increased attention on how NSSAs become co-opted by state authorities or potentially substitute state responsibilities.

The concept of "hybrid multilateralism" (Bäckstrand et al., 2017) captures the intensified interplay between state- and non-state actors. Such a multilateral setting enables "productive interactions between the transnational and international levels" (Hermwille, 2018, p. 462) and more robust integration of NSSAs to pave "a way to help achieve national targets" (Chan et al., 2016, pp. 242 and 468). To productively contribute to intergovernmental climate action, NSSAs share information, knowledge, and expertise (Nasiritousi, Hjerpe, & Bäckstrand, 2016), provide research and education (Kuyper et al., 2018), and foster communication among stakeholders. Through these activities, NSSAs aim to shape and inspire state preferences to incentivize more ambitious state targets and facilitate change. NSSAs support governments to reach their NDCs through modes of orchestration and alignment of non-state action with national targets (Chan et al., 2019; Michaelowa & Michaelowa, 2017). Sub-state authorities like cities and municipalities foster cooperation through transnational initiatives and networks like the C40 Cities Climate Leadership Group (Davidson et al., 2019) or

local trans-municipal partnerships (Nguyen Long & Krause, 2020). Cities thereby facilitate multi-stakeholder networks and act as crucial connectors between state commitments and NSSA action (Smeds & Acuto, 2018). Umbers and Moss (2020) argue that sub-national actors like California, British Columbia, or New York City complement insufficient state action in response to the failure of collective efforts. Also businesses and private entities increasingly influence climate regulatory processes, which poses a threat to public authority and legitimacy (Streck, 2020, p. 25).

Scholars also highlight the critical and confrontational position NSSAs can have. Carter and Childs (2018) illustrate through their study of *Friends of the Earth* how a civil society organization can put pressure on states to demand more urgent and radical climate action. Allan and Hadden (2017) demonstrate how NGOs can successfully reframe climate change-related loss and damage as an issue of social justice rather than of pure scientific evidence. Pearse (2016) describes contentious climate- and energy-related activism in Australia, claiming that these social movements challenge established institutions that they think fail to act adequately on climate change.

Confrontational NSSAs also include private actors such as multinational corporations that oppose stricter climate regulations. Most prominently, Nasiritousi (2017, p. 11) describes the strategies and actions of the 10 largest oil and gas companies to undermine climate policies that they refuse as "too costly." Downie (2016) explains how European-based companies shape international climate negotiations by framing stricter climate policies as an "existential threat" (Downie, 2016, p. 31) to their business. Hein and Jenkins (2017, p. 112) suggest that such resistance "from the inner circle of the corporate elite" also leads to a lack of national climate legislation in the United States.

Climate governance scholars argue that tapping the potential of different NSSA groups to close the emissions gap can be problematic as it risks substituting or replacing state commitments (Chan et al., 2016; Kuramochi et al., 2020). This could reduce pressure on national governments and their responsibility to formulate and implement meaningful emissions reduction measures themselves (Michaelowa & Michaelowa, 2017). For example, the Paris Agreement's focus on voluntary action constrains the mitigation potential of private climate governance in the United States as it incentivizes free-riding (Banda, 2018, p. 387). Streck (2020, p. 24) identifies challenges in terms of legitimacy, accountability, and regulatory control due to a "de-facto delegation of agency to non-state actors." She proposes a formalized engagement of the intergovernmental climate regime with transnational partnerships to "complement government action, not replace it" (Streck, 2021, p. 496). Other scholars refer to previous experiences with carbon leakage (van Asselt & Brewer, 2010) which occur if global emissions rise despite some countries taking action.

While states fail to act, non-state groups like youth or indigenous people criticize being "tokenized" in climate negotiations (Belfer et al., 2019, p. 13). For example, more and more Party delegations to the UNFCCC allow official youth representatives as their delegates, but their ability to access or shape the negotiations remains limited (Thew et al., 2021). Exemplifying this criticism, the term "youth washing" refers to attempts where young activists are used to legitimizing insufficient pledges by countries or businesses (Godsland, 2021). Based on evidence from Finland, Gronow and Ylä-Anttila (2019) point to the risk that also environmental NGOs can be co-opted and instrumentalized by state- and business interests in a corporatist state, which compromises their initial ambitions to generate significant change and prioritize ecological concerns over economic values.

Overall, state-non-state relations in post-Paris climate governance are diverse: While some choose collaborative forms of engagement, create partnerships, and align climate ambitions, others put direct pressure on governments, criticize inaction, and challenge state power. Interestingly, these distinct strategies cut across different actor groups, as we found examples of collaborative and confrontational relations for businesses, NGOs, and subnational authorities alike. An emerging research avenue also deals with the threat of instrumentalization, forms of co-optation, and the dangers of substituting state action. The quest for how NSSAs relate to state actors and the NDC process is closely tied to their level of ambition and the societal change they aim for.

4.2 | Levels of ambition

The scope and depth of societal change promoted through non-state climate action vary greatly from technology-driven ecological modernization to deep societal transformation (Marquardt & Nasiritousi, 2021). NSSA's levels of ambition also fluctuate over time: For example, business actors that start as innovative climate pioneers can turn into free riders and "symbolic leaders" (Dupuis & Schweizer, 2019, p. 77). Consequently, NSSA involvement can flaw, delay, or prevent meaningful change toward large-scale transformation (Chan et al., 2019). Research about these different levels of ambition deals with the ideas of societal change NSSAs postulate and whether they aim to shape individual behavior, spread green technologies or fight for more fundamental social, political, and economic change. The second constitutive theme

of 'different levels of ambition' refers to the kind of change NSSAs envision and aim to achieve in society through climate action. Competing levels of ambition point to conflicts and tensions that may occur despite unifying goals such as the 1.5°C target.

The literature describes multiple, often competing, levels of ambition that we categorize as (1) moderate attempts to reform industries through policy changes and market incentives, (2) transformative attempts to implement more systemic and radical changes, and (3) attempts to resist, deny, or delay progress to protect the status quo. This differentiation reflects debates on effectiveness and ambitions in global climate governance literature more broadly: While Hermwille (2018) argues that the Paris Agreement might cause an "incrementally more sustainable and ultimately carbon-free future," Allan (2019) describes it as an underwhelming solution with insufficient capacity to reduce emissions and solve the climate issue because it compromises ambitions in favor of repackaging existing measures.

Reform-oriented NSSAs aim to influence and improve existing climate legislation through advisory work and pressure on influential stakeholders in legally accepted processes (Fraundorfer, 2017). For example, NGOs and indigenous peoples' networks navigate through established negotiation systems and use international conferences as an opportunity to strategize their approach to change despite material constraints, language barriers, and the threat of tokenism (Allan & Hadden, 2017; Belfer et al., 2019). Carter and Childs (2018) present the "effective policy entrepreneurial role" of a reformist NGO like *Friends of the Earth* that cooperates with state officials by focusing on specific topics rather than pushing them for normative standards that may divert attention from more practical issues. A focus on established procedures, technicalities, and standardization through scientific data is also key to city networks (Gesing, 2018, p. 131). According to the UNEP Emissions Gap Report, NSSAs "play an increasingly important role in raising ambition and accelerating implementation" (UNEP, 2021, p. 28) due to their credibility, responsibility, and accountability. Still, limitations to realizing such ambitions exist, for example, due to uneven distribution of material and leverage powers (Nasiritousi, Hjerpe, & Linnér, 2016). Michaelowa and Michaelowa (2017) come to a similar conclusion: Although at least subnational governments and NGOs (in contrast to business initiatives) aim to go beyond insufficient national regulations, they struggle to compensate for states' inadequate efforts and thereby bridge the emissions gap.

Corporate actors support climate policies and legislation that sustain or improve their competitive capacity in the market, which entails eliminating risks, and costs and managing stakeholder pressure (Weber, 2018). The ambition to maintain relations with external stakeholders and potential employees sometimes translates into hedging strategies where companies show public support when legislation is expected to succeed, despite having a history of opposing it (Downie, 2017; Nasiritousi, 2017). While some corporate actors favor voluntary climate action, the general ambition is higher if regulatory frameworks are in place—especially when the legislation acts as a benchmark for performance and competitive capacity (Dupuis & Schweizer, 2019, p. 80).

In contrast, more disruptive NSSAs express criticism toward established procedures and provide contestation toward widely accepted worldviews. For example, trade unions formulate a Marxist critique of neoliberal values and ecological modernism that directs attention to the interconnectedness between labor, capital accumulation, and the environment (Hampton, 2018). Similarly, climate justice organizations blame market-based solutions and current modes of representation "as responsible for largely ineffective climate politics" (Glaab, 2017, p. 10). Global South groups like the *Bolivian Climate Justice Movement* challenge Eurocentric perspectives and adopt indigenous worldviews to contest dominant framings of development and modernity (Hicks & Fabricant, 2016). These transformative social actors aim to change lifestyles, restructure the existing socio-economic order, and (re)politicize the climate discourse (Glaab, 2017).

Promoting these political agendas requires a considerable reframing of the climate change issue (Allan & Hadden, 2017). Framing tactics consist of top-down, universal, legal-based, and administrative rationales of green governmentality on the one hand and decentralized, bottom-up, and market-based narratives of ecological modernization on the other hand (Kuchler, 2017). Civil society organizations engaged in international climate diplomacy have adopted a more confrontational and radical framing over time, which integrates climate justice concerns, shifts attention to affected actors who carry the burden of realizing climate politics, and encourages unheard voices to get represented in formal procedures (Allan & Hadden, 2017; Smeds & Acuto, 2018). The level of ambition is thereby steered by emotions including anger, hope, fear, and their interplay, as outlined by Kleres and Wettergren (2017).

4.3 | Knowledge foundations

The third constitutive theme emerging from the literature captures how scholars present climate action as being connected to and consequently affected by different sources of knowledge. The theme of 'knowledge foundations' refers to

how various forms of knowledge—from universalized science to local knowledge and indigenous wisdom—get mobilized to legitimize, support, or challenge climate action. We can distinguish between three different knowledge foundations NSSAs use: (1) science, (2) alternative knowledge sources, and (3) a combined approach.[5]

Science—mobilized by NSSAs and states—influences what we know about climate change, how we anticipate its impacts, and which efforts we consider necessary to tackle it. Shen and Steuer (2017) describe science, primarily pronounced by experts and scientists, as a common denominator between states and the broad field of NSSAs that facilitates consensus about climate change. But also the scientific community itself represents a non-state actor, which shapes the UNFCCC regime as an official observer group and—most prominently—through the Intergovernmental Panel on Climate Change (IPCC) that closely cooperates with UNFCCC bodies (UNFCCC, 2021b). These "non-state specialists" (Shen & Steuer, 2017, p. 354) deliver research and expertise in negotiations (Rietig, 2014), and provide information and training to develop climate governance capacities at all levels.

Science is commonly seen as a bridge to overcome the Paris Agreement's tension between a common 1.5°C target and differentiation based on the principle of equity (Lahn, 2018). Yet, the conflict between a "neutral" understanding of science and principles of justice and equity is key in growing debates around the politics of scientific expertise. Lahn (2018) reveals how recognized scientific institutions are mobilized to establish a certain level of credibility, support ambitions, and spread political agendas, for example, by merging justice concerns with scientific assessments. Lahn (2018) suggests revising science as a knowledge foundation from a perspective of equity through evaluating and emphasizing potential interest and value conflicts when creating distributional justice. This reconfiguration can help countries and NSSAs to manage trade-offs between climate issues and other societal concerns. However, the literature also reveals opposing views on whether science is usable once produced through cooperation between scientific and political institutions (Hughes & Paterson, 2017). Nasiritousi (2017) also discusses the usability and support for science, pointing out that companies choose to discredit climate science, lobby against its validity, and support organizations that drive a discrediting agenda.

Fewer studies engage with the role of alternative sources of knowledge. Eisenstadt and West (2017) examine how indigenous people's belief in climate change in Ecuador is influenced by scientific evidence, but also their personal vulnerability, and indigenous cosmovision. These worldviews cover multiple traditional beliefs and ways of living where protecting the planet is an essential component and nature is perceived as an entity with agency. These perspectives are mobilized to question and re-evaluate particularly Eurocentric values and the neoliberal agenda that steers current climate change negotiations (Belfer et al., 2019; Eisenstadt & West, 2017; Hicks & Fabricant, 2016). Based on their extensive ethnographic study of the civil society coalition *Bolivian Platform against Climate Change*, Hicks and Fabricant (2016, p. 7) show how involved organizations that are "united by their shared distrust of modern nation-states" mobilize indigenous thinking to challenge established conceptions of development. Interestingly, while these organizations show a confrontational relation to states globally, state-non-state relations in Bolivia alternated between "cooperative and adversarial" (Hicks & Fabricant, 2016, p. 2) under Evo Morales' socialist government.

Indigenous knowledge also gets mobilized as a potent source for criticism of accounting for efficiency and equity in global climate governance. Indigenous communities' knowledge has extended beyond its place of origin to re-evaluate coping strategies related to agriculture, drought, and flooding (Hicks & Fabricant, 2016). Indigenous groups and climate justice activists have successfully advocated for alternative knowledge sources and human-nature relations based on concepts like *sumak kawsay* or *buen vivir*. In addition, indigenous cosmovision believers also show a higher level of concern when it comes to climate change. Further research needs to explore their recognition in international climate governance and how policies incorporate "essentialist views of traditional indigenous knowledge and other essentialized constructs" (Eisenstadt & West, 2017, p. 55).

Religious beliefs have emerged as another influential knowledge foundation justifying climate action. Faith-based advocacy groups and religious leaders particularly highlight climate justice concerns and problematize the ethical dimension of climate change in international climate negotiations (Glaab, 2017). Although most religious groups have taken a critical approach toward global climate governance and ecological capitalism, they articulate their concerns within established formats in contrast to the more radical climate justice network, thereby following "a more 'mainstream' approach" (Glaab, 2017, p. 10). In April 2016, religious leaders from around the globe delivered their "Interfaith Climate Change Statement to World Leaders" (UNFCCC, 2016) to urge governments to rapidly implement the Paris Agreement. However, Glaab (2017) also found that religious knowledge claims have not led to a more positive environmental impact than secularized arguments.

Although science continues to dominate climate action, NSSAs such as indigenous peoples' groups promote alternative knowledge foundations that re-evaluate widely adopted mindsets and strategies. However, scholars rarely explore

the combination of modern science, traditional beliefs, and cosmovision in an explicit manner. As a notable exception, the case of an Ecuadorian tribe confirms that a mixture of the two knowledge foundations positively affects the belief in and action on climate change (Eisenstadt & West, 2017). For example, indigenous leaders utilize science to hinder external actors from propagating oil on their land, and extracting fossil fuels on their terms (Eisenstadt & West, 2017), and consider living in and with nature as a knowledge foundation that complements science rather than questioning or challenging it.

5 | FROM A FACILITATIVE TO A CONTESTED CLIMATE REGIME

Insufficient state commitments and increased attention to voluntary pledges by the groundswell of NSSAs in the aftermath of COP21 fueled a broad research agenda on non-state climate action. This review has brought three constitutive themes to the forefront of debate. While "state-non-state-relations" and "levels of ambition" echo previous conceptualizations (e.g., Betsill, 2015; Scholte, 2002), questions related to "knowledge foundations" emerge as an increasingly contested field that has received little conceptual attention in global climate governance. All three constitutive themes describe how NSSAs position themselves toward the facilitative post-Paris climate regime on a continuum between compliance and critique. This gives room to a multitude of strategies and risks associated with these roles; pointing at the limitations of a facilitative regime.

5.1 | Facilitators, implementors, and confronters

Particularly three paradigmatic NSSA roles emerge from the constitutive fields identified above (see Figure 1). They reflect not only an established spectrum between cooperative and confrontational strategies (Dellmuth & Tallberg, 2017 differentiate between inside and outside strategies), but they also draw attention to particular threats in a facilitative regime, such as the substitution of state action, forms of co-optation, tokenism, and depoliticization.

Constructive facilitators describe actors with a cooperative position toward state-led climate governance. They promote reforms within established economic, social, and regulatory structures, rooted in a strong belief in climate science, technological advancement, and market-driven incentives. They join the UNFCCC negotiations and contribute to collaborative efforts like the Global Climate Action Platform to enhance state commitments. Constructive facilitators shed light on the nexus between climate change and other ecological and social issues, develop mitigation measures, provide expertise, and cooperate with different stakeholder groups, both domestically and across jurisdictional levels. For example, cities and regions push for more ambitious national emission reduction targets, which could be transmitted to a larger scale in a cooperative setting (Hale, 2020). Hultman et al. (2020, p. 8) found that aggregated U.S. state, city, and business commitments alone could reduce emissions by 25% below 2005 levels by 2030, and could function as

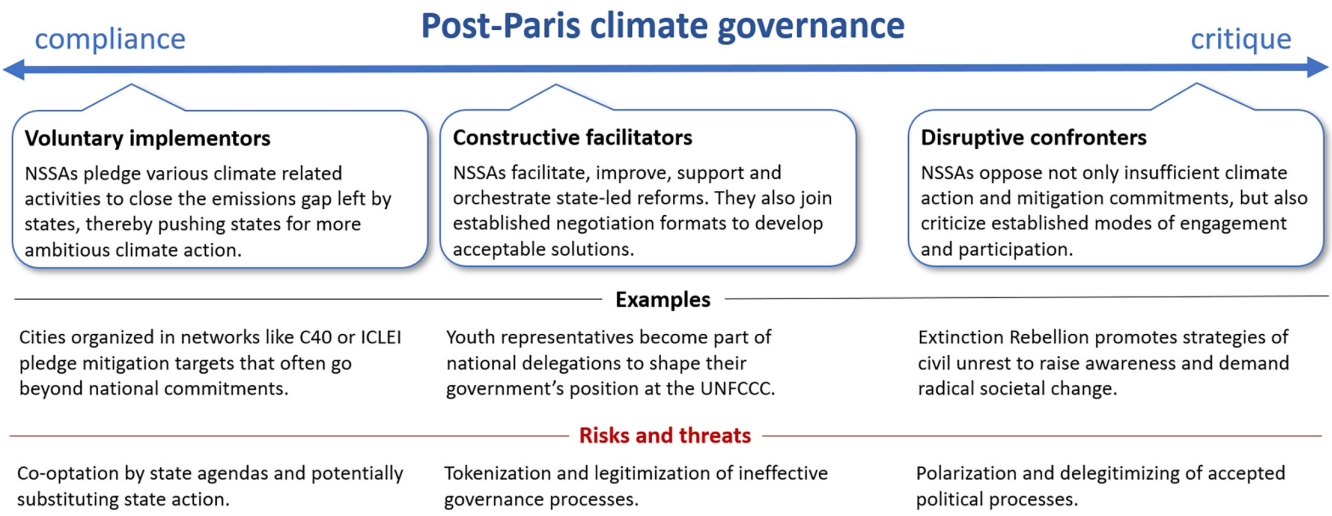

FIGURE 1 Paradigmatic roles of non- and sub-state actors in post-Paris climate governance

"stepped-up action" for additional national commitments to reduce emissions by 49%. To flourish, these decarbonization initiatives require effective national climate policy frameworks (Hultman et al., 2020; Kuramochi et al., 2020). However, national governments may "become complacent and overly rely on non-governmental action" (Streck, 2020, p. 28) as they fail to act themselves.

Most compliant NSSAs not only support state-driven climate action, but even become *voluntary implementors* on their own. Corporate actors particularly pledge for voluntary mitigation efforts that often align with or surpass national ambitions. Transnational businesses and city networks proactively announce to fill the emissions gap left by states as they push federal governments to increase their commitments. Companies particularly from liberal democracies participate in transnational initiatives (Hsueh, 2017), but to assess their commitment further studies are needed, for example, through comparisons of voluntary action across geographies and industry sectors. The U.S. campaigns "America's Pledge" and "We Are Still In" under the Trump Administration exemplify the use of voluntary non-state commitments as a political tool to counterweight governments' inaction and make states move toward a more progressive climate change agenda. Other corporate actors legitimize state-driven climate action, but only to the degree to which it is beneficial for their level of ambition. If state ambitions are low, companies' efforts to align their plans with the state or even increase ambition are limited. While NSSAs as voluntary implementors mainly push climate action to a more progressive path, they can also legitimize ineffective or insufficient state-driven climate politics that prevents more substantial reforms of current political, economic, and social systems.

At the most critical end of the spectrum, NSSAs such as NGOs, youth representatives, local communities, and indigenous peoples' groups act as *disruptive confronters* in post-Paris climate governance. They demand systemic change beyond incremental reforms, challenge established routines, and foster critical interventions often related to non-Western knowledge foundations (Hicks & Fabricant, 2016). Instead of focusing on technological innovations and cumbersome negotiations, disruptive confronters tackle power relations, mobilize against vested interests, and challenge the status quo by calling for systemic changes. They highlight societal concerns such as injustices, gender inequality, and neo-colonialism attached to the climate crisis (Dehm, 2017). Disruptive confronters promote alternative modes of knowing, like indigenous thinking, against "hegemonic knowledge" (Machen & Nost, 2021) and the dominance of modern science. These new perspectives potentially disrupt established ways of evaluating climate change and its effect on society, people, and nature. As demonstrated in the context of youth advocating for climate justice, NSSAs need to be aware of power relations and stakeholder constellations that may impair the extent to which their knowledge claims are recognized and integrated into the decision-making process (Thew et al., 2020). Similarly, indigenous groups may lack recognition from the wider non-state actor community as they speak for marginalized communities and possess underrepresented knowledge (Nasiritousi, 2016).

While research on non-state climate action is much more heterogeneous than these three paradigmatic roles, the 20 most cited articles considered in this review confirm that the field tends to prioritize compliance and collaborative forms of governance (see Figure 2). These roles are, however, interrelated rather than strictly separated. For example, indigenous groups that aim to widen the scope through participation can use confrontative strategies of protest but comply with the UNFCCC rules during COPs.

The three roles highlight the constant challenge for NSSAs to position themselves toward the international climate change regime (Chatterton et al., 2012), thereby reflecting competing environmental discourses that shape how we perceive, construct and evaluate the role of NSSAs (Bäckstrand & Lövbrand, 2006; Dryzek, 2013). In practice, however, a facilitative, synergetic, and collaborative post-Paris regime architecture risks overshadowing these fundamental differences. Instead, we should recognize the merits of contestation as a driver for progressive and meaningful change.

5.2 | The limits of a facilitative regime: Four cautionary tales

Constructing post-Paris climate governance as a facilitative regime based on joint action comes with various caveats. NSSAs that aim to act "without allowing for deliberation and contestation about the (supposedly shared) goal" risk losing their critical capacity when contributing to a global decarbonization agenda (Jernnäs, 2021, p. 15). Particularly *substitution of state action*, *co-optation*, *tokenism*, and *depoliticization* represent interrelated threats arising from a collaborative setting. We outline these four cautionary tales of a facilitative regime and explain why we consider insufficient attention to contestation problematic.

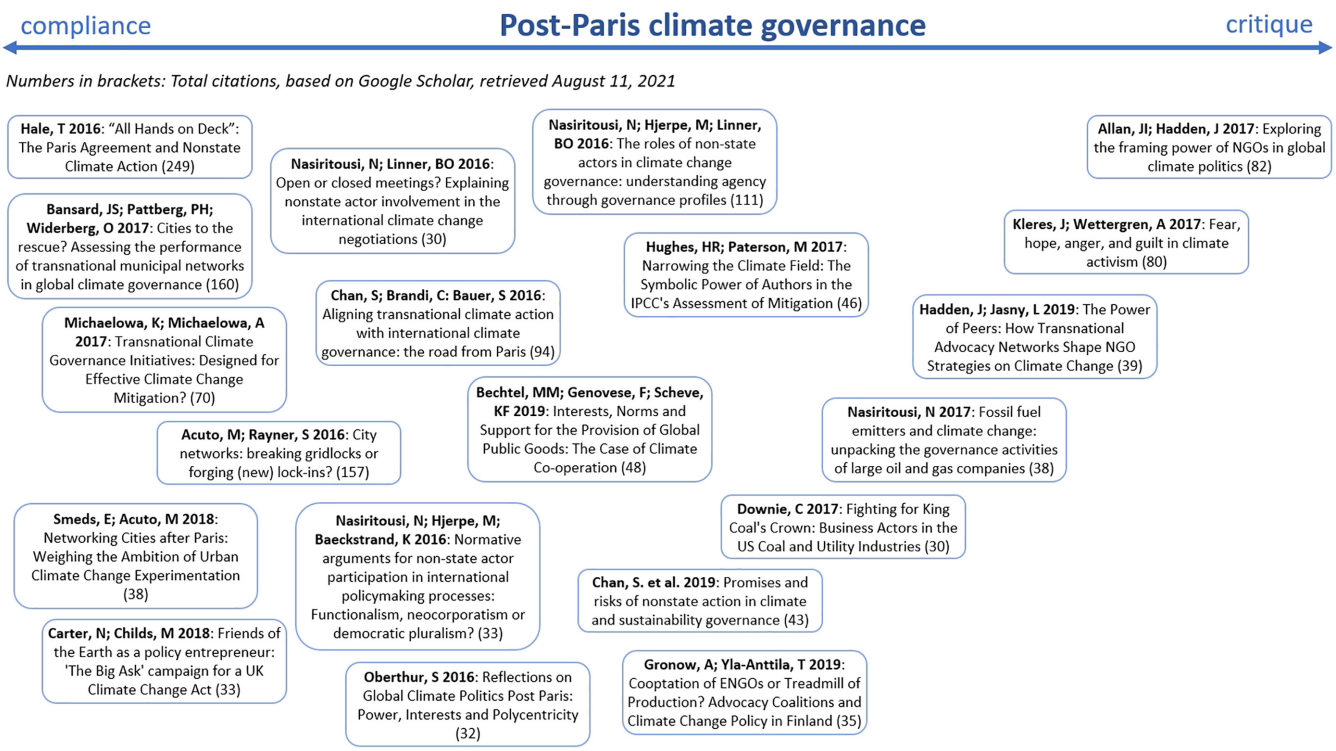

FIGURE 2 Twenty most cited articles dealing with NSSAs in post-Paris climate governance

5.2.1 | Substitution of state action

The facilitative climate regime encourages NSSAs to join the collective fight against climate change but also runs the risk to substitute state responsibilities and gloss over fundamental differences within the broader field of non-state climate action. Particularly constructive facilitators are exposed to criticism to legitimize ineffective governance processes and thereby prevent the action needed to tackle the climate crisis (Bäckstrand et al., 2021). During COP26 in Glasgow, we have seen possibly record-breaking pledges and announcements to deliver ambitious emissions reduction targets by all kinds of actors, supporting the positive narrative of a facilitative climate regime (Muñoz & Topping, 2021). Yet, state commitments and their updated NDCs still fall short to achieve the target set in Paris even if fully implemented. A mismatch that the Climate Action Tracker (2021) called "a massive credibility, action and commitment gap." Although transnational climate governance initiatives and national policy efforts can complement each other (Cao & Ward, 2017; Kahler, 2017; Roger et al., 2017), such evidence does not eliminate the risk of NSSAs substituting state commitments, and taking pressure from governments to ratchet up their NDCs. Hsu and colleagues (2020) observed this phenomenon in the context of the negotiations around the Paris Agreement where, for example, China, India, and Brazil "cautioned that NSA efforts 'must not distract' from and 'can't substitute for the core actions' of national climate efforts" (Hsu, Brandt, et al., 2020, p. 453).

Also, voluntary implementors risk becoming instrumentalized by state actors when "asked to provide voluntary climate targets in the service of governments" (Bäckstrand et al., 2017, p. 575). The threat of substitutive climate action becomes particularly visible in the context of sub-state actors such as cities and regions, that go beyond their responsibilities and use their autonomy to set ambitious targets and implement more effective climate action in certain local issue areas like energy or transport (Hale, 2018). Scholars warn that greater independence does not always lead to more successful outcomes when NSSAs respond to national regulations and climate targets (Michaelowa & Michaelowa, 2017), as sub-state actors are not necessarily more ambitious than national governments (Bansard et al., 2017). To mitigate these risks, scholars suggest that national governments provide opportunity structures through incentives and funding (Roger et al., 2017). We agree that this would require governments to pay attention to both national and international institutions and policies. However, we also urge that alternative or confrontational NSSAs should be considered in the process of creating those structures, to safeguard more inclusive and effective outcomes.

5.2.2 | Co-optation

In November 2021, Glasgow hosted not only the UNFCCC negotiations, but also attracted a lot of outside protests, workshops, and an alternative climate summit. NGOs expressed their frustration about the "most elite and exclusionary Cop ever held" (Taylor, 2021) despite formalized NSSA participation and inclusion. By merging NSSAs into the very system that caused the current environmental crisis, these actors risk being co-opted as they fail to articulate alternatives and demand ambitious changes. Instead of challenging the status quo, they are prone to protect it, that is, they align with the existing ambition and working trajectory of the governance context they enter. Thew et al. (2020) found evidence of this in the context of the climate justice movement, in cases where youth representatives have become "'socialized' or 'molded' into the UNFCCC procedures to accept and replicate the status quo" (Thew et al., 2020, p. 4). Westholm & Arora-Jonsson (2018, p. 933) observed a similar pattern for gender advocacy groups in the REDD+ regime. They risk getting "co-opted into a mainstream, depoliticised discourse" rather than changing perspectives. Integrating NGOs into climate initiatives can also lead to financial dependencies, so they might avoid expressing public criticism against the initiative. To raise concerns, co-opted NGOs switch to more informal channels, but avoid public "naming and shaming" (Hermansen et al., 2017).

Modes of co-optation can be observed from the local to the global level. At the local level, grassroots climate initiatives like urban gardening groups produce ambivalent and contradictory effects when being co-opted by policy-makers and regulators (Celata & Coletti, 2018). At the international level, more countries invite youth representatives to join their UNFCCC delegations partly in response to the global school strikes. While these attempts could potentially raise young voices, youth delegates often struggle with restricted access, the pressure to provide solutions, and their limited ability to solely "act as a critical counterweight to governments" (Thew et al., 2021, p. 5). Particularly at COP26, youth delegates constantly experienced "the dilemma of participating to have one's voice heard while being exposed to processes of co-optation" (Aykut et al., 2022). These observations resemble what Sprain (2016) describes as the "paradox of participation" in development studies where participation is considered an empowering approach but also leads to "the co-optation and delegitimization of marginal people" (Sprain, 2016, p. 68). In contrast, the nuclear lobby provided a visible example of co-opting established climate symbols like the polar bear, climate science, and even the youth strikes as they lobbied for a pro-nuclear agenda (Pavenstädt, 2022).

5.2.3 | Tokenism

Once NSSAs become an integral part of the state-driven climate regime, it becomes difficult for them to articulate critique from the 'outside' and keep their distance from the state. At COP26, UK Prime Minister Boris Johnson embraced the participation of youth delegates in light of ongoing mass protests. However, his efforts were criticized to be "not about sincere youth participation but about opportunistic tokenism" (Hettihewa, 2021). Greta Thunberg deliberately refused to join the official UNFCCC negotiations in 2021, which she criticized as a "PR event" and a "celebration of business as usual" (Collins, 2021). Tokenization in a facilitative regime can result in the loss of alternative narratives, values, and needs, for example, when it comes to seemingly technical solutions like geo-engineering and the socio-political changes they entail. The instrumentalization of youth often referred to as "youth washing," points to the lack of meaningful contestation despite youth presence at COPs (Thew et al., 2021).

For indigenous people, COPs provide an opportunity to shape the agenda, engage with policymakers and collaborate with like-minded people. Yet, they are also exposed to tokenism. Showing indigenous traditions and ceremonies at COPs "risks conveying an aura of greater 'inclusivity' despite little fundamental progress" (Belfer et al., 2019, p. 24). Such a lack of recognition adds to other material and procedural constraints experienced by indigenous people. During COP26, indigenous peoples' representatives have experienced a "tokenizing dynamic," which they describe as a "continuation of colonialism" (Lakhani, 2021). They felt voiceless and unable to contest the collaborative climate change regime despite their presence throughout the event (Brave NoiseCat, 2021).

5.2.4 | Depoliticization

A collaborative setting that overshadows contestation attached to societal challenges like decarbonization, risks amplifying the depoliticization of climate change. If climate politics is reduced to decarbonization pathways, emissions

reductions can be detached from political conflicts and social concerns. Solving the climate crisis then becomes a foremost technical and economic challenge. At the end of COP26, several NSSA groups, including youth, indigenous peoples, and trade unions marched out of the UNFCCC venue. They articulated a strong disappointment over the perceived failure of COP26 and protested against the negotiations' focus on technicalities and economic incentives while evading political debates (Brooks, 2021). Particularly the lack of climate justice and social equity concerns in the negotiated text was criticized. The emphasis on measuring emissions reductions rendered other non-quantifiable social and political issues invisible and irrelevant.

Focusing on technical solutions, asserting expertise to scientific bodies, and diffusing responsibility, are well-known modes of depoliticization that characterize the climate regime. For decades, states which refuse to act have used the "common but differentiated responsibilities principle" as a shield to avoid or delay action (Louis & Maertens, 2021). The principle acknowledges that all countries need to address climate change, but not in an equally responsible manner. If all contribute to the same challenge, responsibilities become blurred. Or, as Aykut and Maertens (2021, p. 513) put it, "if everyone is responsible, no one is." Geographers and social movement scholars investigate how environmental organizations navigate through the post-political conditions offered by the facilitative regime context. For example, de Moor et al. (2021, p. 312) discover that the "post-political context [of the climate crisis] has some depoliticizing impact." Weisser and Müller-Mahn (2017, p. 15) show how the techno-managerial setting of COP21 in Paris with its synergetic and collaborative win-win rhetoric helped "keeping political moments under control."

The Climate Action Hub at COP26 provided a vivid example of how all four threats work in parallel. Meant as a "dynamic events-space" for non-Party stakeholders to stage events and share their perspective with a "focus on concrete climate action" (UNFCCC, 2021a), the area was located at distance from the actual climate talks. While any effects on the negotiations were blurry at best, the scene was dominated by a techno-optimistic science-driven narrative, fueled by stories of hope and optimism, and avoiding (political) contestation. This paves the way for a future research agenda that reinterprets the post-Paris climate regime as a contested governance landscape.

6 | A RESEARCH AGENDA

Through our review, we argue that NSSAs should not be narrowed down to mere implementors, contributors, and supporters of a state-led agenda in a facilitative regime. Such a focus entails the potential to overshadow threats of co-optation, divert attention from state responsibilities, and render more radical alternatives irrelevant. Instead, future research should engage more seriously with the various forms of contestation arising from a facilitative, collaborative, and synergetic setting. We propose three future research areas to (1) critically evaluate collaborative climate governance, (2) investigate the role of competing knowledge foundations, and (3) engage with other fields of study in critical social sciences.

1. Research on the role of NSSAs is dominated by a technical and often managerial perspective, focusing on questions of effectiveness, efficiency, and legitimacy (Ciplet & Roberts, 2017). Non-technical solutions and socio-political alternatives that challenge the status quo remain marginal or invisible. Our review highlights the need to further empirically explore the participation of different types of NSSAs to broaden our understanding of contestations within governance processes and the effects from the local to the global level. Future research should critically reflect on the implications and potential threats of joint efforts and partnerships in a facilitative governance regime, particularly concerning broader societal effects and forms of institutionalization. Early studies in this direction include Allan (2021) and de Moor et al. (2021), who focus on the struggle new climate movements' have in navigating the post-Paris climate governance landscape.
2. Our review sheds light on the different knowledge foundations that inform, incentivize, and legitimize non- and sub-state climate action. Alternative knowledge foundations can challenge widely adopted mindsets and strategies related to climate change can offer avenues to re-evaluate climate-related societal and distributional justice. They enable us to think "outside the box" and should therefore be investigated more closely in the future, also to better understand how NSSAs' roles are informed. Building on previous work on the co-production of knowledge and social order (Edwards, 2017; Jasanoff, 2004) scholars could elaborate on questions such as "What counts as evidence?," "Who benefits from the use of science?," or "How do scientific and political processes shape each other?" Answering these questions will help us better understand the possibilities and limitations of alternative knowledge discourses, their translation into effective and legitimate practices, and NSSA participation in governance processes.

It is also relevant to examine and compare to what extent local experiences match the general acceptance of universalized knowledge claims. For instance, Wittmayer et al. (2014) show how alternative knowledge claims provide a critical voice and represent marginalized groups. The emergence of citizens' climate councils points at tensions and potential synergies between the knowledge generated through local experiences and globalized science, expert wisdom, and lay knowledge. We suggest further examining how youth, indigenous peoples, and other marginalized groups identify and cope with the type of knowledge structures and procedures set out to integrate these groups (Belfer et al., 2019). Besides, longitudinal studies could illuminate whether the acceptance of alternative knowledge foundations changes over time.

3. Finally, we encourage climate governance scholars to engage with other fields of study to grasp the complex societal challenges of the climate crisis. More precisely, we propose an exchange with social movement studies (Corry & Reiner, 2021; de Moor, 2020; Hess, 2005) and science and technology studies (Jasanoff, 2010; Machen, 2018; O'Lear, 2016). Climate governance scholars can make use of the knowledge that has been generated within these research communities, for example, regarding questions connected to how knowledge is being produced, mobilized, and contested (Beck et al., 2021; Jamison, 2010). However, scholars can also fertilize existing knowledge to substantially reflect on questions of co-optation, tokenization (e.g., Thew, 2018), and the risks of a collaborative regime setting when dealing with confrontational NSSAs, like Fridays for Future or Extinction Rebellion. For decades, social movement studies have engaged with the threat of co-optation by political elites and the risk to undermine the credibility of social movements as agents of change (Lima, 2021). A promising research avenue would be to empirically explore the conditions under which co-optation and tokenization occur and the political consequences these strategies may entail. Besides, the various power dynamics behind a facilitative climate regime are yet to be empirically explored. Guiding questions for this field of inquiry include: "Who is in, who is out, and who dominates?," "Where do new social movements position themselves in global climate governance on a spectrum between compliance and critique?," and "How to draw the line between insiders and outsiders?"

Through this review, we have problematized the facilitative setting of the post-Paris climate regime. We have identified three constitutive themes that shape how NSSAs engage with the climate regime and discussed paradigmatic NSSA roles on a continuum between compliance and critique. Building on earlier categorizations, we provide an updated account of the literature by acknowledging not only the importance of NSSAs to support states in tackling the climate crisis by taking on facilitative, cooperative, and collaborative roles, but by arguing that NSSAs also need to play a critical and confrontational role in international climate governance. Weisser and Müller-Mahn (2017, p. 16) called Paris "not the right moment for climate activism to rise from the shadows of the COPs. But maybe post-Paris is." To find out, future studies need to empirically engage with the risks of a facilitative regime, such as tokenism, and depoliticization, thereby reinterpreting contestation as a driver for progressive and meaningful change.

AUTHOR CONTRIBUTIONS

Jens Marquardt: Conceptualization (lead); data curation (equal); formal analysis (equal); investigation (lead); methodology (supporting); software (equal); validation (supporting); visualization (lead); writing – original draft (lead). **Cornelia Fast:** Conceptualization (supporting); data curation (equal); formal analysis (equal); investigation (supporting); methodology (supporting); software (equal); validation (lead); visualization (supporting); writing – original draft (supporting). **Julia Grimm:** Conceptualization (supporting); data curation (equal); formal analysis (equal); investigation (supporting); methodology (lead); software (equal); validation (supporting); visualization (supporting); writing – original draft (supporting).

ACKNOWLEDGMENTS

We are grateful to the Swedish Research Council for Sustainable Development (Svenska Forskningsrådet, Formas) for funding this research in the broader context of the "Action for Climate Transformation in Sweden" project (www.act-sweden.se). We would like to thank Karin Bäckstrand, Eva Lövbrand, Naghmeh Nasiritousi, Oscar Widerberg, and the scientific advisory board of ACTS for detailed comments and suggestions on earlier versions of this literature review. Besides, we thank Michele Betsill, Dorothea Schoppek and Timo Richter for their valuable feedback on earlier drafts of this review. We also thank the participants of the Symposium "Adressing Grand Challenges" at the 81st Annual Meeting of the Academy of Management, as well as partipants at the 2021 ESG Conference and the 14th NESS Conference for their valuable input on how to further improve the manuscript. Open Access funding enabled and organized by Projekt DEAL.

CONFLICT OF INTEREST

The authors have declared no conflicts of interest for this article.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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ENDNOTES

[1] When referring to the Paris Agreement we speak about the Conference of the Parties (COP) decision made in Paris in 2015 and the Agreement that was later adopted as an Annex to the COP decision. When ratified by at least 55 Parties accounting for at least 55% of total global GHG emissions, the Paris Agreement later turned into a legally binding treaty.

[2] The Paris Agreement distinguishes between Parties and non-Party stakeholders which include "civil society, the private sector, financial institutions, cities and other subnational authorities, local communities and indigenous peoples" (UNFCCC, 2015a, p. 2). Following this approach, we use the term non- and sub-state actors (NSSAs) as a category to refer to all public, private, and civil society actors beyond national governments. Such a broad definition allows us to reflect on a variety of actors, but has clear limitations as it simplifies a complex field covered in actor-specific sub-literatures with unique discourses, priorities, and areas of inquiry. We spell out the different actors when referring to specific literature.

[3] This categorization builds on earlier typologies. For example, Betsill (2015) distinguishes between "activists," "diplomats," and "governors" when describing the role of NGOs in climate negotiations. Yet, at least two reasons speak for revisiting the role of NSSAs in post-Paris climate governance. First, we provide an updated account of the broad literature on non-state climate action by substantiating the risks identified by Chan et al. (2016) inherent in a facilitative post-Paris climate change regime. Such an overview provides the basis for a critical intervention to ongoing policy debates and a governance regime dominated by facilitative, synergetic, and collaborative narratives. Second, we outline a future research agenda that engages with the importance of contestation in post-Paris climate governance.

[4] While the latter is strongly related to what Fisher (2010) calls "outsiders," protesting against state-dominated negotiations, there are various forms of protest and confrontational interventions also inside climate talks, as seen during COP25 in Madrid (Harvey 2019).

[5] The theme relates to increasingly essential discussions about the role of science and knowledge-making in climate politics, particularly in times of post-truth and alternative facts (Marquardt & Karhunmaa, 2018). Although it has received less attention in climate governance debates compared to the other two themes, the politics behind science-making stand at the center of several articles, including Hughes and Paterson's (2017) analysis of the IPCC as a "boundary organization" that significantly shapes climate change research and researchers.

REFERENCES

Allan, J. I. (2019). Dangerous incrementalism of the Paris Agreement. *Global Environmental Politics*, *19*(1), 4–11. https://doi.org/10.1162/glep_a_00488

Allan, J. I. (2021). *The new climate activism: NGO authority and participation in climate change governance*. University of Toronto Press.

Allan, J. I., & Hadden, J. (2017). Exploring the framing power of NGOs in global climate politics. *Environmental Politics*, *26*(4), 600–620. https://doi.org/10.1080/09644016.2017.1319017

Aykut, S. C., & Maertens, L. (2021). The climatization of global politics: Introduction to the special issue. *International Politics*, *58*(4), 501–518. https://doi.org/10.1057/s41311-021-00325-0

Aykut, S. C., Pavenstädt, C. N., Datchoua-tirvaudey, A., Amico, E. D., Braun, M., Hinks, E. K., Schenuit, F., Wilkens, J., & Rödder, S. (2022). Circles of Global Climate Governance: Power, Performance and Contestation at the UN Climate Conference COP26 in Glasgow.

Bäckstrand, K., Kuyper, J., & Nasiritousi, N. (2021). From collaboration to contestation? Perceptions of legitimacy and effectiveness in post-Paris climate governance. *Earth System Governance*, *9*, 100115. https://doi.org/10.1016/j.esg.2021.100115

Bäckstrand, K., Kuyper, J. W., Linnér, B.-O., & Lövbrand, E. (2017). Non-state actors in global climate governance: From Copenhagen to Paris and beyond. *Environmental Politics*, *26*(4), 561–579. https://doi.org/10.1080/09644016.2017.1327485

Bäckstrand, K., & Lövbrand, E. (2006). Planting trees to mitigate climate change: Contested discourses of ecological modernization, green governmentality and civic environmentalism. *Global Environmental Politics*, *6*(1), 50–75. https://doi.org/10.1162/glep.2006.6.1.50

Banda, M. L. (2018). The bottom-up alternative: The mitigation potential of private climate governance after the Paris agreement. *Harvard Environmental Law Review*, *42*(2), 325–389.

Bansard, J., Pattberg, P., & Widerberg, O. (2017). Cities to the rescue? Assessing the performance of transnational municipal networks in global climate governance. *International Environmental Agreements: Politics, Law and Economics*, *17*(2), 229–246.

Beck, S., Jasanoff, S., Stirling, A., & Polzin, C. (2021). The governance of sociotechnical transformations to sustainability. *Current Opinion in Environmental Sustainability*, *49*, 143–152. https://doi.org/10.1016/j.cosust.2021.04.010

Belfer, E., Ford, J. D., Maillet, M., Araos, M., & Flynn, M. (2019). Pursuing an indigenous platform: Exploring opportunities and constraints for indigenous participation in the UNFCCC. *Global Environmental Politics*, *19*(1), 12–33. https://doi.org/10.1162/glep_a_00489

Betsill, M. M. (2015). NGOs. In K. Bäckstrand & E. Lövbrand (Eds.), *Research handbook on climate governance* (pp. 251–261). Routledge.

Betsill, M. M., & Corell, E. (2014). NGO influence in international environmental negotiations: A framework for analysis. *Global Environmental Politics*, *1*, 65–85. https://doi.org/10.1162/152638001317146372

Betsill, M. M., Dubash, N. K., Paterson, M., van Asselt, H., Vihma, A., & Winkler, H. (2015). Building productive links between the UNFCCC and the broader global climate governance landscape. *Global Environmental Politics*, *15*(2), 1–10. https://doi.org/10.1162/GLEP_a_00294

Blok, K., Höhne, N., Van Der Leun, K., & Harrison, N. (2012). Bridging the greenhouse-gas emissions gap. *Nature Climate Change*, *2*(7), 471–474. https://doi.org/10.1038/nclimate1602

Blühdorn, I. (1997). A theory of post-ecologist politics. *Environmental Politics*, *6*(3), 125–147. https://doi.org/10.1080/09644019708414344

Brave NoiseCat, J. (2021). The climate talks tokenize Indigenous peoples. National Observer. https://www.nationalobserver.com/2021/11/16/opinion/climate-talks-tokenize-indigenous-peoples

Brooks, L. (2021). Hundreds of global civil society representatives walk out of Cop26 in protest. *The Guardian*. https://www.theguardian.com/environment/2021/nov/12/global-civil-society-representatives-walkout-cop26-protest

Buechler, S. (2000). *Social movements in advanced capitalism: The political economy and cultural construction of social activism*. Oxford University Press.

Bulkeley, H., Andonova, L., Betsill, M. M., Compagnon, D., Hale, T., Hoffmann, M. J., Newell, P., Paterson, M., Roger, C., & VanDeveer, S. D. (2014). Introducing transnational climate change governance. In *Transnational climate change governance* (pp. 1–16). Cambridge University Press. https://doi.org/10.1017/CBO9781107706033.001

Cao, X., & Ward, H. (2017). Transnational climate governance networks and domestic regulatory action. *International Interactions*, *43*(1), 76–102. https://doi.org/10.1080/03050629.2016.1220162

Carter, N., & Childs, M. (2018). Friends of the Earth as a policy entrepreneur: 'The Big Ask' campaign for a UK Climate Change Act. *Environmental Politics*, *27*(6), 994–1013. https://doi.org/10.1080/09644016.2017.1368151

Celata, F., & Coletti, R. (2018). The policing of community gardening in Rome. *Environmental Innovation and Societal Transitions*, *29* (September), 17–24. https://doi.org/10.1016/j.eist.2017.09.002

Chan, S., Brandi, C., & Bauer, S. (2016). Aligning transnational climate action with international climate governance: The road from Paris. *Review of European, Comparative and International Environmental Law*, *25*(2), 238–247. https://doi.org/10.1111/reel.12168

Chan, S., Van Asselt, H., Iacobuta, G., & Niles, N. (2019). Promises and risks of nonstate action in climate and sustainability governance. *WIREs Climate Change*, *10*(January), 1–8. https://doi.org/10.1002/wcc.572

Chatterton, P., Featherstone, D., & Routledge, P. (2012). Articulating climate justice in Copenhagen: Antagonism, the commons, and solidarity. *Antipode*, *45*(3), 602–620. https://doi.org/10.1111/j.1467-8330.2012.01025.x

Ciplet, D., & Roberts, J. T. (2017). Climate change and the transition to neoliberal environmental governance. *Global Environmental Change*, *46*(December 2016), 148–156. https://doi.org/10.1016/j.gloenvcha.2017.09.003

Climate Action Tracker. (2021). Glasgow's 2030 credibility gap: Net zero's lip service to climate action. *Climate Action Tracker*. https://climateactiontracker.org/publications/glasgows-2030-credibility-gap-net-zeros-lip-service-to-climate-action

Collins, K. (2021). *Greta Thunberg slams COP26 climate summit, calling it a "PR event." C-Net*. https://www.cnet.com/news/politics/greta-thunberg-slams-cop26-climate-summit-calling-it-a-pr-event/

Conca, K. (2019). Prospects for a multi-stakeholder dialogue on climate engineering. *Environmental Politics*, *28*(3), 417–440. https://doi.org/10.1080/09644016.2018.1522065

Corbin, J., & Strauss, A. (2008). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. SAGE.

Corry, O., & Reiner, D. (2021). Protests and policies: How radical social movement activists engage with climate policy dilemmas. *Sociology*, *55*(1), 197–217. https://doi.org/10.1177/0038038520943107

Davidson, K., Coenen, L., & Gleeson, B. (2019). A decade of C40: Research insights and agendas for city networks. *Global Policy*, *10*(4), 697–708. https://doi.org/10.1111/1758-5899.12740

de Moor, J. (2020). Alternative globalities? Climatization processes and the climate movement beyond COPs. *International Politics*, *58*, 582–599. https://doi.org/10.1057/s41311-020-00222-y

de Moor, J., Catney, P., & Doherty, B. (2021). What hampers 'political' action in environmental alternative action organizations? Exploring the scope for strategic agency under post-political conditions. *Social Movement Studies*, *20*(3), 312–328. https://doi.org/10.1080/14742837.2019.1708311

Dehm, J. (2017). Carbon colonialism or climate justice? Interrogating the International Climate Regime from a Twail perspective. *Windsor Yearbook of Access to Justice*, *33*(3), 129–161. https://doi.org/10.22329/wyaj.v33i3.4893

Dellmuth, L. M., & Tallberg, J. (2017). Advocacy strategies in global governance: Inside versus outside lobbying. *Political Studies*, *65*(3), 705–723. https://doi.org/10.1177/0032321716684356

Downie, C. (2016). Prolonged international environmental negotiations: The roles and strategies of non-state actors in the EU. *International Environmental Agreements: Politics, Law and Economics*, *16*(5), 739–755. https://doi.org/10.1007/s10784-015-9292-7

Downie, C. (2017). Fighting for King Coal's crown: Business actors in the US coal and utility industries. *Global Environmental Politics*, *17*(1), 21–39.

Dryzek, J. S. (2013). *The politics of the earth. Environmental discourses*. Oxford University Press.

Dryzek, J. S., & Pickering, J. (2017). Deliberation as a catalyst for reflexive environmental governance. *Ecological Economics*, *131*, 353–360. https://doi.org/10.1016/j.ecolecon.2016.09.011

Dupuis, J., & Schweizer, R. (2019). Climate pushers or symbolic leaders? The limits to corporate climate leadership by food retailers. *Environmental Politics*, *28*(1), 64–86.

Edwards, P. N. (2017). Knowledge infrastructures for the Anthropocene. *Anthropocene Review*, *4*(1), 34–43. https://doi.org/10.1177/2053019616679854

Eisenstadt, T. A., & West, K. J. (2017). Indigenous belief systems, science, and resource extraction: Climate change attitudes in Ecuador. *Global Environmental Politics*, *17*(1), 40–58. https://doi.org/10.1162/GLEP_a_00389

Enge, E., & Malkenes, R. (1993). Non-governmental organizations at UNCED: Another successful failure? In H. Bergesen & G. Parmann (Eds.), *Green globe yearbook of international co-operation on environment and development* (pp. 25–30). Oxford University Press.

Fisher, D. R. (2010). COP-15 in Copenhagen: How the merging of movements left civil society out in the cold. *Global Environmental Politics*, *10*(2), 11–17. https://doi.org/10.1162/glep.2010.10.2.11

Fraundorfer, M. (2017). The role of cities in shaping transnational law in climate governance. *Global Policy*, *8*(1), 23–31.

Gesing, F. (2018). Transnational municipal climate networks and the politics of standardisation: The contested role of climate data in the new global covenant of mayors for climate and energy. *Politics and Governance*, *6*(3), 126–135. https://doi.org/10.17645/pag.v6i3.1111

Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods*, *16*(1), 15–31. https://doi.org/10.1177/1094428112452151

Glaab, K. (2017). A climate for justice? Faith-based advocacy on climate change at the United Nations. *Globalizations*, *14*(7), 1110–1124. https://doi.org/10.1080/14747731.2017.1308060

Godsland, J. (2021). Last hope for the climate. *The Lancet Child & Adolescent Health*, *5*(12), 837. https://doi.org/10.1016/S2352-4642(21)00345-X

Gronow, A., & Ylä-Anttila, T. (2019). Cooptation of ENGOs or treadmill of production? Advocacy coalitions and climate change policy in Finland. *Policy Studies Journal*, *47*(4), 854–875. https://doi.org/10.1111/psj.12185

Hadden, J., & Jasny, L. (2019). The power of peers: How transnational advocacy networks shape NGO strategies on climate change. *British Journal of Political Science*, *49*(2), 637–659. https://doi.org/10.1017/S0007123416000582

Hale, T. (2016). "All hands on deck": The Paris Agreement and nonstate climate action. *Global Environmental Politics*, *16*(3), 12–22. https://doi.org/10.1162/GLEP_a_00362

Hale, T. (2018). *The role of sub-state and non-state actors in international climate processes*. https://www.geg.ox.ac.uk/publication/cooperative-climate-

Hale, T. (2020). Transnational actors and transnational governance in global environmental politics. *Annual Review of Political Science*, *23*, 203–230. https://doi.org/10.1146/annurev-polisci-050718-032644

Hale, T., Chan, S., Hsu, A., Clapper, A., Elliott, C., Faria, P., Kuramochi, T., McDaniel, S., Morgado, M., Roelfsema, M., Santaella, M., Singh, N., Tout, I., Weber, C., Weinfurter, A., & Widerberg, O. (2021). Sub- and non-state climate action: A framework to assess progress, implementation and impact. *Climate Policy*, *21*(3), 406–420. https://doi.org/10.1080/14693062.2020.1828796

Hall, R. B., & Biersteker, T. J. (2002). The emergence of private authority in the international system. In R. B. Hall & T. J. Biersteker (Eds.), *The emergence of private Authority in Global Governance*. Cambridge University Press.

Hampton, P. (2018). Trade unions and climate politics: Prisoners of neoliberalism or swords of climate justice? *Globalizations*, *15*(4), 470–486. https://doi.org/10.1080/14747731.2018.1454673

Hein, J. E., & Jenkins, J. C. (2017). Why does the United States lack a global warming policy? The corporate inner circle versus public interest sector elites. *Environmental Politics*, *26*(1), 97–117. https://doi.org/10.1080/09644016.2016.1244966

Hermansen, E. A. T., McNeill, D., Kasa, S., & Rajão, R. (2017). Co-operation or co-optation? NGOs' roles in Norway's international climate and forest initiative. *Forests*, *8*(3), 1–27. https://doi.org/10.3390/f8030064

Hermwille, L. (2018). Making initiatives resonate: How can non-state initiatives advance national contributions under the UNFCCC? *International Environmental Agreements: Politics, Law and Economics*, *18*(3), 447–466. https://doi.org/10.1007/s10784-018-9398-9

Hess, D. J. (2005). Technology- and product-oriented movements: Approximating social movement studies and science and technology studies. *Science Technology and Human Values*, *30*(4), 515–535. https://doi.org/10.1177/0162243905276499

Hess, D. J. (2015). Publics as threats? Integrating science and technology studies and social movement studies. *Science as Culture*, *24*(1), 69–82. https://doi.org/10.1080/09505431.2014.986319

Hettihewa, J. (2021). *Why youth participation in climate change remains a struggle*. The Oxford Institute of Population Ageing.

Hicks, K., & Fabricant, N. (2016). The Bolivian climate justice movement mobilizing indigeneity in climate change negotiations. *Latin American Perspectives*, *43*(4), 87–104. https://doi.org/10.1177/0094582X16630308

Hoffmann, M. (2011). *Climate governance at the crossroads: Experimenting with a global response after Kyoto*. Oxford University Press.

Hsu, A., Brandt, J., Widerberg, O., Chan, S., & Weinfurter, A. (2020). Exploring links between national climate strategies and non-state and subnational climate action in nationally determined contributions (NDCs). *Climate Policy*, *20*(4), 443–457. https://doi.org/10.1080/14693062.2019.1624252

Hsu, A., Höhne, N., Kuramochi, T., Vilariño, V., & Sovacool, B. K. (2020). Beyond states: Harnessing sub-national actors for the deep decarbonisation of cities, regions, and businesses. *Energy Research & Social Science*, *70*, 101738. https://doi.org/10.1016/j.erss.2020.101738

Hsu, A., Widerberg, O., Weinfurter, A., Chan, S., Roelfsema, M., Lütkehermöller, K., & Bakhtiari, F. (2018). *Bridging the emissions gap—The role of non-state and subnational actors*. https://doi.org/10.18356/289adcd7-en

Hsueh, L. (2017). Transnational climate governance and the global 500: Examining private actor participation by firm-level factors and dynamics. *International Interactions*, *43*(1), 48–75. https://doi.org/10.1080/03050629.2016.1223929

Hughes, H. R., & Paterson, M. (2017). Narrowing the climate field: The symbolic power of authors in the IPCC's assessment of mitigation. *Review of Policy Research*, *34*(6), 744–766. https://doi.org/10.1111/ropr.12255

Hultman, N. E., Clarke, L., Frisch, C., Kennedy, K., McJeon, H., Cyrs, T., Hansel, P., Bodnar, P., Manion, M., Edwards, M. R., Cui, R., Bowman, C., Lund, J., Westphal, M. I., Clapper, A., Jaeger, J., Sen, A., Lou, J., Saha, D., ... O'Neill, J. (2020). Fusing subnational with national climate action is central to decarbonization: The case of the United States. *Nature Communications*, *11*(1), 5255. https://doi.org/10.1038/s41467-020-18903-w

Jagers, S. C., & Stripple, J. (2003). Climate governance beyond the state. *Global Governance*, *9*(3), 385–399. https://doi.org/10.1163/19426720-00903009

Jamison, A. (2010). Climate change knowledge and social movement theory. *Wiley Interdisciplinary Reviews: Climate Change*, *1*(6), 811–823. https://doi.org/10.1002/wcc.88

Jasanoff, S. (2004). *States of knowledge. The co-production of science and social order*. Routledge. https://doi.org/10.4324/9780203413845

Jasanoff, S. (2010). Testing time for climate science. *Science*, *328*(5979), 695–696. https://doi.org/10.1126/science.1189420

Jernnäs, M. (2021). *Governing climate change under the Paris regime meeting urgency with voluntarism* (Issue 819). Linköping University Press.

Johnson, C. A. (2021). Creating a commons for global climate governance. In *Making commons dynamic* (pp. 211–229). Routledge.

Jordan, A. J., Huitema, D., Hildén, M., Van Asselt, H., Rayner, T. J., Schoenefeld, J. J., Tosun, J., Forster, J., & Boasson, E. L. (2015). Emergence of polycentric climate governance and its future prospects. *Nature Climate Change*, *5*(11), 977–982. https://doi.org/10.1038/nclimate2725

Kahler, M. (2017). Domestic sources of transnational climate governance. *International Interactions*, *43*(1), 156–174. https://doi.org/10.1080/03050629.2017.1251687

Kleres, J., & Wettergren, Å. (2017). Fear, hope, anger, and guilt in climate activism. *Social Movement Studies*, *16*(5), 507–519. https://doi.org/10.1080/14742837.2017.1344546

Kuchler, M. (2017). The human rights turn: ENGOs' changing tactics in the quest for a more transparent, participatory and accountable CDM. *Environmental Politics*, *26*(4), 648–668.

Kuramochi, T., Roelfsema, M., Hsu, A., Lui, S., Weinfurter, A., Chan, S., Hale, T., Clapper, A., Chang, A., & Höhne, N. (2020). Beyond national climate action: The impact of region, city, and business commitments on global greenhouse gas emissions. *Climate Policy*, *20*(3), 275–291. https://doi.org/10.1080/14693062.2020.1740150

Kuyper, J. W., Linnér, B. O., & Schroeder, H. (2018). Non-state actors in hybrid global climate governance: Justice, legitimacy, and effectiveness in a post-Paris era. *Wiley Interdisciplinary Reviews: Climate Change*, *9*(1), 1–18. https://doi.org/10.1002/wcc.497

Lahn, B. (2018). In the light of equity and science: Scientific expertise and climate justice after Paris. *International Environmental Agreements: Politics, Law and Economics*, *18*(1), 29–43. https://doi.org/10.1007/s10784-017-9375-8

Lakhani, N. (2021). 'A continuation of colonialism': Indigenous activists say their voices are missing at Cop26. *The Guardian*. https://www.theguardian.com/environment/2021/nov/02/cop26-indigenous-activists-climate-crisis

Lima, V. (2021). The institutionalisation of social movements: Co-Optation and democratic policy-making. *Political Studies Review*, *19*(2), 245–261. https://doi.org/10.1177/1478929920913805

Louis, M., & Maertens, L. (2021). *Why international organizations hate politics*. Routledge. https://doi.org/10.4324/9780429466984

Machen, R. (2018). Towards a critical politics of translation: (Re)producing hegemonic climate governance. *Environment and Planning E Nature and Space*, *1*(4), 494–515. https://doi.org/10.1177/2514848618785515

Machen, R., & Nost, E. (2021). Thinking algorithmically: The making of hegemonic knowledge in climate governance. *Transactions of the Institute of British Geographers*, *46*(3), 555–569. https://doi.org/10.1111/tran.12441

MacLean, J. (2020). Rethinking the role of nonstate actors in international climate governance. *Loyola University Chicago International Law Review*, *16*(1), 21–43.

Marquardt, J. (2017). Conceptualizing power in multi-level climate governance. *Journal of Cleaner Production*, *154*, 167–175. https://doi.org/10.1016/j.jclepro.2017.03.176

Marquardt, J., & Karhunmaa, K. (2018). Why we should care about the fate of climate science. Vignettes@STS.Next.20. http://stsnext20.org/vignettes

Marquardt, J., & Nasiritousi, N. (2021). Imaginary lock-ins in climate change politics: The challenge to envision a fossil-free future. *Environmental Politics*, 1–22. https://doi.org/10.1080/09644016.2021.1951479

Michaelowa, K., & Michaelowa, A. (2017). Transnational climate governance initiatives: Designed for effective climate change mitigation? *International Interactions*, *43*(1), 129–155. https://doi.org/10.1080/03050629.2017.1256110

Muñoz, G., & Topping, N. (2021). Leading non party stakeholders commit to deliver immediate high ambition climate targets. UNFCCC. https://climatechampions.unfccc.int/non-party-stakeholders-at-cop26-commit-to-deliver-immediate-high-ambition-climate-targets/

Nasiritousi, N. (2016). *Shapers, brokers and doers: The dynamic roles of non-state actors in global climate change governance*. Linköping University Press.

Nasiritousi, N. (2017). Fossil fuel emitters and climate change: Unpacking the governance activities of large oil and gas companies. *Environmental Politics*, *26*(4), 621–647. https://doi.org/10.1080/09644016.2017.1320832

Nasiritousi, N., Hjerpe, M., & Bäckstrand, K. (2016). Normative arguments for non-state actor participation in international policymaking processes: Functionalism, neocorporatism or democratic pluralism? *European Journal of International Relations*, *22*(4), 920–943. https://doi.org/10.1177/1354066115608926

Nasiritousi, N., Hjerpe, M., & Linnér, B. O. (2016). The roles of non-state actors in climate change governance: Understanding agency through governance profiles. *International Environmental Agreements: Politics, Law and Economics*, *16*(1), 109–126. https://doi.org/10.1007/s10784-014-9243-8

Nguyen Long, L. A., & Krause, R. M. (2020). Managing policy-making in the local climate governance landscape: The role of network administrative organizations and member cities. *Public Administration*, *99*(1), 23–39. https://doi.org/10.1111/padm.12684

Okereke, C., Bulkeley, H., & Schroeder, H. (2009). Conceptualizing climate governance beyond the international regime. *Global Environmental Politics*, *9*(1), 58–78. https://doi.org/10.1162/glep.2009.9.1.58

O'Lear, S. (2016). Climate science and slow violence: A view from political geography and STS on mobilizing technoscientific ontologies of climate change. *Political Geography*, *52*, 4–13. https://doi.org/10.1016/j.polgeo.2015.01.004

Pavenstädt, C. (2022). #ATOMS4CLIMATE: The nuclear lobby at COP26. Climate Matters. https://climatematters.blogs.uni-hamburg.de/2022/01/atoms4climate-the-nuclear-lobby-at-cop26/

Pearse, R. (2016). Moving targets: Carbon pricing, energy markets, and social movements in Australia. *Environmental Politics*, *25*(6), 1079–1101. https://doi.org/10.1080/09644016.2016.1196969

Princen, T., & Finger, M. (1994). *Environmental NGOs in world politics*. Routledge.

Raustiala, K. (1997). States, NGOs, and international environmental institutions. *International Studies Quarterly*, *41*(4), 719–740. https://doi.org/10.1088/0957-4484/20/20/204016

Rietig, K. (2014). 'Neutral' experts? How input of scientific expertise matters in international environmental negotiations. *Policy Sciences*, *47*(2), 141–160. https://doi.org/10.1007/s11077-013-9188-8

Roger, C., Hale, T., & Andonova, L. (2017). The comparative politics of transnational climate governance. *International Interactions*, *43*(1), 1–25. https://doi.org/10.1080/03050629.2017.1252248

Scholte, J. A. (2002). Civil society and democracy in global governance. *Global Governance*, *8*(3), 281–304. https://doi.org/10.1163/19426720-00803004

Shen, Y., & Steuer, B. (2017). Conflict or cooperation: The patterns of interaction between state and non-state actors in China's environmental governance. *Journal of Chinese Governance*, *2*(4), 349–359. doi.wiley.com/10.1002/wcc.440

Slaughter, A.-M. (2015). The Paris approach to global governance. Project Syndicate. https://www.project-syndicate.org/commentary/paris-agreement-model-for-global-governance-by-anne-marie-slaughter-2015-12?barrier=accesspaylog

Smeds, E., & Acuto, M. (2018). Networking cities after Paris: Weighing the ambition of urban climate change experimentation. *Global Policy*, *9*(4), 549–559. https://doi.org/10.1111/1758-5899.12587

Sprain, L. (2016). Paradoxes of public participation in climate change governance. *Good Society*, *25*(1), 62–80. https://doi.org/10.5325/goodsociety.25.1.0062

Streck, C. (2020). Filling in for governments? The role of the private actors in the international climate regime. *Journal for European Environmental & Planning Law*, *17*(1), 5–28. https://doi.org/10.1163/18760104-01701003

Streck, C. (2021). Strengthening the Paris agreement by holding non-state actors accountable: Establishing normative links between transnational partnerships and treaty implementation. *Transnational Environmental Law, May.*, *10*, 493–515. https://doi.org/10.1017/S2047102521000091

Stripple, J., & Bulkeley, H. (2011). Introduction: On governmentality and climate change. In J. Stripple & H. Bulkeley (Eds.), *Governing the climate: New approaches to rationality, power and politics* (pp. 1–24). Cambridge University Press. https://doi.org/10.1017/CBO9781107110069.003

Tallberg, J., Sommerer, T., Squatrito, T., & Jonsson, C. (2013). Introduction. In *The opening up of international organizations* (pp. 1–21). Cambridge University Press. https://doi.org/10.1017/CBO9781107325135.001

Taylor, M. (2021). Cop26 will be whitest and most privileged ever, warn campaigners. *The Guardian*. https://www.theguardian.com/environment/2021/oct/30/cop26-will-be-whitest-and-most-privileged-ever-warn-campaigners

Thew, H. (2018). Youth participation and agency in the United Nations framework convention on climate change. *International Environmental Agreements: Politics, Law and Economics*, *18*(3), 369–389. https://doi.org/10.1007/s10784-018-9392-2

Thew, H., Karsgaard, C., Marquardt, J., Rist, C., & Yona, L. (2021). Youth participation in UN climate change conferences. Challenges and Opportunities. COP26 Research Fellowship Policy Brief. https://doi.org/10.13140/RG.2.2.15657.31846

Thew, H., Middlemiss, L., & Paavola, J. (2020). "Youth is not a political position": Exploring justice claims-making in the UN climate change negotiations. *Global Environmental Change*, *61*(July 2019), 102036. https://doi.org/10.1016/j.gloenvcha.2020.102036

Tolbert, D. (1992). Global climate change and the role of international non-governmental organizations. In R. Churchill & D. Freestone (Eds.), *International law and global climate change*. Graham and Trotman.

Tosun, J., & Schoenefeld, J. J. (2017). Collective climate action and networked climate governance. *Wiley Interdisciplinary Reviews: Climate Change*, *8*(1), 1–17. https://doi.org/10.1002/wcc.440

Umbers, L. M., & Moss, J. (2020). The climate duties of sub-National Political Communities. *Political Studies*, *68*(1), 20–36. https://doi.org/10.1177/0032321718819076

UNEP. (2021). *Emissions Gap Report 2021*. United Nations Environment Programme.

UNFCCC. (2015a). *Decision 1/CP.21. Adoption of the Paris Agreement. UN Doc FCCC/CP/2015/10/Add.1*. United Nations Framework Convention on Climate Change. https://unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf

UNFCCC. (2015b). Paris Agreement. *21st Conference of the Parties*. United Nations Framework Convention on Climate Change. https://unfccc.int/sites/default/files/english_paris_agreement.pdf

UNFCCC. (2016). *Religious groups urge governments to rapidly implement Paris agreement*. United Nations Climate Change https://climaterights.org/interfaith-climate-change-statement-to-world-leaders-april-18-2016

UNFCCC. (2021a). Action Hub Events at COP 26. United Nations Framework Convention on Climate Change. https://unfccc.int/climate-action/gca-events/action-hub-events-at-cop-26

UNFCCC. (2021b). Cooperation with the IPCC. United Nations Climate Change https://unfccc.int/topics/science/workstreams/cooperation-with-the-ipcc

van Asselt, H., & Brewer, T. (2010). Addressing competitiveness and leakage concerns in climate policy: An analysis of border adjustment measures in the US and the EU. *Energy Policy*, *38*(1), 42–51. https://doi.org/10.1016/j.enpol.2009.08.061

vom Brocke, J., Simons, A., Niehaves, B., Reimer, K., Plattfaut, R., & Cleven, A. (2009). Reconstructing the Giant: On the importance of rigour in documenting the literature. *Proceedings of the 17th European Conference on Information Systems*, December 2013.

Wälti, S. (2010). Multi-level environmental governance. In H. Enderlein, S. Wälti, & M. Zürn (Eds.), *Handbook on multi-level governance* (pp. 411–422). Edward Elgar.

Weber, A. (2018). The revival of the honourable merchant? Analysing private forest governance at frm level. *International Environmental Agreements*, *18*, 619–634.

Weisser, F., & Müller-Mahn, D. (2017). No place for the political: Micro-geographies of the Paris climate conference 2015. *Antipode*, *49*(3), 802–820. https://doi.org/10.1111/anti.12290

Westholm, L., & Arora-Jonsson, S. (2018). What room for politics and change in global climate governance? Addressing gender in co-benefits and safeguards. *Environmental Politics*, *27*(5), 917–938. https://doi.org/10.1080/09644016.2018.1479115

Widerberg, O., & Pattberg, P. (2017). Accountability challenges in the transnational regime complex for climate change. *Review of Policy Research*, *34*(1), 68–87. https://doi.org/10.1111/ropr.12217

Wittmayer, J. M., Schäpke, N., Van Steenbergen, F., & Omann, I. (2014). Making sense of sustainability transitions locally: How action research contributes to addressing societal challenges. *Critical Policy Studies*, *8*, 465–485.

Zelli, F. (2011). The fragmentation of the global climate governance architecture. *Wiley Interdisciplinary Reviews: Climate Change*, *2*(2), 255–270. https://doi.org/10.1002/wcc.104

How to cite this article: Marquardt, J., Fast, C., & Grimm, J. (2022). Non- and sub-state climate action after Paris: From a facilitative regime to a contested governance landscape. *WIREs Climate Change*, *13*(5), e791. https://doi.org/10.1002/wcc.791