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Designing and leading collaborative urban climate governance: Comparative experiences of co-creation from Copenhagen and Oslo

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Abstract

This article has a twofold aim. First, inspired by collaborative governance theory, the article develops an analytical framework built around three ideal co-creation strategies utilized by city governments for building capacity and addressing urban climate solutions. Second, this co-creation framework is applied to a comparative case study of climate governance in two climate-ambitious Scandinavian cities, Copenhagen and Oslo, to illustrate the role of co-creation as an approach and tool for urban climate governance. The comparative analysis reveals how the two cities navigate differently within a polycentric ecosystem of actors depending on a variety of contextual factors and whether climate responses are geared mainly towards assembling and aligning public, private business or citizen actors, respectively, for collaborative efforts. The findings suggest that both cities combine two ideal co-creation strategies, a *whole of government strategy* with an *externally focused stakeholder strategy*, while neither of the cities has adopted a full-fledged *externally focused civil society co-creation strategy*. The findings have implications for co-creation theory and urban climate leadership. In both cities, the benefits of co-creation are found to depend on support from both conducive institutional design and new forms of public leadership. Over time, leadership has started to congeal into a distinctive type of co-creational leadership based on both hands-on and hands-off tools and instruments in climate responses. The findings suggest that a co-creation approach benefits the debate on citizen participation in climate governance as it brings a nuanced understanding of the *multiple* roles that citizens can play in relation to both public and private services and business actors; as residents, consumers, climate agents, as well as voters with rights and responsibilities who can provide the city leadership with legitimacy but also oppose climate action.

1 | INTRODUCTION: CO-CREATING URBAN CLIMATE GOVERNANCE

Cities are rapidly becoming key agents and sites of climate change governance. They play a central role in designing the institutions, infrastructures, and behaviors that drive decarbonization and adaptation to changing climatic conditions (Betsill & Bulkeley, 2007; Bulkeley, 2015; Bulkeley & Betsill, 2013; van der Heijden, 2018, 2019). Urban climate governance is thus in essence a political endeavor. It seeks to disrupt carbon lock-ins and create pathways

towards decarbonization through political decisions, policies, and initiatives that promote, alter, enable, constrain, and sometimes demand, technological and behavioral changes (Bernstein & Hoffman, 2018, p. 191, IPCC, 2018, 2021). However, urban governance is intrinsically embedded in polycentric systems operating in a context of multilevel governance (Wurzel et al., 2019; Bernstein & Hoffmann, 2018; Hughes et al., 2017). The sources of greenhouse gases are multiple and the economic, social, and political relationships supporting carbon-based energy production, transport and consumption are heavily intertwined. There are limits to a city government's control over sources of CO_2 emission and relevant policy agendas. Cities are largely not in control of the major businesses, urban estates, transport and energy systems and related assets and development agendas that are crucial for transformative policies to succeed. This reflects that climate change governance represents a 'collective action' problem–emissions are caused by the cumulative result of actions taken by many diverse actors–and thus requires collaborative efforts and mutual trust across public and private actors and sectors to be resolved (Jordan et al., 2018; Ostrom, 2010; van der Heijden, 2018). Consequently, city governments need to develop fine-tuned engagement strategies capable of unleashing activity from a variety of actors–from large technological companies, public entities and professional organizations to small scale property owners and businesses and citizens (van der Heijden, 2015; Hughes et al., 2017, p. 1; Hofstad & Torfing, 2017; Jordan et al., 2018; Bulkeley, 2021; Hofstad et al., 2021).

The article explores such engagement strategies further according to a twofold aim. First, inspired by recent advancement in collaborative governance theory, the article develops an analytical governance framework founded on three ideal co-creation strategies utilized by city governments for building capacity and addressing urban climate solutions (Ansell & Gash, 2018; Torfing et al., 2016; Hofstad et al., 2021). Second, applying this framework to a comparative case study of two climate-ambitious Scandinavian cities, the article illustrates how the benefits of co-creation as a tool for public governance depend on support from conducive institutional design and new forms of public leadership. The comparative analysis characterizes forms of collaborative governance strategies designed and employed in and by Copenhagen and Oslo in co-creating urban climate strategies and realizing ambitious climate goals. It reveals how co-creation is employed as a leadership instrument to increase capacity for climate solutions within urban metropolitan areas. The analysis provides researchers as well as practitioners with a deeper understanding of the hands-off and hands-on meta-governance tools that public decision-makers must foster to achieve innovative public value outcomes from co-created climate actions (Hughes et al., 2018; Sørensen & Torfing, 2009).

While research on participation mainly addresses the relation between the governor (city) and the governed (citizens), the perspectives of collaborative governance and co-creation reveal a broader landscape of relevant and concerned actors for addressing climate change as a complex, unruly public problem. Over the last decades, governance research has devoted increased attention to various forms of collaborative governance, exploring how public agencies institutionalize and engage in collective forums to address public problems together with public and private stakeholders (Ansell & Gash, 2008, 2018; Bryson et al., 2017). However, despite an enhanced focus on this topic in recent scholarship, we still lack robust evidence about the specific dynamics of co-creation processes within the realms of urban climate policies and cities' role as agents of collaborative governance, including the engagement of citizens and other stakeholders (van der Heijden, 2019).

The structure of the paper is as follows. We start by presenting the analytical governance framework defining co-creation and identifying three ideal types of co-creation strategies for building capacity in urban governance and integrated climate responses. Then we outline the specific role of institutional design and leadership–as strong variables–in defining and pursuing these co-creation strategies with public, private and civic actors, respectively. We proceed by presenting the methodology applied to the case study investigations, before comparing urban climate governance in Copenhagen and Oslo. Furthermore, we discuss key findings, draw implications for policy and governance and suggest how co-creation theory and practice can inform the debate on citizen participation. Finally, we conclude and propose an avenue for future research.

2 | CO-CREATION WITHIN URBAN CLIMATE GOVERNANCE: AN ANALYTICAL FRAMEWORK

2.1 | Co-creation defined

The concept of co-creation is particularly interesting in the context of the special issue of this journal with its focus on citizen engagement in climate politics and climate governance. Co-creation is an emergent concept linked to the collaborative governance scholarship and represent a distinct form of collaboration across a set of public and/or public actors (Ansell & Torfing, 2021; Hofstad et al., 2021). Moving beyond the idea of a 'ladder of participation' (Arnstein, 1969), co-creation recognizes the limitations of a citizen participation approach in the theory and practice of urban governance by suggesting that there is a need to bring *multiple* types of actors' knowledge, resources and competences together to address complex and unruly climate change issues (Torfing et al., 2019; Hofstad et al., 2021; Vedeld, Hofstad, Solli & Hanssen, 2021). Hence, co-creation as a strategic governance mechanism is assumed to move beyond 'citizen participation' and a dyadic 'co-production' of services (Ansell & Torfing, 2021; Osborne et al., 2016; Pestoff, 2018). This is manifest in differences in the basic aim of the two approaches and in who is involved and how, and what the outcomes are likely to be within the wider governance structure (Ansell & Torfing, 2021; Fung, 2006).

We define co-creation as processes in which public and/or private actors attempt to solve a shared public problem or task by exchanging different kinds of resources serving to co-initiate, co-design and/or co-implement visions, strategies, policies, regulatory frameworks or technological solutions (Hofstad et al., 2021; Torfing

et al., 2016; Vedeld et al., 2021). As such, it is concerned with the design and leadership of interactional processes and networks and the systematic engagement of all kinds of relevant and concerned public and private actors in the initiation and implementation of shared goals, innovative strategies, and co-created projects. On the one hand, co-creation may be directed towards reducing carbon dependence, as a public value that requires innovation and system changes. On the other hand, co-creation of climate solutions may contribute to public value by expanding traditional democracy through engagement of a wider set of actors in co-designing and/or co-implementing policies and practices (Sørensen & Torfing, 2019).

The interest in co-creation has evolved from the larger and substantive literature on 'collaborative governance' as an umbrella concept for a wide range of agendas and dynamics tied to processes and structures of public policy decision enabling actors to engage across boundaries (Ansell & Torfing, 2021, p. 218). Several partly overlapping, partly evolutionary developments are discernible in the literature: network governance studies (Ansell & Gash, 2008; Keast et al., 2014; Kooiman, 1993; Sørensen & Torfing, 2007), collaborative innovation (Sørensen & Torfing, 2016; Vargo et al., 2015), co-production of services (Lusch & Vargo, 2011; Radnor et al., 2014; Strockosch & Osborne, 2020; Trischler & Charles, 2019) and co-creation in the face of complex, cross-sectoral and multilevel challenges (Sørensen & Bryson, 2021; Torfing et al., 2016). In this regard, co-creation serves to highlight and target specific forms and practices of collaboration, increasingly observed to be actively encouraged by governments in urban climate governance (Hofstad & Vedeld, 2021; Vedeld et al., 2021).

First, co-creation theory emphasizes that a key feature of co-creation is the weight put on achieving (collaborative) innovation (Ansell & Torfing, 2021). Different subsets of innovation theory highlight various engagement strategies as key to developing innovative solutions and practices: crowdsourcing, citizen science, and co-production of products and services, as well as co-development of places and co-creation of public value outcomes (Rosenstock et al., 2017; Voorberg et al., 2015, p. 1334; Baker & Mehmood, 2015). A defining aspect of co-creation is thus that it brings public and/or private actors together to find innovative solutions that help achieve public value (Ansell & Torfing, 2021, p. 218), for example, addressing climate change. Second, the co-creation approach underlines the importance of institutional intermediation for mobilizing actors and ensuring equitable distribution of social innovation – namely, finding better ways to meet human needs, altering the relationship between stakeholders and strengthening commitment (Mees et al., 2019; Nicholls et al., 2015, p. 11; Voorberg et al., 2015, p. 1334). Third, while collaborative governance often is pursued to mend, calm or mediate tensions and conflicts between opposing views, co-creation is a proactive process to mobilize otherwise untapped experience, competence and knowledge resources for some form of public value (Ansell & Torfing, 2021, p. 219). Seen through the lens of climate change governance, this would imply aiming to substantially alter the status quo by setting cities on pathways towards decarbonisation and socio-economic transformation in line with the sustainability ideal of ensuring a 'just transition' that leaves no one behind (Bernstein & Hoffmann, 2018; Bulkeley, 2021; Figueres et al., 2017). To succeed with this ambitious agenda, cities must engage and stimulate wide sections of society to contribute by creating new routines, procedures, organizational solutions, goals, tasks, funding schemes and technologies that all lead in the same direction. In short, they must innovate and transform through co-creative problem-solving.

2.2 | Analytical approach: The role of co-creation in three ideal co-creation strategies

We propose that institutional design and public leadership of the climate governance system may be combined into three different *ideal co-creation strategies* depending on the governance context. The context includes factors such as the available leadership measures, the relevant constellations of actors for a particular climate action or purpose (public vs. private actors), the content of climate goals and policies, the adopted approaches to climate mitigation and identified sources of emissions (Bulkeley, 2013; Hofstad et al., 2021). In simplistic terms, one might say that each of these three co-creation strategies represents a building block of the wider multi-level and polycentric governance system for urban climate transformation (van der Heijden, 2019). The three ideal strategies serve as the analytical framework for the comparative case study analysis below.

The first strategy is an *internal whole of government strategy*. It aims to assemble and align relatively autonomous and departmentalized public agencies with different goals and forms of expertise in co-creating new cross-cutting climate goals, norms, procedures and projects that in turn are given principled priority over sector concerns (Adelle & Russel, 2013). This may contribute to the reduction of emissions from the municipalities own properties and publicly sponsored activities such as administration, planning, service delivery, buildings, equipment and other infrastructure. The city may delegate daily responsibilities to a dedicated public entity mandated to direct administrative resources, competences and attention to the climate challenge through internal coordination and co-creation across the many entities of the municipal administration (Anguelowski & Carmin, 2011; van der Heijden, 2019). Citizens play a limited role in this co-creation strategy. But they may be involved through user boards, focus groups or citizen juries that provide input on the plans and climate responses of local public agencies. Thus, this strategy combines internal co-creation to assemble and align municipal entities across sectors and scales with external engagement through more traditional forms of collaboration and participation of both citizens, academia and private businesses.

The second strategy is an *externally focused stakeholder strategy* that aims to institutionally design and lead a partnership between public actors and private stakeholder organizations such as city developers; property owners; green tech firms; utility and transport companies, environmental and climate change organizations, think-tanks, research/university institutions, that can help to co-create climate change solutions in large sectors such as energy production, construction, city development; and public and private transport, which are all

large CO_2 emitters. The strategy may also facilitate technological innovations and green urban economy. Cities target these stakeholder groups by forming climate action committees, task forces, partnerships, science parks, climate business networks, and urban living labs as experimental platforms and arenas for testing, piloting and upscaling decarbonization of infrastructures and related sectors (Anguelowski & Carmin, 2011; Bulkeley et al., 2013, Bulkeley, Marcin, Palgan & Frantzeskaki, 2019). Such arenas and platforms for interaction are, obviously, also initiated by stakeholders outside of the realm of the municipal organization to which public leaders may be invited (or not) (Hofstad et al., 2021; Vedeld et al., 2021). Citizens play a small role in this strategy as the main ambition is to mobilize expert knowledge, ideas, and support to transform the energy, construction and transport sectors in ways that reduce emissions and boost technology innovation and green urban economy transformation.

The third strategy is an *externally focused civil society strategy* that aims to enhance collaboration between public actors, local citizens and civil society organizations through selected platforms and arenas to gain local or lay actor competencies rather than expert knowledge and co-create new solutions that help to reduce emissions related to private consumption and urban living. This strategy also helps to build legitimate support for climate initiatives more broadly through active public leadership, typically in place-based decarbonization or related city developments. Notable new and innovative strategic approaches include urban living labs, citizen's panels, workshops and broader platforms and programmes (Bulkeley et al., 2019, Hölscer et al., 2019; Karvonen, 2018). These strategies involve individual and organized groups of citizens in consciousness-raising and climate education, transformation of consumption patterns, shared economy initiatives, energy renovation in large housing associations, planning initiatives creating a greener environment, circular economy development and various smart city initiatives. The fundamental ambition of this strategy is to prompt the transformation of social living to make it more sustainable by changing habits, social patterns and daily practices in ways that both reduce emissions and enhance life quality while reducing tensions and resolving possible conflicts and dilemmas.

One distinguishing factor in these three ideal co-creation strategies is their dependence on traditional hierarchy, authority, and bureaucratic instruments. Each of the strategies differently confers hierarchical and non-hierarchical levers of authority since they draw upon the authority of diverse constellations of public and private actors (van der Heijden, 2019). Within the internal whole of government strategy, co-creation helps to mitigate the negative effects of administrative sector organization by assembling internal actors and bridging different organizational sectors and multilevel scales, thereby reducing fragmentation and assuring alignment between internal approaches of diverse municipal entities (Baker & Mehmood, 2015). In turn, internal policy integration facilitates co-creation processes with external stakeholders across sectors and public agencies. The interactional relationships benefit from a more coherent and integrated public sector operating through predictable and mutually supportive and collaborative strategies (Baker & Mehmood, 2015). In the two other strategies related to external stakeholders and civil society respectively, the city leadership cannot, in the same manner, rely on direct mechanisms or mandated authority to engage and motivate actors to contribute to common goals. In practice, these strategies, as will be illustrated by the case studies, may be employed by public leadership in overlapping and integrated manners. When seeking to build collaborative relationships with professional stakeholders and civil society, cities tend to use a hybrid mix of hierarchical mechanisms, such as regulations, planning and financial schemes that indirectly encourage participation and softer collaborative governance mechanisms, such as convincing, building trust, and highlighting common interests to build common grounds (Hofstad & Vedeld, 2021; Vedeld et al., 2021). Thus, both the complexity of tasks and mechanisms and the diversity of relevant and concerned actors involved in climate action increase when the city enters the external arena. The degree to which each of these strategies are applied and their distinct combination varies according to context depending on each city's understanding of goals, ambitions, and approach to climate change (van der Heijden, 2019).

2.3 | Foundational aspects of co-creation: The role of institutional design and leadership

Collaborative governance theory proposes that to reap the fruits of co-creation as a tool for public governance, the use of one or more co-creation strategies must specifically be supported by conducive *institutional design* and new forms of *public leadership* (Ansell & Gash, 2008; Ansell & Gash, 2018; Torfing et al., 2016; Hofstad et al., 2021; Weber & Khademian, 2008).

2.3.1 | The role of institutional design

Co-creation often still lacks a more solid and comprehensive institutional foundation in an 'institutional and administrative framework within which stakeholders with different interests can discuss and agree to cooperate and coordinate their actions' (Graversgaard et al., 2018, p. 14; Ansell & Gash, 2018). Co-creation is observed as a governance process in many local jurisdictions and contexts, yet approaches to it are often hesitant, ad hoc, and tentative. Hence, the use of co-creation in public governance may benefit from insights from theories of institutional design (Fung and White, 2003; Fung, 2006; Skelcher et al., 2005; Skelcher & Torfing, 2010; Huntjens et al., 2012). The institutional design of platforms and arenas represents the organizational framework for collaborative processes (Ansell & Gash, 2008, 2018). A key feature of platforms and arenas is that they can call a 'public' into existence (Bryson et al., 2017). They provide a more or less coherent set of rules, norms and procedures that allow relevant and affected actors to communicate with each other, frame their joint search for solutions to common problems, facilitate experimentation, and exchange and/or pool their resources and coordinate their actions in the implementation phase. In short, platforms and arenas allow distributed actors to engage in the co-creation of innovative climate-sound policies and solutions.

2.3.2 | The role of public leadership

If institutional design has an indirect effect on co-creation by providing a stabilizing framework and ground rules for collaborative interaction, public leadership has a direct effect on the relations, actions, and identities of the participating actors. New research claims that the exercise of leadership plays a crucial role in promoting, supporting and giving direction to co-creation (Brandsen et al., 2018; Sørensen & Bryson, 2021; Torfing, 2016; Hofstad et al., 2021), such as;

- to develop, share, and sustain a joint vision intended to encourage a diversity of actors to transcend their own narrow self-interests and achieve higher collective goals (Bass & Riggio, 2006; Jacobsen & Andersen, 2015);
- to determine which activities in the public sector to maintain and which to adapt or alter through innovation and strategic endeavors to align actors, processes and goals across institutional, organizational and sector boundaries (Heifetz, Linsky & Grashow, 2009);
- to explore possible answers through dialog and empower the other actors by involving them in discussions about what to do next and how to do it (Denis et al., 2012);
- to foster cross-sector collaboration and policy integration in turbulent environments where separate efforts by relevant actors have failed to produce new and feasible solutions (Crosby & Bryson, 2010);
- to encourage leaders and managers to direct a diverse set of collaborators in ways that enable them to lead themselves, thus reducing the need for top-down directional leadership (Pearce & Conger, 2003); and
- to create appropriate disturbances, stimulate learning and encourage the actors to think out of the box and pursue innovative ideas (Morse, 2010; Torfing, 2016) and thus to move towards effective and efficient self-governance (our addition).

Each form of leadership highlights a distinctive approach to processes of collaborative problem-solving. In practice, there is a great deal of overlap between these forms, and they will often be employed in concert, as illustrated by this article.

3 | METHODOLOGICAL APPROACH TO EMPIRICAL DATA AND CASE COMPARISON

In applying the analytical framework to the two empirical cases, we have selected a qualitative approach adapted to the aim of exploring how specific co-creation strategies are supported by institutional design and evolving forms of public leadership. The methodology combines policy and institutional reviews with qualitative interviews with key officials. Interviews brought out interpretations and storylines about interactional processes and the roles of relevant actors and participants in co-creation processes. The two case cities, Copenhagen and Oslo, are both situated in an institutional context typical of Scandinavian municipalities in several respects. The elected governments of both cities are characterized by a high degree of devolution, professional and bureaucratic administrations, a reluctant and selective adoption of New Public Management reforms, high trust in government, a strong tradition of public-private collaboration and they are both highly capacitated. While Danish and Norwegian national climate policies are relatively similar and supportive of local action, they leave detailed formulation of climate strategies to the discretion of local government. Both cities have taken on an international climate leadership role by participating in several international climate networks and arenas supported by highly ambitious climate goals (Hofstad et al., 2021; Hofstad & Vedeld, 2020). The two cities differ, however, when it comes to their choice of co-creation strategies and the supporting institutional designs and emerging forms of leadership (City of Copenhagen, 2012, 2017; City of Oslo, 2018, 2020a).

Despite these cities' serious and continuous attention to climate change and the apparent proliferation of new instruments, interventions and projects designed as part of this agenda, it remains uncertain exactly what these activities amount to in terms of overall reduction of GHG emissions. The attempted transformations will take time, and many variables define the overall picture. We do not attempt to ascertain the degree to which both cities fully address potential gaps between policy and what is happening on the ground or precisely what influence co-creation has on these achievements. In both cities, the climate action plans and related governance in the climate arena enjoy relatively broad support across the political spectrum, and yearly reports on GHG emissions do suggest significant reductions and that the cities are largely on track to achieve stated climate goals (City of Copenhagen, 2019; City of Oslo, 2019). The qualitative data collected comprises 53 qualitative research interviews in Copenhagen (24) and Oslo (29) conducted in the period 2018–2020 and key policy documents from the last decade featuring climate-relevant strategies, plans, policies and steering decisions. Informants were selected using a snowball method and represent actors actively involved in the cities' climate governance in different ways (Table 1).

The interviews were semi-structured, typically lasted 1–1.5 h and were recorded, transcribed and stored in a secure location. Both the interviews and the documents were coded based on a codebook with detailed operationalization of the variables and arguments presented in the theory sections above. New codes were added dynamically when we made interesting observations in the data material.

4 | MAIN FINDINGS: CITY CLIMATE GOVERNANCE IN COPENHAGEN AND OSLO

This section introduces and compares key contextual factors in the two cities and subsequently provides an overview of the character

TABLE 1 Overview: Interviews in the two cities

City	Informants, role and numbers (in brackets)
Copenhagen	Leading administrators (5), central politicians incl. Current and former mayors (5), private stakeholders (5), local climate project participants (9)
Oslo	Leading administrators (15), central politicians (5), private companies (4), idealistic shareholding companies (3), environmental foundations (2)

and relative weight of the different co-creation strategies for climate change governance and how these strategies are supported by institutional design and public leadership.

4.1 | Contextual comparison

We know from earlier research that the politico-administrative, eco-climate and socio-economic context in and around a city have implications for its climate change strategies and evolving governance arrangements. Such 'starting conditions' may inspire and constrain a city's choice of climate strategies (Ansell & Gash, 2008; Bulkeley, 2013). Table 2 outlines key contextual variables as a basis for comparing and understanding the approaches of our two case cities.

Table 2 shows that while the two cities have relatively similar governments (red-green alliances), they differ considerably when it comes to their main sources of CO_2 emissions and thus their key climate change challenges. In Copenhagen, the main source of emissions is electricity use (34%), with electricity being produced largely by fossil fuel energy plants located outside the city boundaries. Oslo's main source of emissions is transport (55%), reflecting the fact that the city's electricity is supplied mainly by hydropower plants.

The city of Oslo governs according to two operational goals, namely to reduce the direct greenhouse gas (GHG) emissions by 95% when compared with emissions in 2009 and to become climate resilient – both goals to be achieved by 2030 (City of Oslo, 2020a, p. 2). A milestone on the way to zero-emissions is to cut GHG by 65% in 2025. Oslo's climate policy therefore has a significant CO_2 fix, but also relative clarity in terms of operational goals, while Copenhagen's policy has a broader scope, to become CO_2 neutral by 2025 (City of Copenhagen, 2012, 2021). According to Copenhagen's current climate strategy, CO_2 neutrality means that all energy consumed within the city limits in the public, private and transport sectors should come from sustainable energy sources (mainly biofuel) or be offset by sustainable energy production financed by public or private actors within the city (City of Copenhagen, 2021). This reflects that most of the energy produced for the city comes from plants located outside the city boundaries, originally fossil-fueled, today mainly non-fossil operated.

TABLE 2 Key contextual variables in Copenhagen and Oslo

Key contextual factors	Copenhagen	Oslo
City government composition	Social democrats govern based on red-green majority	Red-green coalition governs, Social Democrats are the largest party
Emissions of CO_2 equivalents in total	1.54 tons*	1.37 tons**
Main sources of CO_2 emissions	Electricity use (38%) Transport (34%) District heating (22%) Individual heating (2%) Other (8%)*	Road transport (55%) Waste incineration, waste, and sewage (29%), Heating (6%) Other mobile incineration (6%) Shipping (4%)**
Overarching climate change goal	Become CO_2 neutral by 2025	Reduce direct greenhouse gas (GHG) emissions by 95% and be climate resilient by 2030

Note: *City of Copenhagen, 2019 **City of Oslo, 2019.

4.2 | Comparison of co-creation strategies

Copenhagen's internal *whole of government strategy* is concentrated around a few targeted measures. It is spearheaded by the creation of a special purpose Climate Secretariat consisting of 10 climate experts with special access to political leadership and a cross-departmental convener role (Torfing et al., 2021). From 2010–2012 onwards, a Steering Group in the Secretariat's institutional home, the Technical and Environmental Administration (TEA), that included the director of Department of Culture and Leisure worked to prepare the latest climate strategy (City of Copenhagen, 2017). The leader of the Climate Secretariat had regular and rather informal meetings with the Department Director and the Mayor for the Environment. The meetings provided a vertical arena for brainstorming and strategizing. The TEA Steering Group was supplemented by cross-departmental meetings between all the directors that aimed to enhance collaboration based on the so-called 'Copenhagen Story'–a jointly formulated narrative linking the goals and values of the seven departments into a common vision of Copenhagen as a mobile, green, livable and growing city. The meetings provided a platform for the formation of concrete project arenas. It was determined that the city's heating system could potentially deliver more than 70 per cent of the cuts in CO_2 emissions called for by the city's climate strategy. As a result, the publicly owned metropolitan energy utility company HOFOR assumed a central position in the quest for climate neutrality. According to informants, the relationship between the city administration and HOFOR is characterized by the search for and negotiation of new solutions within the realm of the climate neutrality agenda. HOFOR has integrated the neutrality goal as part of its own strategy. The co-creational aspect of the relation between the city and HOFOR involves testing the potential of new ideas and working to find ways to finance them through what key officials call 'joint fact finding' with relevant partners upwards, sideways and downwards.

The *externally focused stakeholder strategy* of Copenhagen's climate governance secures development of a green tech industry that requires interaction between the city, universities, private firms, and investors. During the development of the climate strategy, stakeholders were invited in the design phase to a series of conferences and seminars that constituted a platform for the formation of thematic working groups that provided arenas for qualified input. As one leading city administrator explained, 'The more actors we had on board, the more ambassadors for the climate plans we would end up

having.' Hence, the construction of broad ownership of the new climate strategy was important. A project portfolio consisting of about 60 specific partnerships that involved public managers, staff and organized stakeholders were used to implement energy-saving solutions, particularly in the area of transport. A further strategy was the involvement of the city with the 'Gate 21' triple helix platform or network between a set of municipalities in the greater Copenhagen region. The platform was jointly formed by public and private actors after disappointment with the COP 15 in 2009 to mobilize academics, professionals and other actors with a mutual green transition agenda. According to its CEO, Gate 21 plays a pivotal role in the co-creation of climate responses across neighboring municipalities and private companies.

Copenhagen's *externally focused civil society strategy* relies on project organization involving relevant and affected actors and is utilized to achieve common goals based on different co-creation and participatory methods such as local partnerships and living labs involving citizens. However, as one of the central actors in TEA explained,

> *To be completely honest, we haven't spent very much time co-creating solutions with citizens and civil society since CAP3 is a structural plan. The areas where we've involved citizens are concrete initiatives, such as local fractioning and waste recycling, bicycle paths, and climate adaptation.*

Hence, the core of the climate strategy was structural and technical and mainly concerned with energy production that involved HOFOR. However, we see more involvement of citizens in climate adaptation projects, which have a more localized character than energy production; adaptation is of high concern in Copenhagen due to its flat, low-lying terrain and emerging issues of sea-level rise and storm flooding leading to increasing incidence of cloudburst rain.

Table 3 summarizes the co-creation strategies of Copenhagen and Oslo and provides a bridge to the presentation of Oslo's unique approach below.

The *whole of government strategy* is key to understanding Oslo's climate governance. Both public and private informants underlined how the clarity of the city's climate goal and its operationalization into the climate budget and related monitoring and reporting systems create predictability across relevant actors and enhance climate action on the ground, as expressed by the following quote:

> *Point one, it should be a clear climate goal that could not manipulated, it should be measurable in tons of CO_2, no nonsense about quotas or reference paths or other things. It should be easy to understand.*

> *Point two, we need to make a governance system that avoids fragmentation by clarifying and adopting in the City Council the measures that need to be implemented and who should be responsible for implementing them. Thus, [we need to] to incorporate the climate goal into*

TABLE 3 Copenhagen and Oslo's co-creation strategies – Internal and external coordination and capacity

Copenhagen		Oslo
Internal whole of government strategy	A special-purpose *climate secretariat* operating vertically and horizontally in the municipal organization Joint formulation of '*the Copenhagen story*' Close collaboration between climate secretariat/*TEA and HOFOR*	Creation of a *climate agency* vested with a horizontal convener, coordination and policy integration role Development of a *climate budget* coupled to the normal financial budget as a coordination and steering tool Cross-departmental engagement and collaboration to implement designated climate measures and develop new policy initiatives, for example, *climate criteria* for new procurement rules and land use planning.
Externally focused stakeholder strategy	A series of *conferences and workshops* 60 energy-saving *partnerships* Involvement in *the triple helix Gate21 platform*	Creation of a *Business for Climate Network* - a compact is signed; partners agree to contribute to attain the city's climate goals and participate in regular dialogs City-initiated stakeholder meetings Collaboration between city representatives and stakeholders to develop fossil-free solutions
Externally focused civil society strategy	*Citizens and civil society actors* are mainly involved in urban development, localized adaptation and personal transport projects	*Communication strategy* to stimulate climate sound action *Climate barometer* to measure and assess climate policy support *Localized involvement* in for example, densification projects *Reactive interaction* as a response to protests

> *the entire management of the municipality*. (Position politician)

The backbone of this whole of government strategy is a set of traditional bureaucratic management instruments (annual activity plan, assignment letters, budgeting, monitoring, reporting) combined with new and innovative institutional designs and exercise of leadership through for example, climate budgeting and new procurement rules with climate criteria (City of Oslo, 2018, 2020b, 2020c, 2020d). A variety of formal and informal meeting arenas and co-creation processes are employed between vertical layers of the municipality and horizontally across departments and agencies when deciding on political goals and concrete climate actions and how to combine traditional and new types of instruments when designing new policies and measures. Several collaborative processes drive the development of new governmental measures and solutions. They are facilitated by Oslo politicians across the political spectrum who take on active leadership roles and provide political backing, as well as by the Climate Agency, which takes on a technical, operative and coordinating leadership role:

> *We must have a good dialogue with (…) [and] find the right people to talk to in the various agencies (…) to keep in mind all the time that we need to look for new measures even if we have not been explicitly asked to. Can we do something about this measure? (…) is something we always keep in mind when we meet other agencies*. (Administrative advisor)

It is fair to argue that the climate budget process and related collaborative processes have triggered the adoption of new procurement and planning policies with climate criteria and furthered the collaborative dimensions of the external stakeholder strategy and new policies concerning for example, procurement for clean construction, car-free city centre, fossil-free goods and utility transport, and fossil-free work mobility (City of Oslo, 2017, 2020b, 2020c, 2020d). Hence, the whole of government strategy is structurally and functionally intertwined with the two other external co-creation strategies.

Oslo's *external stakeholder strategy* is characterized by concrete problem-solving and identification of specific climate action to reduce CO_2. Either in consciously designed arenas or through more ad hoc or temporary platforms initiated either by the city or by external stakeholders themselves. Table 3 includes some notable examples: among them, a city-initiated Business for Climate Network consisting of more than 130 companies that have agreed to sign a compact with the city to reach the city's climate goals and coordinate their actions with the city. Engagement of the network has been used instrumentally to discuss means and ends of key climate strategies of the city, as well as in formulating climate criteria for new procurement and planning rules (City of Oslo, 2016, 2017, 2018, 2020d). Additional ad-hoc meetings with representatives of environmental foundations were used to discuss the implementation of plans for the expansion of the toll ring, creation of a car-free city center, and 'clean construction' policies – which is a recent flagship project of the city. Our data show that the present city-wide policy of fossil-free construction sites evolved from below. The first fossil-free construction site was initiated through a public-private partnership between an environmental foundation and a public building company. The approach later proliferated to additional locations and projects in the city involving different public building agencies, private companies, environmental foundations, and trans-local networks (Vedeld et al., 2021). This evolving process indicates important bottom-up co-created climate actions in the city and suggests that such innovative experimentation relies on networked processes with potential for scaling. Only later in the process did the City Council and the Climate Agency embrace these decentered initiatives and make fossil-free construction policy for the city government as a whole. This evolving policy process subsequently formed a rallying point for a set of co-creation arenas with other cities and trans-local and transnational networks (e.g., C40, EUROCITIES), and collaboration with private businesses and civil society actors in the implementation phase.

The *external civil society strategy* in Oslo combines involving citizens in conventional public hearings on strategies and development plans, communication, nudging at arm's length and more local interactions and living labs to discuss local development plans and resolve conflicts, most notably around compact city development or other local projects (bicycle lanes, parking restrictions). A broad-based communications strategy was developed to alter citizens' behavior by presenting examples of positive and innovative climate action. In the same vein, a climate barometer based on opinion polling measures was created, which assesses the support for climate change policy from a variety of citizen groups – as well as from the business community.[1] Thus, the communications part of the city's civil society strategy is largely a one-way ICT strategy based on social media and does not foster much direct two- or multi-way interaction between representatives from the city and citizens, although information about citizens' opinions and behaviors is gathered passively. This communications strategy is accompanied by a climate fund to support climate-friendly practices, such as e-bikes and climate-friendly heaters. Thus, the leadership approach aims to stimulate self-governance and activities in line with the city's climate change goal.

At the community level, however, public authorities do interact directly with citizens, as required by the national planning law, to discuss local development plans and actions and to engage in dialog over citizen protests. Among others, a series of central and local meetings between citizen groups, politicians and administrators were held in conjunction with the city development plans to discuss compact city initiatives and local mobility issues (densification, new street plans, bike lanes, removal of parking, new e-charging stations).

5 | COMPARATIVE ANALYSIS

Cross-case comparison reveals similar patterns in as much as there is relatively good institutional and leadership support for the predominant co-creation strategies. In both cities, institutional design has fostered several platforms and arenas for co-creation between public and

private actors and various forms of public leadership have been exercised to set the agenda, motivate participation, facilitate collaboration and networking, spur innovation and monitor results. Hence, the strategic choices are a result of setting specific goals and operationalizing them into energy transition in Copenhagen and fossil-free transport and city development in Oslo. To this end, the cities have both relied mostly on governance instruments or infrastructure controlled by public actors, (larger) property developers, green-tech companies, and climate experts in environmental foundations and research.

5.1 | The intertwined character of internal and external stakeholder co-creation strategies

Our findings suggest that, in both cities, the whole of government strategy and the externally focused stakeholder strategy are firmly intertwined and seem to presuppose and support each other. However, the content of each city's strategies and their performance of leadership vary. First, different choices of main policy domains for addressing CO_2 emission–energy transition in Copenhagen versus green transport and city development in Oslo–lead to differences in how goals are formulated in the two cities–CO_2 neutrality in Copenhagen and 'CO_2 fixed' emission reduction in Oslo. The clarity and transparency of Oslo's climate goal encourages the use of a combination of regulatory restrictions and innovations in transport and city development and expresses an intention to secure a high degree of correspondence between the CO_2 reduction policies and practice on the ground (cf. Hofstad et al., 2021). Climate goal-setting, in combination with the internal climate budget process, has triggered experimentation with new procurement rules and co-created experimentation with fossil-free construction sites with external stakeholders. Copenhagen's carbon neutrality goal, on the other hand, has led to a strong focus on energy transition supported by a whole of governance strategy including a small and effective Climate Secretariat and delegation of daily leadership to HOFOR, the energy utility company owned by the municipality, playing a key role in goal attainment (Torfing et al., 2021). In addition, this is combined with an externally focused stakeholder strategy with the Climate Secretariat operating as a project organization 'outsourcing' climate action to 60 external partnerships, as well as co-creational initiatives under the Gate 21 umbrella.

The comparison thus highlights that the relationship between contextual variables, goal formulation, institutional design and leadership approach when seeking to stimulate decarbonization produces unique contextual approaches that provide nuanced insights into different ways of enacting seemingly similar co-creation strategies. In Copenhagen, the carbon neutrality goal provides a mutual platform for action by resource controlling actors operating in a fairly independent manner (HOFOR) or in arenas at arm's length from the comparatively small climate secretariat (60 partnerships, Gate 21). In Oslo, the Climate Agency plays a more operative leadership role as it is directly involved both internally and externally, working on the institutional design of new instruments and stable internal and external arenas and platforms as well as engaging directly in experimentations and project-based co-creational activities. The most prominent instrument is the climate budget whose novelty lies in its firm integration into the financial budget and internal monitoring and reporting systems, which have spurred new innovations and collaborative relationships with external actors in the wake of the budget's quest for new CO_2 reduction alternatives across sectors and actors. Furthermore, the evolving clean construction policy, which is the outcome of mutual exchange between public and private actors, has further expanded involvement of public and private actors in co-created or networked relationships.

The two cities' unique approaches to climate-driven co-creation strategies have been consciously developed to attain their overarching climate goals. Copenhagen openly expresses that, given the contingent circumstances and context, an instrument such as the climate budget is futile, "most of the emissions are controlled by private investors, mostly in the construction sector." The leadership further highlights that due to multilevel constraints, the city cannot approach transport in the same manner as in Oslo. Oslo, on the other hand, is driven by a clear conviction that by co-developing instruments across internal and external actors the outcome is greater predictability and trust. Hence, the Oslo leadership is willing to use its institutional capacity and resources related to developing whole of government instruments and related co-creation processes to calibrate approaches to what private actors can deliver. In addition, the institutional conditions in Oslo make it possible to implement stronger car restrictive measures than are feasible in Copenhagen.

These contextual differences are mirrored in how the cities design institutions and perform leadership within the whole of government and stakeholder strategies. Copenhagen relies on a small yet effective climate secretariat that seeks to inspire actors at arm's length by relating to the carbon neutrality agenda and distributing leadership to an array of professional stakeholders. Oslo takes a more hands-on approach in which institutional design and leadership aim to integrate climate action internally and externally, and the Climate Agency engages directly in stakeholder dialog on concrete solutions and adaptation of policies and instruments to place-based contexts.

5.2 | The role of citizen participation in climate change governance

An important similarity between the two city cases is the observation of limited citizen's involvement beyond fairly instrumental efforts to secure support for specific (local) plans or projects. This lost opportunity for co-creation with citizens is perhaps mainly the result of a conscious choice; the leadership is seemingly not convinced that stronger citizen engagement will necessarily 'pay off' in terms of new knowledge or required buy-in to common approaches. The selective involvement of relevant and concerned actors in the two cities happens for diverse purposes and in diverse policy domains and arenas. The basic aim of any actor engagement is likely to be to enhance public capacity for solving specific problems, developing ideas, creating goals and policies or gaining access to resources for operationalizing

transformative goals (Fung, 2006). In this regard, diverse groups of citizens (high vs. low education; high vs. low CO_2 footprint; wealthy vs. poor etc.) and diverse organized interests possess different capabilities, powers, and knowledge with potential importance for decarbonization. However, these actors have varied interests in co-created climate actions. In both Oslo and Copenhagen, citizens and citizen organizations are judged to contribute significant knowledge and resources, first and foremost as voters, local agents and residents. Citizens thus mainly play a role as participants in collaborative processes to reactively legitimize climate strategies and to provide local knowledge and ownership of place-based interventions. We suggest three reasons for this state of affairs.

First, both cities have decided that their best chance of realizing their ambitious climate plans lies in addressing 'low-hanging fruits' within specific policy domains including energy production, transport, and city construction development. These are rather technical and technology-dependent policy areas and are perceived by the cities as calling for strategic collaboration with relevant private stakeholders with technical expertise and control over relevant infrastructure and capital rather than broad-based citizen participation and round table discussions with lay actors. To this end, several organized civic think tanks and professional environmental foundations in Oslo are frequently involved in strategic policy development, learning and networking since they embody recognized expertise in key climate-related domains. Greater citizen involvement in co-creation of solutions in these areas could potentially create a broader commitment to climate goals and help democratize urban climate governance decisions, but this has not been a key priority for public leadership in either city.

Second, both cities have adopted a strategy that frames the efforts to cut emissions as a way of modernizing the city and promoting business development through a 'green shift' or transition in the economy. This particular policy strategy seems to draw more attention to organized stakeholders such as property developers, private businesses and construction firms than to ordinary citizens. In both cases, it is clear that citizen engagement is triggered, either from below or from above, when climate-related action is localized and directly affects citizens' everyday life, such as in the case of compact city development and restrictions on car usage in Oslo. This leads to citizen engagement, and sometimes active protests, which, in turn, prompt the city administration to invite citizens to dialog meetings. In Copenhagen, citizens are typically invited to take part in climate adaptation projects, which have a localized character.

Third, although there are niches where citizen involvement in climate governance is stronger, especially in local city densification developments, these efforts have not been scaled up or firmly integrated into the broader governance structure and approaches of the cities. This suggests that traditional bureaucratic design and leadership strategies in the field of urban climate governance are still important in both cities, although, especially in Oslo, we observe how reform of traditional government instruments is increasingly intertwined with and triggers innovative co-creation efforts with external–as well as internal–stakeholders.

Summing up the comparative analysis, we suggest that the widespread co-created pilot projects and the emergence of new arenas and platforms initiated from above as well as from below by both public officials and private and civic agencies are an indication of learning and reflection in the combined leadership group at the city level (Hofstad et al., 2021). Our findings mirror the emergence of city governance through networked experimentations and related urban policy reforms which have been recognized as important approaches in many global cities (Bulkeley & Castán Broto, 2013; van der Heijden, 2019); Bulkeley, 2021; Hofstad & Vedeld, 2021).

6 | TAKEAWAY FOR THEORY AND POLICY

This article set out to do two things: first, to develop a co-creation framework based on three ideal co-creation strategies utilized by city governments, and second, to apply this framework to a comparative case study on the role of co-creation in building capacity for addressing climate solutions in the urban climate governance of two Scandinavian cities.

First, a key finding is that the analytical framework provides nuanced insight to the substantive and distinct role of co-creation in urban climate governance. The application of the framework to the comparative case cities, reveals how the two cities navigate differently within the polycentric ecosystem of actors depending on the context and contingent circumstances. However, both cities similarly combine a *whole of government strategy* with an *externally focused stakeholder strategy*, while neither of the cities has adopted a full-fledged *externally focused civil society co-creation strategy*.

Second, the analysis furthermore shows how the benefits of co-creation as a tool for public governance depend on support from both conducive institutional design and new forms of public leadership. Co-creation is designed and employed by public leadership through distinct mixed, hybrid governance approaches involving both collaborative and traditional bureaucratic tools and instruments. A variety of networks and arenas/platforms emerged to overcome and solve specific complex challenges encountered. Such arenas are built through continuous collaborative efforts and innovative step changes which the actors jointly perceive as necessary to meet the specific goals and ambitions inherent in the local – as well as the global - climate change agenda – in line with what is found in co-creation theory (Ansell & Torfing, 2021). Moreover, while there is room for further improvement in operationalizing co-creation, especially in relation to citizen involvements, we find that new institutional designs and forms of leadership in the two cities evolved over time and started to congeal into a distinctive type of co-creational leadership based on both hands-on and hands-off tools. These processes equip both local public and private managers and professionals with new and collaborative designs and leadership tools for furthering co-creation and related platforms and networks. We see the contours of various forms of public leadership which are combined in different context-sensitive ways, and we observe leaders that take initiatives as collaborative capacity builders beyond traditional bureaucratic roles (Weber & Khademian, 2008).

Third, we also propose, especially with reference to the Oslo case, that a variety of partly reformed bureaucratic tools supported and underpinned the design and engagement in co-creation processes (cf. Vedeld et al., 2021). This intimate relationship between the (reformed) traditional hierarchical instruments (climate budget, new planning and procurement rules with climate criteria) and the building of co-creation arenas is often not recognized in the collaborative governance literature, which has been preoccupied with analyzing the encounters between public actors and citizens (Torfing et al., 2016). These findings emerge from a broad analytical focus on multiple actor relationships within a polycentric context, which goes beyond a participatory governance perspective that typically focuses mainly on forms and degrees of citizen involvements.

Fourth, neither city has adopted a full-fledged *externally focused civil society strategy*. Both cities have instead adopted an instrumental approach to climate governance guided by relative clarity in climate goals and directed at the largest sources of CO_2 emissions and related core stakeholders. Hence, they have thus far been able to address mainly the transformation of larger energy, buildings and transport systems and engaged concerned professional stakeholders in co-creating innovation within these spheres, more so than behavioral changes of citizens. This has motivated specific instrumental approaches targeted towards stakeholders in control of relevant expert knowledge and resources that potentially enhance collective capabilities for decarbonization of specific emissions sources (Hofstad et al., 2021; Hofstad & Vedeld, 2020, 2021; Vedeld et al., 2021). As both Oslo and Copenhagen have started to integrate circular economies, consumption and just transition concerns into climate strategies, citizens as consumers and agents with diverse socio-economic statuses and degrees of responsibility for CO_2 emissions need to become increasingly part of urban climate politics and action.

Policy-wise, the evolving post-Glasgow climate agenda with its focus on consumption and behavioral changes, equity and sustainability requires a broad and fundamental transformation of the urban fabric and economy, and thus a more broad-based involvement of *both* citizens *and* private stakeholders than presently observed. If the wider and accelerated climate agenda is accepted as critical, it has important implications for how we perceive city climate governance and leadership. It necessitates a more nuanced understanding of the critical role citizens need to play in climate action, including how to leverage their capabilities, interests and concerns, beyond what we observe in the two case cities. This includes a focus on how citizens engage in interactional relationships with both public and private business actors across sectors and scales. Citizens are, obviously, highly relevant and concerned residents, consumers, and climate agents, as well as voters with rights and responsibilities and resources for climate action who also provide the city leadership with legitimacy to act. We have seen how the two cities target their engagement with citizens as residents in placed-based projects aimed at developing sustainable transport and densifying housing. However, the recent emergence of different kinds of protests in both cities related to more ambitious and restrictive climate policies–both in favor and against–suggest that citizens constitute a mixed group with diverse interests in pursuing transformative climate policies, which creates new challenges and dilemmas for city governance and leadership.

A fifth observation is thus that, along with this evolving climate agenda, new public leadership roles are needed to unclog bottlenecks, deal with risks and uncertainties, design collaborative platforms, and manage broad-based and innovative co-creation processes with citizens and private actors alike. This will involve transformative, distributive, and adaptive leadership processes that can tackle multiple public demands and needs and potential conflicts across diverse public and private interests (Sørensen & Torfing, 2019, 2020; Torfing et al., 2021; Hofstad & Vedeld, 2021). City leadership, in this regard, needs to take on the role of collaborative capacity builder to fully reap the benefits of involving a diversity of citizens' experiences.

Finally, we propose that co-creation as a *theoretical concept* potentially has more analytical power than citizen participation when it comes to understanding how cities navigate, lead and govern climate change within a polycentric ecosystem of actors. It helps to analyze the role of citizens within relevant multi-actor arenas and platforms, whether they are created 'from above' or 'from below'. It brings a nuanced understanding of the multiple roles that citizens can play as climate agents, residents, consumers (of both public and private services) as well as voters who can provide the city leadership with legitimacy but also oppose climate action. As a *collaborative practice*, co-creation comes with a large toolbox of institutional designs, instruments and leadership strategies for mobilizing a multitude of relevant and concerned private *and* civic/citizen actors to move the evolving climate agenda forward. However, none of the two concepts of co-creation and citizen participation can escape the inherent tension in urban governance strategies between democratic representativeness (input legitimacy) and goal effectiveness (output legitimacy) in either theory or practice (Ansell & Gash, 2018; Ansell & Torfing, 2021). Co-creation often occurs outside of formal politics and thus needs to be regulated and incentivized through democratic accountability mechanisms if this tension is to be addressed. Co-creation is for the common good only to the extent that this is specified as a strategic goal and pursued by each of the participants.

7 | CONCLUSION: IMPLICATIONS FOR FUTURE RESEARCH

In order to pursue the analysis of the role of co-creation in city climate governance further, we suggest that a promising path would be to study how institutional design and public leadership, more precisely, are employed in mixed hybrid forms within and outside the realm of the municipal organization as the climate agenda moves to address deeper urban sustainability and justice concerns. A key focus would be on how potential conflicts and barriers are tackled by leadership, and how different policies and instruments are combined in order to transform not only technologies, but also the behavior of actors within the wider economy and urban fabric. The analysis would need to cover the encounters and collaborative efforts across the polycentric ecosystem of public actors, private businesses, civil society, and citizens as lay actors, each of which comes to the table with a

diversity of interests, assets and powers. A key puzzle would be how to reap the fruits of co-creation while navigating in such a varied, conflict-ridden and uncertain landscape of agents.

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ENDNOTE

[1] The climate barometer and the examples of good climate action are communicated at www.klimaoslo.no

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