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Cities as leaders in EU multilevel climate governance: embedded upscaling of local experiments in Europe

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ABSTRACT

The success of local climate governance in Europe depends not only on leading cities but also on the dynamics between leaders, followers, and laggards. Upscaling local experiments helps to close the gap between these actors. This process is driven by the increasing embeddedness of cities and their networks in EU multilevel governance. Embedded upscaling combines horizontal upscaling between leading cities with vertical upscaling between leaders and followers that is mediated by higher levels of government, and hierarchical upscaling that even reaches the laggards. Various types of upscaling, their combinations, and their impacts are analyzed. Networks have become denser and networking has intensified. City networks and their member cities have become embedded in national and EU governance, lost authority and depend more and more on regional, national, and European authorities.

KEYWORDS European Union climate governance; cities; regions; upscaling; experimentation; Covenant of Mayors

Introduction

It is widely acknowledged that cities have become important players in climate governance at national, European, and global levels. At the 2015 Paris climate conference, UN Secretary-General Ban Ki-moon recognized the important role of city leaders, stating that cities have taken leadership to a new level of cooperation and innovation. Many actors from the local to the global level share this view. This development has stimulated many new debates, such as Benjamin Barber's idea to establish a Global Parliament of Mayors (Barber 2013).

Since the Rio Earth Summit, international debates have influenced European cities. Shortly after the Summit in 1992, most leading European cities, such as Copenhagen and Amsterdam, started Local Agenda 21 initiatives, developed indicators, set carbon dioxide (CO_2) reduction targets, and established monitoring systems for measuring their emissions. These pioneering cities not only took early action, but also founded city networks

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such as Local Governments for Sustainability (ICLEI) and the Climate Alliance to exchange their experiences, competed for awards, branded themselves as green cities, and tried to become models for other cities at home and abroad. Thus, they developed from pioneers, which take action without the ambition to attract followers, into exemplary leaders (Liefferink and Wurzel 2017, Wurzel *et al.* 2019 – this Volume).

Leading European cities not only started earlier than their peers but they have also set more ambitious goals than the EU and its member states. This means that the success of EU energy and climate governance depends not only on the member states but also on subnational action. However, local climate action is not a panacea. Although leading cities have pursued effective climate actions, many cities and towns have not yet introduced appropriate mitigation and adaptation strategies. Despite all the debates on good/best practice transfer and the replicability of experiments, smaller cities and towns may not follow the leaders. On a voluntary basis, good practices are not automatically taken up (Heidrich *et al.* 2016, Reckien *et al.* 2018).

Therefore, the goals of the Paris agreement are attainable only if initiatives are not limited to a few larger cities in metropolitan regions, with the majority of medium-sized and small cities and towns staying behind. Around 40% of Europe's population lives in non-metropolitan regions (Eurostat 2016), and even in metropolitan regions many suburban cities and towns have not developed any relevant strategies. In Germany, for example, only about 30% of the population lives in 80 cities with more than 100,000 inhabitants. Smaller cities and towns have far lower capacities than internationally known leaders. Thus, there is a high potential for CO_2 emission reductions in suburban and rural areas (see also Jänicke and Wurzel – this Volume). As in Germany, the Netherlands, and Sweden, almost all cities with more than 100,000 inhabitants have already started initiatives (for the Netherlands, see den Exter *et al.* 2015); the effectiveness of local climate governance depends on additional actions in smaller cities and towns.

Although even smaller cities (such as Växjö in Sweden) or villages (such as Güssing in Austria) have become internationally known models, such municipalities are 'unlikely pioneers' (Homsy 2018) because the percentage of climate change leaders is highest among large metropolitan regions. Therefore, here I analyse the dynamics between leaders that take action on a voluntary basis and the followers/laggards that require external incentives or even mandatory standards to act (Fuhr *et al.* 2018). Operating on the assumption that system-wide transformation requires climate actions in all municipalities, I ask how cities and towns are governed in a multilevel governance system directly (e.g. by setting mandatory standards) and indirectly (e.g. by certification and rankings), and how cities and towns that have not taken any voluntary action can be stimulated to do so.

I focus on the dynamic relationship between cities in EU multilevel climate governance. Internal and external factors, particularly the embeddedness of local initiatives in polycentric networks of actors at different scales, drive this process. The main argument is that new forms of upscaling have emerged in the EU multilevel governance system. After discussing the nature of my analysis, the research design and the methods, I introduce three types of upscaling of local experiments in multilevel systems: horizontal, vertical and hierarchical upscaling, before suggesting that a new form of upscaling, embedded upscaling, has emerged in the EU multilevel system. I then discuss the impact of embedded upscaling on networking and present some conclusions.

Character of the analysis, research design and methods

This contribution is largely exploratory and conceptual in nature, although it also presents original empirical research. Despite the facts that research on local climate governance has become well-researched, and that interest in large-*N* analysis (e.g. Reckien, 2018), as well as research on small and medium-sized cities and towns (Hoppe *et al.* 2016, Wurzel *et al.* 2019 – this Volume), have increased considerably, most studies focus on: case studies on leading cities in large metropolitan regions, neglecting mid-sized and smaller cities and towns; global city networks such as C40, neglecting national and European networks and associations of cities; or experiments and urban living labs in larger cities, neglecting the transfer of experiments beyond city borders and to smaller cities and towns in rural areas (Homsy 2018, van der Heijden 2018).

The dynamics between leader, followers, and laggards over time is most evident in relatively affluent liberal democracies that grant local authorities a high degree of political and financial autonomy. I focus on Europe for five main reasons. First, many pioneering and leading cities are located in Europe, and European cities have been at the forefront of taking sustainability and climate policy initiatives. Second, national municipal networks (such as the Dutch *Klimaatverbond)* and transnational municipal networks (such as the Climate Alliance) came into being already 25 years ago. Third, polycentric city networking existed in Europe, in the form of the Hanseatic League, even before the rise of the nation-state. Spurred on by Europe's history of conflicts and wars after the rise of the nation-state, city twinning became popular after the Second World War. Fourth, the first national (subsidy) programs already existed 20 years ago, in particular in the Netherlands and Sweden. In Germany, initiatives started in the federal states (Länder) and, finally, led to an ambitious national program established in 2008. Fifth, the EU Covenant of Mayors (CoM), which the EU Commission initiated in 2008, is a unique feature of multilevel and

polycentric governance that goes far beyond transnational city networking. Although the developments in Europe differ from developments in other parts of the world, studying recent trends in Europe may create helpful knowledge for understanding (future) developments outside of Europe.

This contribution builds on original empirical research on climate governance in cities and regions. I conducted around 30 interviews with administrators and politicians in Germany, the Netherlands, and Sweden (in leading cities, regions where these leading cities are located, and national governments), and with representatives of national and international city networks and associations. In addition, I draw on the results of various research projects (Meijering *et al.* 2014, 2018, den Exter *et al.* 2015, Graf *et al.* 2018).

Horizontal, vertical, and hierarchical upscaling in EU multilevel climate governance

Upscaling of local experiments

Although there is widespread interest in upscaling local experiments, no scholarly agreement exists on its definition. Studies on experiments in urban laboratories combine scholarly interest in scales with research on experimental governance (Hoffmann 2011, Castán Broto and Bulkeley 2013, Evans *et al.* 2016). The World Bank (2005), for example, defines upscaling as 'expanding, adapting and sustaining successful policies, programs or projects in different places and over time to reach a greater number of people.'

The concept of scale has been used in various disciplines, ranging from scales in ecosystem management to discussions on 'economies of scale' in economics. The debate on upscaling is most prominent in human geography (van Doren *et al.* 2016, van Winden and van der Buse 2017) and in transition research (Naber *et al.* 2017). Upscaling of local experiments is a process over time that we can characterize by the following:

- *Expansion*: upscaling is limited to the city in which the experiment was conducted, for example, the planned roll-out of a place-based pilot project from one neighborhood to other neighborhoods, driven by project-to-project learning processes;
- *Diffusion*: upscaling between cities on a voluntary basis, based on various forms of networking, ranging from twinning to global city networks;
- *Transformation*: upscaling that leads to a transformation towards sustainability (WBGU 2016) in a specific territory, such as a region or a nation-state, and requires climate action in all municipalities within that territory.

In contrast to existing research on upscaling, which focuses mainly on expansion, i.e. the roll-out of place-based pilot projects (van Doren *et al.* 2016, van Winden and van der Buse 2017), or on socio-technical systems

(Naber *et al.* 2017), here I concentrate primarily on diffusion and transformation in multilevel systems such as the EU and the German federal system. Diffusion of local experiments on a voluntary basis, which does not involve higher levels of government, leads to horizontal upscaling between cities. This facilitates the transfer of good practices to cities and towns that have the capacity to follow the leaders. Transformation towards sustainability in a specific territory requires additional forms of upscaling that involve the state.

I start from the assumption that various types of upscaling exist in multilevel governance systems (Figure 1) (Kern 2014). While *horizontal upscaling* is based on voluntary actions and direct relations between leading cities, *vertical upscaling* is shaped by the interdependent relations between cities and higher levels of government, and *hierarchical upscaling* leads to a harmonization of policies at the national and/or EU level and sets mandatory standards for all municipalities. I claim that a new hybrid mode of upscaling, which I label *embedded upscaling*, is emerging. It combines horizontal, vertical, and hierarchical upscaling (Table 1).

Horizontal upscaling

Horizontal upscaling involves the exchange of experiences, knowledge transfer, and learning between and among cities. Most research on the transfer of good/best practices has focused on debates on policy transfer and diffusion, lesson-drawing, and policy mobility. While policy transfer and lesson-drawing have focused primarily on the transfer of ideas and policies between nation-states, and the discussions on policy diffusion have concentrated on the U.S. states, policy mobility studies primarily analyze

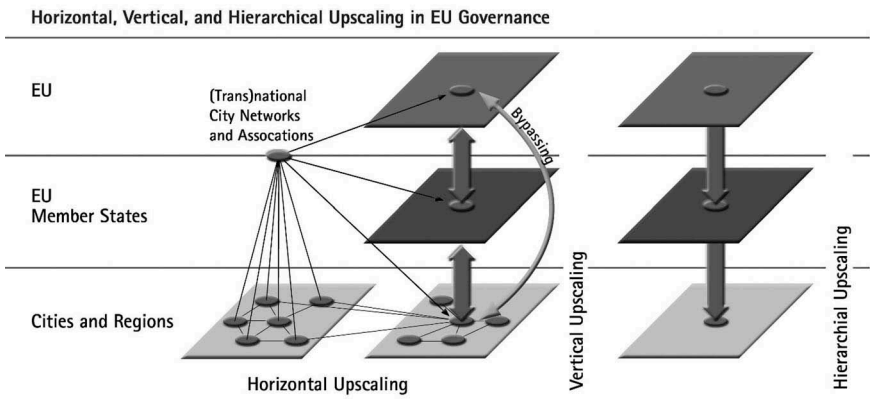

Figure 1. Horizontal, vertical, and hierarchical upscaling in EU governance

Table 1. Types of upscaling.

Type of upscaling	Horizontal upscaling	Vertical upscaling	Hierarchical upscaling	Embedded upscaling
Conceptual approach(es)	(horizontal) policy diffusion; policy transfer, policy mobility, etc.	Multilevel governance	Multilevel governance (Type I)	Multilevel governance (Type II embedded in Type I)
Modes of governance	Governance by diffusion; best-practice transfer; voluntary governance (certification, rankings, and awards); bottom–up approach; crossloading	Governance by (positive) incentives; top–down and bottom–up approaches; uploading	Hierarchical governance; mandatory standards, goals and targets; coercion and sanctions by regional and national authorities; top–down approach; downloading	Combination of horizontal, vertical, and hierarchical modes of governance; polycentric governance
Levels involved	Local level only	EU multilevel system; national multilevel systems (member states)	National multilevel systems (member states)	EU multi-level system; national multilevel systems (member states)
Forms of networking	Twinning; polycentric networking (city networks); main functions: knowledge transfer, exchange of experience	Polycentric networking (city networks, associations of cities and towns); emergence of direct links between the EU and cities (bypassing and scale-jumping); main functions: representation, lobbying, funding	National associations of cities and towns; main functions: representation and lobbying at national level	Polycentric networking; emergence of new forms of networking from regional to EU levels: meta-networks, territorial networks, and functional networks
Leader-follower-laggard dynamics	Learning and transfer among leading cities; widening the gap between leaders and laggards	Regional, national, and EU strategies and programs attract not only leaders but also followers; options for followers to catch up to the leaders	(national) mandates for all cities; even laggards need to comply; closing the gap between leaders and laggards	Combination creates opportunities for leaders, followers, and laggards; closing the gap between leaders and laggards
Challenges	*Experimentation;* experiments are not taken up	*Differentiation;* targeted programs for cities with different ambition levels needed	*Regulation;* Binding standards may have negative repercussions on leading cities	*Integration;* Need to solve the challenges of experimentation, differentiation, and regulation simultaneously

policy mobility between cities (Kern 2000, Karch 2007, Marsden and Stead 2011, McCann and Ward 2012) (see Table 1).

Although scholars and practitioners often refer to the transfer of good practices and the replicability of experiments, there is only limited empirical evidence that place-based experiments actually travel to other places and successfully stimulate policy and institutional changes in other cities at home and abroad. Successful examples include the diffusion of innovations in transport policy, such as Bus Rapid Transport (BRT) initiatives (Marsden and Stead 2011), which started in Latin America and have triggered many initiatives around the world (Mejia-Dugand *et al.* 2013). In contrast to BRT, highly contested experiments in transport policy, such as congestion charges first introduced in Singapore, show that such experiments may travel and thrive in some places (like London and Stockholm) but are not welcome in others (like New York). Due to many cases of non-diffusion and failed diffusion, adoption rates almost never reach 100%, not even if the diffusion of a policy innovation reaches critical mass and the process becomes self-sustaining (Kern 2000, Kern *et al.* 2007).

Horizontal upscaling is most relevant for leading cities. Exemplary and cognitive leadership (Wurzel *et al.* 2019 – this Volume) starts with local experiments that may be replicated within the same city, in other cities in the same country, and in cities in other countries. While experiments are place-based, their transfer depends on polycentric networks that help experiments to cross territorial boundaries and travel to other places.

Leading cities have developed sustainability strategies, integrated climate strategies, and smart city concepts. They have opened their own offices in Brussels and set up city networks, including general networks such as Eurocities, as well as specialized networks such as ICLEI and the Climate Alliance. Leading cities tend to join various networks at the global, European, and national levels, even if these networks fulfill similar functions (interview, City of Freiburg, 2016).

Reckien *et al.* (2018) found that cities that develop mitigation and adaptation plans are most often large, rich cities with relatively high adaptive capacities that join networks. This group of cities shares certain characteristics. They are: capital cities, such as Paris or Stockholm; second cities, such as Barcelona or Rotterdam; or at least regional centers, such as Hanover, the state capital of the German federal state of Lower-Saxony. These cities are relatively wealthy and powerful with strong research institutions that are highly integrated into the European economy; often, they are close to the sea.

Leading cities are most often located in the Nordic countries (Copenhagen or Stockholm), continental Europe (Amsterdam), and the UK (Bristol). Stockholm became the first European Green Capital in 2010; Copenhagen won this award in 2014, Bristol in 2015, and

Amsterdam was among the finalists in 2010/2011. Leading cities not only join certification systems (such as the European Energy Award), apply for awards, and participate in rankings, they also use their high rankings and their awards to brand the city as a 'sustainable city', 'green city', 'smart city', etc. (Meijering *et al.* 2014, 2018, de Jong *et al.* 2015, Busch 2016). Cities such as Stockholm, Copenhagen, and Freiburg, which are rather small compared to big capital cities like London, do not have the power to act as structural leaders. However, by collecting awards and using their excellent positions in the rankings to brand themselves, they have become intentional exemplary leaders (Liefferink and Wurzel 2018, Wurzel *et al.* 2019 – this Volume), which are acknowledged not only in Europe, but even worldwide.

Only a few cities from southern Europe belong to the leadership group. Exceptions include Vitoria-Gasteiz, which won the European Green Capital Award in 2012, and Barcelona, which was among the finalists in 2012/2013. Cities in central and eastern Europe have shown even less ambition, although this seems to be changing, at least in countries that have started to set up national programs, such as the Polish low-carbon economy plan (Donnerer 2016). Due to challenges after the fall of the Berlin Wall, only a few cities in central and eastern Europe have joined transnational networks, rarely competing for awards, and, in rankings, the cities at the very bottom are most often located east of the former Iron Curtain (Siemens 2009). There are a few exceptions, such as the pioneering Polish city of Bielsko-Biala or Ljubljana, the European Green Capital of 2016.

Horizontal upscaling among leading cities gains support from the following dynamics: bilateral city twinning, i.e. long-term networking of a rather general nature that can provide a basis for more complex forms of cooperation; project networking of a limited number of cities, which facilitate tailor-made forms of knowledge transfer and learning; and multilateral networking of cities, particularly (trans)national city networks. Leading cities joined at least one of three transnational city networks, i.e. the Climate Alliance, Energy Cities, and ICLEI, which pioneering cities founded in the early 1990s. From the outset, the exchange of experiences, transfer of knowledge, and stimulation of learning among their members crystalized as one of their key functions (Kern and Bulkeley 2009, Fünfgeld 2015, Busch 2016). Membership in these networks grew rapidly in the first years but slowed when these networks matured and became more consolidated. Today, it has become difficult to attract new member cities in Europe.[1] In contrast, the development of global city networks, such as C40, seems to be far more dynamic (for discussion on global city networks see Bouteligier 2013, Bansard *et al.* 2016, Gordon and Johnson 2017, 2018), but only 18 European cities are members of the C40 network. Most of these are capital cities, and not all are leading cities (for example Rome, Moscow, and Istanbul) (cf. van der Heijden 2018).

Since horizontal upscaling is most prominent among leading European cities, it is not surprising that researchers and practitioners alike have focused on leading cities and horizontal upscaling. As we can characterize most European cities as followers and laggards, horizontal upscaling is a necessary first step, but it is not sufficient for system-wide transformations because potential followers may not have the capacities required to follow the leaders, but can only do so if they get external support provided by governmental and non-governmental actors, e.g. through national funding programs or the establishment of new agencies that provide services and advice (see also Wurzel *et al.* 2019 – this Volume).

Vertical upscaling

Upscaling of local experiments is not limited to horizontal upscaling between leading cities because the role of cities in EU climate governance has changed. Authority and competencies shifted not only upwards to the EU, but also downwards to subnational authorities (see Hooghe and Marks 2003, Monni and Raes 2008, Emilianoff 2014, Jänicke and Quitzow 2017, Jänicke and Wurzel 2019, – this Volume). Initiatives range from the development of new institutions, such as local and regional energy agencies, to guidelines and new funding programs. In several member states, national strategies and guidelines guide local climate policy (Heidrich *et al.* 2016), while other member states have developed subsidy programs. Funding projects and offering choices between various ambition levels enable smaller cities and towns, with less capacity and lower ambitions than the leading cities, to start climate actions (see Table 1).

If there is a lack of appropriate national programs, cities may turn their attention to EU programs. EU funding programs are most welcome, even by leading cities such as Amsterdam or Malmö (interviews: City of Hanover, City of Freiburg, City of Amsterdam, all 2016; Stumpp 2016). Therefore, cities have developed new strategies to get access to EU institutions, for example by bypassing national authorities (see Figure 1). Going to Brussels generates new opportunities for cities. These strategies are in line with research on Europeanization that has shown that leading countries influence EU decision-making and try to upload their policies to the European level, so they become binding for all member states, including the laggards (Börzel 2002).

I characterize the relationship between the EU and cities as involving interdependent relations and polycentric networking. Vertical upscaling requires that city networks and associations represent their members and lobby at regional, national, and EU levels. Apart from a few big cities with structural power and leadership (Liefferink und Wurzel 2018) that have the means to represent their interests directly, the strategies of city networks

and associations become decisive (Monni and Raes 2008, Kern 2014). Thus, the Climate Alliance, Energy Cities, and ICLEI have developed active strategies to lobby for the interest of their member cities in Brussels. There are various venues from which to influence EU institutions, including the Committee of the Regions (CoR).

As the EU Commission has an interest in cooperating with cities in a more systematic way, it supports their activities in Brussels. An early example is the Commission's support of the European Sustainable Cities and Towns Campaign. This initiative started in 1994 and attracted, in particular, Spanish and Italian cities (Echebarria *et al*. 2004, Sancassiani 2005). Today, the Campaign consists of five transnational networks and associations of local authorities, such as Eurocities and the Council of European Municipalities and Regions (CEMR); a committee of representatives of cities, the EU Commission, and the EU Expert Group on the Urban Environment coordinate the campaign.

Taking not only leading metropolitan cities but also smaller cities and towns into account requires a stronger focus on national and regional associations that represent all cities and towns in a given territory. The Council of European Municipalities and Regions (CEMR) represents smaller cities and towns in Brussels. At the national level, regional and national networks of cities and towns (such as the Swedish *Klimatkommunerna* or the Dutch *Klimaatverbond*) may be far more important than transnational city networks (see Table 1).

Since vertical upscaling is not limited to leading cities, but facilitates the transfer of innovations between leaders and followers, the analysis of vertical upscaling requires better understanding of municipalities that are neither leaders nor laggards, and the dynamics between the leaders and this group of cities and towns. Vertical upscaling provides incentives for cities and towns that are not (yet) at the forefront of local climate action but want to start such initiatives and catch up with the leaders. However, in the absence of hard regulations, there are still a considerable number of municipalities that are not taking any action on a voluntary basis.

Hierarchical upscaling

I characterize hierarchical upscaling as initiatives at European, national, and regional levels, which force the laggards to reach standards set by the EU and its member states. In contrast to horizontal and vertical upscaling, hierarchical upscaling requires strong governments with the authority and power to harmonize policies and set binding standards. Relations between different levels of government are organized top–down, and authority concentrates at EU and member state levels (see Figure 1 and Table 1),

while the authority of cities is limited to the implementation of EU and national legislation.

Decisions made in Brussels or in the national capitals of the member states affect all local authorities in the EU. Traditionally, environmental policy incorporated standard-setting and a command-and-control style of policy-making that left implementation to subnational authorities. Hierarchical governance plays a decisive role in the development of EU environmental policy, for example, by setting binding emission standards for air pollutants, but this has often resulted in implementation deficits.

Hierarchical governance is far less developed in EU climate governance than in other policy areas. Local climate policy is still a voluntary task in most EU member states. National and regional governments face a challenge here because hard mandates are not always an option, due to the fact that local authorities have the right to local self-government, on the one hand, and no means to comply with such mandates, on the other.

As voluntary actions by leading cities and their followers most often do not reach the laggards, I argue that horizontal and vertical upscaling need to be complemented by hierarchical upscaling, i.e. binding rules for all municipalities. Despite all actions of leading cities and soft policies, I expect that laggards become active only if mandatory requirements exist. From an upscaling perspective that takes the dynamics between leaders, followers, and laggards over time into account, hierarchical upscaling is a process that starts with local experiments in leading cities. Their ideas and experiences are taken up by the national government (vertical diffusion), transformed into national regulations, and, finally, become binding for all municipalities.

In the EU, binding regulations for municipalities are still limited to a few member-states. Local climate plans are required only in France, the UK, Slovakia, and Denmark. In France, the central government requires intermunicipal authorities with more than 20,000 inhabitants to develop local climate and energy plans (Donnerer 2016), and, in the UK, the Climate Change Act demands that local authorities integrate climate mitigation and adaptation policies in their local planning documents (Heidrich *et al.* 2016, Reckien *et al.* 2018). In Scotland, the 2009 Climate Change Scotland Act even sets general GHG emission reduction targets for Scottish cities.

While climate mitigation depends mainly on voluntary actions at the local level, binding standards can be found more often in energy policy, for instance, energy efficiency standards for (new) buildings. Based on EU directives, particularly the Energy Performance of Buildings Directive that requires that new buildings deliver nearly zero-energy consumption by 2020, all member states must enact mandatory standards for new buildings.

In Germany, for example, the Energy Savings Law *(EnergieeinsparungsG)* and the Energy Savings Ordinance *(Energieeinsparverordnung, ENEV)* accomplished this. After a revision in 2016, the ENEV even states that

almost all buildings should be climate-neutral by 2050. Leading cities, such as Freiburg and Heidelberg, developed specific competences within local government and initiated their own programs (interview, Climate Protection and Energy Agency Baden-Württemberg, 2016) long before binding standards were set. These initiatives facilitated the enactment of national and state regulations for the energy efficiency of buildings. However, the implementation of these regulations in all municipalities has led to serious implementation deficits due to a lack of capacity in many smaller municipalities (Graf *et al.* 2018).

Moreover, hierarchical upscaling may restrict the leaders if national standards are binding and do not allow leading cities to set stricter standards. This situation is avoidable only by setting minimum standards, i.e. standards that are binding (for the laggards) but nonetheless allow leading cities to set higher standards on a voluntary basis (Table 1).

Embedded upscaling

The challenges of horizontal, vertical, and hierarchical upscaling caused the emergence of embedded upscaling as a new hybrid form of upscaling (Table 1). Embedded upscaling means that Type II multilevel governance (Hooghe and Marks 2003), characterized by task-specific and intersecting membership and a flexible design, is embedded in Type I multilevel governance, i.e. in general-purpose, multi-functional, non-intersecting jurisdictions (EU, national governments, regions) (Liefferink and Wurzel 2018). Moreover, embedded upscaling also shows the main elements of polycentric governance, which 'seems to be the key concept in addressing the complexity of territorial planning and management in Europe' (Finka and Kluvánková 2015, p. 606). This is in line with Elinor Ostrom's argument that polycentric systems with multiple governing authorities at different scales have advantages due to mechanisms for learning, adaptation, and mutual monitoring (Ostrom 2010, p. 552). Embedded upscaling links a variety of governing authorities at different scales, offers new options for experimentation and learning, not restricted to leaders, and polycentric networking becomes embedded in existing governance systems.

Both the EU Covenant of Mayors (CoM) and the German *Kommunalrichtlinie (KRL)* are forms of embedded upscaling. The KRL program, established in 2008, has funded around 12,500 projects in more than 3,000 German municipalities (around 25% of all German municipalities). Funding is obtainable, for example, for investments in energy-efficient street lighting, climate protection concepts, and climate management (interview, German Institute for Urbanism, 2016). It is particularly interesting for poor municipalities because they can get higher subsidies. In addition, the German federal government has also supported 41 leading

municipalities *(Masterplankommunen, MPK)*. Two cohorts of MPKs, selected on a competitive basis in 2012 and 2016, received funding for four years and have committed themselves to reduce GHG emission by 95% by 2050.

Dynamic interactions between the federal government, state governments, and (leading) cities have accompanied the development of the KRL. Today, this program's implementation involves close cooperation by the Federal Environment Ministry; the Service and Competence Center for Local Climate Protection *(Service- und Kompetenzentrum: Kommunaler Klimaschutz)*, which is affiliated with the German Institute for Urban Affairs *(Deutsches Institut für Urbanistik);* and Project Management Jülich *(Projektträger Jülich)*.

At EU level, the EU Commission (DG Energy), supported by the Committee of the Regions and the EU Parliament, set up the *Covenant of Mayors (CoM)* at almost the same time. Its main aim has been the local implementation of the EU Climate and Energy Package of 2008. Thus, signatories committed themselves to reducing their CO_2 emissions by at least 20% by 2020. In March 2014, the EU Commission complemented the CoM with Mayors Adapt, a second initiative that the EU Commission (DG Climate Action) launched in cooperation with the European Environment Agency. In the fall of 2015, both initiatives merged and became the *Covenant of Mayors for Climate & Energy*. Signatories are obliged to develop integrated strategies to tackle climate mitigation and adaptation and reduce their CO_2 emissions in line with the EU's 40% target by 2030. 7,755 local authorities with almost 253 million inhabitants had joined the initiative by August 2018, among them many small and medium-sized cities and towns in Italy and Spain. Networks and associations of local and regional authorities run the CoM Office, the Intelligent Energy Europe program provides funding, and the EU Commission's Joint Research Center assesses all action plans and monitoring reports (Kona *et al*. 2015). Signatories have already submitted around 6,000 action plans and around 1,700 monitoring reports.

The increasing embeddedness of initiatives in multilevel governance systems is most obvious with respect to the CoM because the Covenant differs considerably from traditional city networks. It is a unique institutional arrangement based on the close cooperation of all major European city networks, the EU Commission, and the European Commission's Joint Research Centre as the monitoring agency. The CoM gets support from more than 200 *Covenant Coordinators* (national and regional authorities such as Italian provinces) and more than 180 *Covenant Supporters* (national and regional city networks and associations, local and regional energy agencies).

The percentage of cities that participate in the CoM differs considerably between member states. While around 40% of all Italian municipalities have joined the CoM, in Germany or France, less than one percent of the municipalities have signed. In countries with a high number of small municipalities, these differences decrease when attention is shifted from the number of participating municipalities to the population covered by the CoM: 23% of Germans, 26% of French, and 70% of Italians live in municipalities that joined the CoM. The differences between Germany and Italy are explicable by the parallel development of the EU CoM and the German KRL; both initiatives started in 2008 and fulfill similar functions because they facilitate and stimulate climate action in mid-sized cities and towns. Due to the KRL and the initiatives funded by the federal government, German cities and towns do not see added value in joining the CoM. Participation in the CoM seems to be limited to the leading cities, and even these pioneers complain about the extra burden of monitoring CO_2 emissions in different ways because no harmonized system of monitoring exists (interviews: City of Hannover and City of Freiburg, 2016, City of Potsdam, 2017, Donnerer 2016). The missing linkages between the CoM and the KRL also contribute to low participation of German cities in the CoM. Such linkages exist in countries with a high number of CoM signatories; for example, the provinces of Valencia (Spain) and Vlaams-Brabant (Belgium) allocate additional financial support for municipalities that join the CoM (Donnerer 2016).

Upscaling and networking

Embedded upscaling has impacts on city networks, which were established by leading cities, for leading cities (Kern and Bulkeley 2009). Based on the examples of the KRL and the CoM, I argue that embedded upscaling changes the characteristics of city networks. In the 1990s, European city networks attracted primarily cities that considered themselves to be leaders or wanted to become leaders, while the CoM attracts not only many small cities and towns in Italy and Spain but also municipalities that want to act but do not intend to become vanguard cities. The examples of the CoM and the KRL show that embedded upscaling is based on various forms of cooperation and networking, including new practices, new actors, and new networks.

First, the CoM developed into a *meta-network*, i.e. a network which has other networks and associations as members. At least in Europe, this is a general trend. Energy Cities, for example, has around 200 individual member cities and 20 collective members (such as the Dutch *Klimaatverbond* and the Union of the Baltic Cities) with around 2,600 member cities and towns. The CoM is supported by almost 100 associations and networks of

local and regional authorities (such as the Association of Polish Cities and the Climate Alliance Austria). In addition, the CoM office in Brussels is funded by the EU and run by a consortium of all major, and sometimes competing, networks and associations of local and regional authorities in Europe.[2] The emergence of meta-networks has advantages for the EU Commission because all relevant networks need to speak with one voice, but it also means that networks are forced to cooperate with each other and become more dependent on the EU.

Second, at national and subnational levels, we find at least three types of *territorial networking*:

- networking at the national level, initiated and driven by local authorities such as *Klimatkommunerna* in Sweden, and national/regional associations that represent all cities and towns in a given territory (interviews: Rijkswaterstaat, 2017; Klimatkommunerna, 2017);
- networking initiated and driven by regional authorities (e.g. Italian provinces or German counties) that make initiatives such as the CoM or the KRL work on the ground, for example, by coordinating and supporting the development of Joint Sustainable Energy Actions Plans (SEAPs) for smaller municipalities (Rivas *et al.* 2015, De Gregorio Hurtado *et al.* 2015, interviews Climate and Energy Agencies Lower Saxony and Baden-Württemberg, 2016);
- networking initiated and driven by actors at the national and EU levels, such as the National Clubs of the CoM, i.e. national networks of CoM signatories.

Third, new *functional networks* have emerged as a byproduct of funding programs: for example, networks of climate protection managers in Germany. The German federal government indirectly created such positions at local level through KRL funding. In Baden-Württemberg, the federal state funds the establishment of regional energy agencies (most of them at county level) that now cover nearly the whole state and have led to a dense network of cooperation among these new institutions (interview, Climate and Energy Agency Baden-Württemberg, 2016). The federal government and the federal states (Länder) initiate and support networking between these new actors (interview, German Institute for Urbanism, 2016). This has resulted in new forms of functional networking because these young and engaged employees are a rather homogenous group and fulfill similar functions in their municipalities. In 2016, climate protection managers even founded their own professional association *(Bundesverband Klimaschutz)*.

To sum up, embedded upscaling is accompanied by the emergence of various new types of networking at different scales, ranging from the EU to

the regions. This includes meta-networking, which has become an important task of European city networks. Additionally, new forms of territorial networking at the national and regional levels, and functional networking among climate managers or regional energy agencies have emerged.

Conclusions

Local climate action has become an important feature of European climate governance, and a considerable percentage of Europeans now live in cities with relatively ambitious reduction goals. Although big, wealthy, and powerful cities, led by charismatic leaders have become important players in climate governance, local climate action is not a panacea. While many cities have reduced their CO_2 emissions considerably, most small and medium-sized municipalities in Europe have not yet started taking climate initiatives.

Most leading European cities are located in the Nordic countries, continental Europe, and the UK. Only a few leaders can be found in southern and eastern Europe. Research has focused on leading cities (Copenhagen, Amsterdam, and Freiburg, for example), horizontal upscaling, and global city networks. Much less is known about smaller cities and towns; researchers have neglected new forms of upscaling and networking that are more important for followers and laggards. The success of local climate policy in Europe depends, however, not only on a small group of leading cities, but also on follower cities that are willing to catch up with the leaders, and on binding standards for laggards that would otherwise not start their own initiatives.

Cities have become embedded in European multilevel governance. Polycentric governance by embedded upscaling goes far beyond the voluntary upscaling of local experiments, and combines certain elements of horizontal, vertical, and hierarchical upscaling. Embedded upscaling helps to bridge the gap between leaders, followers, and laggards and provides tools for differentiated approaches that are needed because municipalities differ considerably. While leading cities have a European or even international orientation, followers and laggards are nationally or even regionally oriented. As leading cities are rare in southern and eastern Europe, specific strategies for these regions are needed. While the Covenant of Mayors seems to work well in southern Europe, where regional authorities support cities and towns, there is still a lack of local climate initiatives and regional support in the former socialist countries.

The EU Covenant of Mayors and the German *Kommunalrichtlinie* are examples of embedded upscaling by polycentric governance. Both initiatives coordinate and orchestrate multiple governing authorities at different scales. Rule-based, incorporating monitoring systems, and allowing for

experimentation and learning, embedded upscaling provides options for leading cities such as Copenhagen to maintain their leadership role and distinguish themselves from the rest of the pack, for followers to catch up with the leaders or at least improve their performance at a lower ambition level, and for laggards if they want to catch up.

Embedded upscaling creates new opportunities for cities, the EU, and its member states because it establishes new forms of networking. First, *meta-networking* has emerged at EU level. Although climate leadership by cities has always been supported by city networks, these networks have changed their form and function. The CoM has generated incentives for follower cities, but has also had repercussions on city networks that have become more dependent on EU institutions. Second, both case studies show the importance of *territorial networking*. Upscaling place-based experiments is most successful if they become connected to regional and national networks, that are more important for mid-sized cities and towns (see also Wurzel *et al.* 2019 – this Volume). In southern Europe, the success of the CoM depends on the integration of regional authorities in the CoM, and in Germany the involvement of counties and regional energy agencies are decisive for the successful implementation of the KRL. Third, the German KRL shows an increase of *functional networking* because it led to the emergence of networks of local climate managers at regional and national scale.

This increase of meta-networking, territorial networking, and functional networking shows that (polycentric) networks have become denser and more intense. The inclusion of followers and laggards may cause changes for city networks and their members. The cases of the CoM and the KRL show that cities and their networks have become embedded in EU and national climate governance. City networks that were developed bottom–up have lost authority and depend more and more on regional, national, and European authorities.

Notes

1. While Energy Cities and the Climate Alliance have grown during the last 15 years, ICLEI lost members in Europe. Since 2000 ICLEI membership in Germany has not only decreased by 25% but also shows a high degree of fluctuation. Around 60% of the cities that were members of this network in 2000 have left. The Climate Alliance has grown, but most new members are small municipalities in Austria. As almost 90% of its members are German and Austrian cities, today's Climate Alliance is far less international than it was in its early days. However, this also means that 37% of all Austrian municipalities are members of the Climate Alliance, which cooperates closely with all Austrian federal states *(Bundesländer)* that joined the Climate Alliance as associated members.

2. Energy Cities, Climate Alliance, Council of European Municipalities and Regions (CEMR), Eurocities, European Federation of Agencies and Regions for Energy and the Environment (FEDARENE), and ICLEI Europe.

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