

# ID 1416 | MULTI-LEVEL CLIMATE GOVERNANCE IN GERMANY – THE OPPORTUNITIES AND CONSTRAINTS IN FORMAL AND INFORMAL INSTRUMENTS FROM A LEGAL PERSPECTIVE

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## 1 SETTING THE SCENE

Climate change is one of the most pressing societal challenges of our times. International climate governance is currently shifting from top-down and monocentric to bottom-up and polycentric governance structures with, inter alia, cities and local governments becoming increasingly visible and engaged actors. The research explores, from a legal perspective, multi-level and polycentric climate governance in Germany with a focus on formal and informal instruments of federal state (“Bundesland”) and local level (“Städte und Gemeinden”) climate action planning.

The paper, first, briefly depicts recent developments in the international climate change regime to show the current shift from mono- to polycentric climate governance structures (2). It then looks at the German system of climate governance and explores the key formal and informal instruments at national and federal state level for steering multi-level climate mitigation efforts (3). At the heart of the research, three local case studies highlight the manifold ways in which German cities are currently interlinked into polycentric climate governance, depending on how they mandatorily or voluntarily interact with vertical or horizontal climate governance axes (4). Building on these case studies, the formal and informal instruments developed at the different levels of the climate governance regime, their interrelationship, potential benefits and constraints are critically discussed with a view to effective climate mitigation action (5). Finally, conclusions are drawn and recommendations developed (6).

## 2 FROM MONO- TO POLYCENTRIC CLIMATE GOVERNANCE

The international climate change regime established with the 1992 United Nations Framework Convention on Climate Change (UNFCCC) and the 1998 Kyoto Protocol with its first and second commitment period has the typical top-down and state-centric structure of a multilateral environmental agreement (MEA). The agreements are addressed only to states. The Kyoto Protocol defined clear emission reduction goals that were to be reached by states within a certain time period. State actors below the national level or non-state actors did not play any direct role in the legal and institutional framework set up by the original system. They only came into play indirectly via the state level and the use of certain instruments such as emissions trading or the Clean Development Mechanism fleshed out in national legislation.

This changed with the entry into force of the Paris Agreement (PA). In order to enable global commitments, the Paris Agreement turns the top-down approach of the Kyoto Protocol into a bottom-up approach. Under the Paris Agreement, parties agreed to the overall 2°C and 1.5°C goal (Art. 2 para. 1(a) PA)<sup>1</sup> and the general obligation to undertake and communicate “nationally determined contributions” (NDCs) (Art. 3 PA). They did not agree to state-specific emission reduction contributions in the form of quantified emission limitation or reduction commitments expressed in percentage terms in relation to the base year 1990 for the respective commitment periods. In general, the Paris Agreement leaves it up to the parties how they compose their NDCs without predefining a certain form, other than the requirement to provide the information necessary for clarity, transparency and understanding in accordance with decision 1/CP.21 (Art. 4 para. 8 PA). Thus, NDCs submitted under the Paris Agreement differ quite significantly from one another. While some countries, for example Germany, “only” submitted a brief but clear emission

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<sup>1</sup> According to Art. 2 para. 1(a) PA states agree to hold the “increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels”.

reduction target for a certain time period, others, for example China, explicitly referred to state actors below the national level and addressed their contributions<sup>1</sup>.

Another indicator of the opening of the former monocentric international climate regime to sub-national levels of government and non-state actors is the wording of the preamble of the Paris Agreement. Here, states explicitly recognize “the importance of the engagements of all levels of government and various actors, in accordance with respective national legislations of Parties, in addressing climate change”. While the legally binding text of the Paris Agreement does not assign rights and obligations to these actors, the Marrakech Partnership for Global Climate Action (MP) adopted by Parties to the Paris Agreement at COP 22 held in October 2016 further develops the institutional framework to include non-Party actors. With this step, the international climate regime arguably enters a new era in international law. The aim of this innovative step is twofold. On the one hand the Marrakech Partnership wants to catalyse and support climate action by Parties and non-Party stakeholders in the period from 2017-2020 (MP, p. 1). On the other hand, it aims to integrate the climate change mitigation and adaptation of a wide range of non-Party actors, including cities and other subnational authorities, and local communities (MP, p. 4), into a comprehensive and transparent management framework. For example, non-Party stakeholders participating in the Marrakech Partnership agree that their commitments are recorded on the UNFCCC Non-State Actor Zone for Climate Action (NAZCA) platform and that they regularly report on the implementation and progress towards those commitments (MP, p. 4).

Apart from the international climate regime, states also recognized the crucial role of cities in action on climate change mitigation in key documents of the global governance agenda such as the Sustainable Development Goals (SDGs) adopted in September 2015 and the New Urban Agenda adopted in October 2016 at the UN Habitat III Conference in Quito, Ecuador. For example, in SDG 11.b governments committed to “substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards (...) mitigation and adaptation to climate change, (...)”. In the New Urban Agenda, governments committed “to promoting international, national, subnational, and local climate action including climate change adaptation and mitigation, and to supporting the efforts of cities and human settlements, their inhabitants and all local stakeholders as important implementers.” (New Urban Agenda, para 79).

Furthermore, in addition to the opening of the international climate regime and the international political mandates adopted by states in the SDGs and the New Urban Agenda, cities themselves are increasingly engaging in international networks such as ICLEI – Local Governments for Sustainability, C40 Cities Climate Leadership Group or the Global Covenant of Mayors for Climate and Energy and voluntarily pledging to reduce their local greenhouse gas emissions.

These recent developments indicate an incremental shift from a top-down state-centric to a more bottom-up and polycentric international system of climate governance (Jordan et. al 2015). In line with Ostrom’s assumption that complex societal problems with unknown solutions are best addressed by a variety of actors and overlapping policies at local, national and international levels (Ostrom 2012), this integration of non-Party stakeholders into a comprehensive management framework could turn out to be crucial for reaching the 2°C or even 1.5°C goal of the Paris Agreement. This paper focuses on German cities and municipalities as important actors in climate mitigation efforts and explores how they are embedded into the federal- and state-level legal and political framework of Germany.

### 3 CLIMATE GOVERNANCE IN GERMANY

Germany did not submit an individual NDC under the Paris Agreement but is bound via the NDC submitted by the European Union. This NDC states that the “EU and its Member States are committed to a binding target of at least a 40% domestic reduction in greenhouse gas emissions by 2030 compared to 1990, to be fulfilled jointly [...]”. In Germany, the national government as well as sixteen federal states, including three city-states (Berlin, Bremen and Hamburg), are endowed with formal legislative power and develop laws and policies aiming at climate change mitigation.

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<sup>1</sup> NDCs can be downloaded at <http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx>.

### 3.1 NATIONAL LEVEL

The key instrument currently steering national climate governance is the Climate Action Plan 2050, an informal policy instrument, adopted by the German cabinet on November 16, 2016 (CAP 2050). According to the CAP 2050, Germany aims to become basically greenhouse gas-neutral by 2050 (CAP 2050 at 2.4). In order to reach this goal, the federal government does not impose any specific emission reduction obligations on lower-level entities such as federal states (“Bundesländer”) or municipalities. The CAP only refers to the importance of enhanced mitigation action at all levels, including the local level, in general (CAP at 4.3). It follows a sectoral and non-binding approach by setting out emission reduction targets for different sectors of industry to be reached by 2030 (CAP at 5). In line with this political guidance, regulation is also sectoral with, for example, laws on renewable energy production, emissions trading and energy efficiency. Although it has been the subject of some political and scientific debate about it (Rodi/Sina 2011), there is no climate protection law at the national level as an overall legally binding and thus formal instrument directing German climate mitigation efforts.

To date, national climate policies have only addressed German municipalities and cities via financial incentive programmes such as the National Climate Initiative (Nationale Klimaschutzinitiative). Municipalities can participate either in the funding programme of the “Municipality Guideline” (Kommunalrichtlinie) or the “Master Plan Guideline” (Masterplan-Richtlinie). The former – inter alia – provides funding for municipalities to establish integrated climate action plans; the latter supports more ambitious municipalities who commit themselves to two reduction goals: (1) reduction of their GHG emissions by 95% by 2050 and (2) reduction of their final energy by 50% compared to 1990 levels. The “Masterplan municipalities” (Masterplan-Kommunen) are financially supported in reaching these goals. So far, 41 German municipalities have voluntarily become “Masterplan municipalities”, Frankfurt am Main and Stuttgart being those with the largest populations.

Thus, under the national legal and political framework, only those municipalities which have voluntarily chosen to become a member of one of the national government funding programmes have to fulfil the requirements of the respective programmes. All other German municipalities are free to plan or not plan, implement or not implement actions on climate change mitigation within the scope of local self-governance as provided for by article 28 (2) of the German constitution.

### 3.2 STATE LEVEL

In recent years, seven of Germany’s federal states have enacted climate protection laws: Hamburg, North Rhine Westphalia, Baden-Württemberg, Rheinland-Pfalz, Bremen, Berlin and Schleswig-Holstein. These laws may be very broadly classified into three “generations”, bearing in mind that also those that belong to one “generation” differ significantly in terms of specific regulations (Wickel 2015 and 2013). The climate protection law and the climate protection ordinance issued by Hamburg as early as 1997 and 2007 respectively may be referred to as “first generation” climate protection laws. They are not of a strategic nature but mainly concerned with specific energy saving and energy efficiency measures for buildings and installations (Schröder and Kullick 2012; Wickel 2015 and 2013). Neither the law nor the ordinance contains any state-wide emission reduction goals nor do they require the Hamburg government to enact a climate protection plan or regulate respective minimum content or procedural requirements. The “second generation” climate protection acts of North Rhine Westphalia (2013), Baden-Württemberg (2013) and Rheinland-Pfalz (2014) set an institutional and instrumental framework for strategic climate mitigation action at state-level. All three climate protection acts set emission reduction goals for the years 2020 and 2050, require the state government to enact a climate protection plan, provide guidance on its content, responsibilities and regular monitoring, establish an advisory committee to monitor and support the climate action plan and refer to the role model function of public authorities with, inter alia, specific goals and measures regarding state-owned buildings (Wickel 2013 and 2015).

The most recent climate protection acts have been issued in Bremen (“Bremisches Klimaschutz- und Energiegesetz” 2015), Berlin (“Berliner Energiewendegesetz” 2016) and Schleswig-Holstein (“Energiewende- und Klimaschutzgesetz Schleswig-Holstein” 2017). They contain all the elements of the strategic steering of climate mitigation and adaptation efforts of their “second generation” precedents (goal setting, climate protection plan, monitoring etc.), but go beyond this strategic level in providing for more specific instruments, for example, regarding local electricity and heat consumption and supply. Thus, they

might – broadly speaking – be referred to as “third generation” state-level climate protection acts. For the purpose of the analysis of multi-level relations in the German hierarchy of climate governance, the four state laws that explicitly address the level of municipalities or districts are examined below.

### 3.2.1 NORTH RHINE WESTPHALIA

The climate protection law of North Rhine Westphalia (CPL NRW) is the first and so far the only climate protection law not issued by a city-state that establishes a legally binding responsibility for climate mitigation action at municipal level. It requires all public authorities, including municipalities, to enact climate protection plans (§ 5 (1) CPL NRW). However, the actual obligation to do so, the time limit and more specific content requirements are dependent on a statutory instrument that the state government is empowered to issue. Municipalities have to provide for climate protection plans two years after the entry into force of such a statutory instrument (§ 5 (3) CPL NRW). Bearing in mind the outcome of the recent state elections in North Rhine Westphalia, it remains somewhat questionable whether this statutory instrument will be issued in the near future under the new conservative state government.

In addition to this specific procedural requirement, the climate protection law underlines the role model function of the public authorities in terms of climate protection and, more specifically, the lowering of local GHG emissions, expansion of renewable energy and adaptation efforts.

### 3.2.2 BREMEN

The city-state of Bremen consists of two municipalities (Bremen and Bremerhaven). Their climate mitigation activities are, in addition to a general reference to the role model function of municipalities (§ 7 CPL Bremen), addressed in four main ways via the Bremen climate protection law (CPL Bremen). Firstly, there is a general duty for the municipalities to take into account the goals and explicitly outlined strategies for action in their local decision-making (§ 2 (2) CPL Bremen). Secondly, the municipalities are required to issue and apply limitations on the energy consumption of newly built, renovated or newly rented public buildings within one year of the entry into force of the CPL Bremen. The law came into force 27 March 2015. Thirdly, both municipalities have to issue specific requirements for public procurement, e.g. cars, lighting, electrical equipment (§ 9 (1) CPL Bremen) and institute controls on the energy consumption of public buildings (§ 9 (3) CPL Bremen). Fourthly, the municipalities need to develop local urban planning concepts (“städtebauliche Konzepte”) with local goals and strategies for action on climate mitigation and adaptation. Such concepts are to be publicly available, reviewed every five years and contain information on specific measures in land use planning (“Bauleitplanung”) and urban development contracts (“städtebauliche Verträge”) (§ 13 (1) CPL Bremen). The local climate concepts shall specifically examine the scope for action with respect to the energy supply of new urban developments, the design and orientation of plots and rooftops for the production of renewable energies, construction of renewable energy plants, reduction in the energy consumption of buildings and adaptation measures (§ 13 (2) CPL Bremen).

### 3.2.3 BERLIN

The Berlin climate protection law (CPL Berlin) highlights the role model function of public authorities (§ 6 CPL Berlin) but contains several more specific requirements on the local level. It is important to note that the city-state of Berlin, unlike Bremen, is not divided further into municipalities. As in the city-state of Hamburg, the next level down is the administrative level of districts (“Bezirke”). The districts are explicitly addressed in § 9 of the Berlin climate protection law. It states that in general districts are free to fulfil their role model function under their own discretionary scope for action. However, they are required to produce their own energy balances and carbon emission inventories, enact goals for carbon emission reductions and provide for statements regarding energy savings in district-owned buildings (§ 9 (1) CPL Berlin). Upon request, districts need to report to the senate administration on the accomplishment of the reduction goals set (§ 9 (2) CPL Berlin). The only other specific obligation on the district level is regulated in § 16 CPL Berlin. According to this, district administrations need to examine their buildings with a view to the use of renewable energies, revamp roofs of suitable buildings in cases of renovation to enable the use of solar energy for electricity and heating, and actually use such rooftops of public buildings for the production of

solar power and heat (§ 16 (2), (3), (4) CPL Berlin). Furthermore, at state-level renovation strategies and energy management for buildings are to be established to include buildings belonging to the district administration (§ 8 CPL Berlin).

### 3.2.4 COMPARISON

The following table summarizes the responsibilities of municipalities and districts established via state-level regulation. The overview shows that state-level regulation has two main foci: one is to require and broadly guide the strategic planning of climate mitigation efforts at the local level and the other one is to oblige municipalities and districts to establish certain standards or management procedures in areas within their remit, such as public buildings and procurement. None of the state laws requires the local level to reach certain carbon emission reduction goals. Requirements in strategic planning are limited to procedural and thematic substantive guidance. In Nordrhein-Westfalen much will depend on the content of the statutory instrument that still needs to be enacted.

	NRW	Bremen	Berlin
<b>Strategic Planning Instrument</b>	CAP	Urban planning concepts	-
<b>Content of strategic planning instrument</b>	To be specified in statutory instrument	Local goals and strategies Specific measures in land use planning and urban development contracts Examine specific scopes for action (RE plants, energy supply of new developments, etc.)	-
<b>Process</b>	tbd	Reviewed every 5 years	-
<b>Transparency</b>	tbd	Publicly available	-
<b>Target setting</b>	in CAP	In urban planning concepts	Goals for carbon emission reduction
<b>Monitoring</b>	tbd	5-year review	Energy balances Carbon emission inventories
<b>Reporting</b>	tbd	Review publicly available	To senate administration upon request on progress towards goals
<b>State – local relationship</b>	tbd	Take higher level goals and strategies into account in local decision-making	-
<b>Role model function</b>	yes	yes	yes
<b>Public buildings</b>	tbd	Limit energy demand of public buildings Institute controls on energy consumption of public buildings	Statements regarding energy savings Examine and eventually use roofs of public buildings for solar energy production (Renovation strategies)

			and energy management at state level)
Public procurement	bid	Issue specific requirements, e.g. re cars, lighting, electrical equipment	-

Table 1 – Synopsis of the responsibilities of municipalities and districts established via state regulation

## 4 LOCAL CASE STUDIES

This section of the paper discusses case studies from the city-state of Hamburg, the city of Frankfurt – located in the federal state of Hessen without a climate protection law but voluntarily participating in the ambitious “Master Plan Guideline” programme – and the city of Cologne – situated within the jurisdiction of North Rhine Westphalia in order to provide examples of the different forms in which German cities can be interlinked into the multi-level web of climate governance. The case studies serve as a basis for the next chapter’s more in-depth discussion of the strengths and weaknesses of different forms in terms of the design of multi-level climate governance.

Before outlining the specific instruments developed to steer climate mitigation action down to or up from the local level, it is important to note the immense relevance of local, especially city-level, action. In 2005, approximately 75% of global energy flows were consumed in cities (Swilling et al. 2013). About half of the world’s population already lives in cities and this number is expected to rise to about two thirds by 2050 (UN DESA 2015). The share of energy consumption in cities and thus cities’ relevance for climate change mitigation action will continue to rise. Consequently, it becomes more and more important to include cities in reliable, strategic climate mitigation action and equip them with instruments, institutions and ideally also financial support that enable them to effectively contribute to GHG emission reductions.

In general, cities and other municipalities in Germany have a constitutionally enshrined right to local self-government (“Recht der kommunalen Selbstverwaltung”, article 28 (2) of the German constitution). Based on this right they can regulate and manage local affairs under their own responsibility within the limits of the law, for example via municipal ordinances and the spending of locally raised taxes. Within this scope for action many German municipalities have voluntarily enacted local climate action plans to strategically steer their climate mitigation efforts (Kahl/Schmidtchen 2013: 342). However, German and European-wide studies show a lack of mechanisms that ensure that targets are met (Sippel 2011, Bulkeley et al. 2011).

### 4.1 HAMBURG

With 1.7 million inhabitants Hamburg is the second largest city in Germany and the eighth largest city in the European Union. Per capita carbon emissions currently amount to 10.2 tonnes CO<sub>2</sub>/year (Hamburg Climate Plan 2015, p. 7). The city-state of Hamburg is free to voluntarily steer its climate mitigation efforts. It is not bound by any substantive or procedural international or national regulations, for example, to meet specific reduction targets, apply certain methodologies in its GHG inventory, report to anyone setbacks or progress in its mitigation efforts, or include citizens or public authorities in its climate action planning.

Voluntarily, Hamburg has been a member of two city networks, the European Climate Alliance since 1993 and the Covenant of Mayors for Climate and Energy since 2008. It reports its carbon emission data and reduction targets to the CDP (formerly Carbon Disclosure Project) and NAZCA (Non-State Actor Zone for Climate Action) established under the Paris Agreement.

The State Parliament of Hamburg adopted its most recent Hamburg Climate Plan (Hamburger Klimaplan, Drs. 21/2521) in December 2015. The key overall targets of the Hamburg Climate Plan are to halve CO<sub>2</sub> emissions by 2030, reach a CO<sub>2</sub> emission reduction of at least 80% by 2050 compared to 1990 levels, and – maintaining a quantitative target – reduce CO<sub>2</sub> emissions by almost 2 million tonnes by 2020. Per capita carbon emission reduction targets are 9 t CO<sub>2</sub> per capita by 2020, 6 t by 2030 and 2 t by 2050 (ibid. p. 7). The Hamburg Climate Plan puts in place a transformative process divided into so-called adaptive management cycles (ibid. p. 10) and thematically focused on the following four aggregated strategic

clusters with cluster-specific goals: the transformation of urban spaces, the green economy, the city as a role model and climate communication (ibid. p. 11). For example, a sub-goal of the cluster “the city as a role model” is that the Hamburg state administration becomes climate neutral by 2030 (ibid. p. 15).

To coordinate and steer action on climate change mitigation and adaptation, the city created the Hamburg Coordination Centre for Climate Issues (Leitstelle Klimaschutz) (ibid. p. 8). This body is also responsible for the control of measures and financial flows, as well as CO<sub>2</sub> monitoring. Control and monitoring is a major element of the Hamburg Climate Action Plan and builds on a project-focused “bottom-up” method (ibid. p. 73 f.). Annexes 1 and 2 of the plan list 175 specific measures, the associated annual financial expenditure, measure-specific reduction targets for the year 2020 and the annual reductions achieved in 2013 and 2014.

The interim results of the monitoring process show for the year 2013 an overall CO<sub>2</sub> emission reduction of 14.3% compared to the base year 1990, per capita CO<sub>2</sub> emission reduction of 13.5% compared to the base year 2003, as well as a CO<sub>2</sub>-intensity reduction per unit of GDP of 28.4% compared to the 2003 level (ibid. p. 78).

## 4.2 FRANKFURT AM MAIN

With 730,000 inhabitants Frankfurt am Main is the fifth biggest city in Germany. Per capita carbon emissions in 2010 were 9.65 tonnes CO<sub>2</sub> (Frankfurt Green City). Frankfurt voluntarily joined the national funding programme of the “Master Plan Guideline” (Masterplan-Richtlinie) and since 2013 has developed its “Masterplan 100% Climate Protection” issued in 2016. As a “Masterplan Municipality” the city committed to (1) reducing its GHG emissions by 95% by 2050 and (2) reducing its final energy consumption by 50% compared to 1990 levels. Participating in this funding scheme also involves putting in place a strategic planning instrument such as the “Masterplan 100% Climate Protection” to reliably steer the process required in order to reach the reduction targets and specific requirements regarding, inter alia, control and monitoring, participation and external review by an advisory board.

Frankfurt is member of the city networks German Climate Alliance and the Covenant of Mayors for Climate and Energy and it reports its carbon emission data and reduction targets to NAZCA established under the Paris Agreement.

The Frankfurt Masterplan 100% Climate Protection starts with a status quo description of final energy consumption in Frankfurt for the different sectors of electricity, heating and transport and respective subcategories (Chapter 2). In the following chapters it discusses the reduction potential in these different sectors and subcategories via energy saving measures and the use of renewable energies (Chapters 3-5). Chapter 6 highlights opportunities in the redirection of financial expenditure in the energy sector. Chapter 7 develops sector-specific scenarios (reference scenarios and measure scenarios) for electricity, heating and transport and concludes with scenarios and recommendations for covering 100% of the energy demand in 2050 by means of renewable energies. All in all, the feasibility study shows that it is possible to reach the ambitious goals for 2050.

The main coordinating body for action on climate change mitigation in the City of Frankfurt is the department of energy. A detailed table available on the department’s website lists all resolutions adopted by the city council since 2006 in the field of energy and climate policies.

## 4.3 COLOGNE

The city of Cologne is located in the federal state of North Rhine Westphalia and with about 1 million inhabitants is the fourth biggest city in Germany. Cologne has been a voluntary member of the European Climate Alliance since 1992 and a member of the Covenant of Mayors for Climate and Energy since 2008. The city derives its carbon emission reduction targets from the goals involved in membership of these city networks. Members of the Climate Alliance work, inter alia, towards reducing their CO<sub>2</sub> emissions by 50% by 2030 compared to the base year 1990. Key commitments for members of the Covenant of Mayors at the time Cologne joined were an increase in energy efficiency by 20%, an increase in renewable energies in the energy mix by 20% and a 20% reduction in carbon emissions by 2020 compared to 1990 levels (City

of Cologne). Members of the Covenant of Mayors also committed to establishing a carbon or GHG emission inventory, instruments for strategic steering towards reaching the above targets and reporting (Covenant of Mayors for Climate and Energy). Cologne reports its carbon emission data and reduction targets to NAZCA established under the Paris Agreement.

As a municipality of North Rhine Westphalia, the city of Cologne is bound by the regulations issued under the Climate Protection Law of the state. Thus, according to article 5 CPL NRW the city will be obliged to enact a climate protection plan with the specific content requirements as soon as the state has issued the relevant statutory instrument. Currently, the key strategic planning instruments in the field of climate mitigation action are the 2012 Integrated Climate Protection Concept (Integriertes Klimaschutzkonzept) with its two main parts related to energy and transport and the 2014 Program of Climate Protection Measures (Klimaschutzmaßnahmenprogramm). The Integrated Climate Protection Concept focused on energy begins with a stocktake of the energy and carbon balance for the year 2008 (chapter 2), discusses the potential of energy saving measures (chapter 3), develops energy and carbon scenarios for 2020, addresses participation in the development of specific measures to reach the targets (chapter 5), develops a programme of measures (chapter 6), tracing of its effects (chapter 7) and its embedding in networking and public relations concepts (chapter 8). The Integrated Climate Protection Concept focused on transport builds on a stocktake for the year 2006 (chapter 5), develops a reference and a climate protection scenario (chapters 6 and 7), depicts specific climate protection measures in the transport sector including guidance for their implementation (chapters 8 – 15). Chapter 16 is dedicated to controlling and monitoring the effectiveness of the proposed measures in the transport sector. Building on the findings in both parts of the Integrated Climate Protection Concept (energy and transport), the city council adopted a resolution with 13 priority measures in 2014.

## 5 DISCUSSION OF INSTRUMENTS

The three local case studies highlight the manifold ways in which German cities are currently interlinked into polycentric climate governance depending on how they mandatorily or voluntarily interact with vertical or horizontal climate governance axes. All three cities voluntarily participate in the European city network Climate Alliance and in the international city network Covenant of Mayors for Climate and Energy. These voluntary memberships involve certain requirements for GHG or carbon emission reduction targets and strategic planning towards reaching such targets. Via the Covenant of Mayors for Climate and Energy, all three cities report to the Non-State Actor Zone for Climate Action (NAZCA) established under the Paris Agreement and strengthened through the 2016 Marrakech Partnership. Thus, with respect to the international level it is evident that voluntary mitigation efforts by cities organized in city networks are increasingly visible and start to be integrated into the formal international climate regime established under the Paris Agreement.

In the absence of any obligatory national regulation of municipal climate mitigation action, Hamburg and Cologne, just as the vast majority of German municipalities, freely decide upon their mitigation efforts and steering of these under their right to local self-government enshrined in the German constitution. Frankfurt am Main voluntarily participates in the funding program of the Masterplan-Guideline and is thus subject to the ambitious 2050 reduction targets and strategic planning requirements set by the funding programme. The German national legal framework thus refrains from setting any obligatory minimum requirements regarding municipal climate action planning and – more specifically, inter alia – targets, process, content, instruments, methodologies, participation and transparency. So far it focuses on financial and procedural support for the highly ambitious targets of the 41 German municipalities.

At state level only Nordrhein-Westfalen and the city-state of Bremen require their municipalities to enact climate action plans via their climate protection laws. However, with respect to Nordrhein-Westfalen deadlines and content depend on a statutory instrument that still needs to be issued. Bremen has the most detailed requirements for strategic climate mitigation action in its two municipalities including target setting, minimum content requirements and a publicly accessible five-year review. In the city-state of Berlin, districts have to set emission reduction targets, put in place energy balances and carbon emission inventories and upon request report to the senate administration on progress. Hamburg was the first German state with a climate protection law but it is focused on specific energy saving and efficiency measures for buildings and installations and does not require any strategic planning. It can be observed

that at state level there is a tendency in the newer climate protection laws to include regulation on strategic steering of climate mitigation action at the municipal level.

Thus, climate action planning at city level derives its framework from different axes. In Hamburg the process is internally steered, goals and content have been decided upon politically, administratively and with public participation bearing in mind the requirements of the city networks. Special efforts have been made with regard to monitoring and control. With the support of the Wuppertal Institute, the city developed a bottom-up process to trace in a measure-specific way which goals could be reached at what cost. The process of climate mitigation efforts in Frankfurt builds on an ambitious history and is in its recent form framed via the requirements of the national funding programme of the Masterplan-Guideline. With the scientific support of, among others, the Fraunhofer Institutes IBP and ISE, the city developed sector-specific strategies to reach the 2050 emission reduction goals set by the funding programme. The city of Cologne derives its carbon emission reduction targets via membership of the Climate Alliance and the Covenant of Mayors for Climate and Energy. The current 2012 Integrated Climate Protection Concept encompasses measures tailored to the energy and transport sectors. In the future, as soon as the relevant statutory instrument is in force, this strategic planning instrument will have to fulfil the requirements set by state regulation based on article 5 of the NRW CPL. Other formal requirements of strategic climate mitigation planning only exist for the municipalities of Bremen and for districts in Berlin. The city-level climate action plans as such are in all cases informal planning instruments with no legally binding effect and no formal requirements regarding procedure, participation and transparency.

		Hamburg	Frankfurt am Main	Cologne
International	Marrakech Partnership	via NAZCA	via NAZCA	via NAZCA
	City Network	Climate Alliance Covenant of Mayors for Climate & Energy	Climate Alliance Covenant of Mayors for Climate & Energy	Climate Alliance Covenant of Mayors for Climate & Energy
	Requirements	Targets and Process	Targets and Process	Targets and Process
	Reporting	CDP & NAZCA	NAZCA	NAZCA
National	National	-	Masterplan-Guideline 2012-2016	-
	Requirements	-	2050 Targets and Process	-
State	Regulation	HHKlSchG and VO	-	NRW CPL
	Requirements	No strategic planning	-	Climate Action Plan

		requirements Specific energy saving and efficiency measures for buildings and installations		(Process and content to be specified)
Local	Climate Action Plan	2015 Hamburg Climate Plan	2016 Masterplan 100% Climate Protection	2012 Integrated Climate Protection Concept
	Targets	2050 and interim goals	2050 and interim goals	2020 and interim goals
	Content	Strategies and 175 specific measures to reach own 2050 and interim goals	Strategies to reach 2050 targets of Masterplan-Guideline	Strategies and specific measures to reach 2020 targets derived from city network membership Different parts for energy and transport
	Monitoring	Measure-specific bottom-up methodology	yes	yes
	Participation	yes	yes	yes
	Coordination	Coordination Centre for Climate Issues	Department of Energy	Coordination Centre for Climate Protection

Table 2 – Synopsis of case studies in polycentric climate governance axis

## 6 CONCLUSIONS AND OUTLOOK

The research has shown a growing web of polycentric climate governance structures, with cities becoming increasingly engaged and visible actors. Currently, cities and other German municipalities interact with the climate governance regime mainly via informal steering instruments. However, recent developments such as the Marrakech Partnership and the state-level climate protection laws of three German states show a tendency towards increasing formalization. It is too early to assess whether or in how far a formalization of local level climate mitigation efforts is beneficial to support cities in their climate action planning and turn them into reliable partners for international polycentric climate governance, with a view to reaching the overall 1.5 or 2.0 degree goal of the Paris Agreement. The state and city-level laboratories of strategic planning show a rich variety of target setting, development of sector specific strategies, assessment, monitoring, participation and transparency and much potential for the exchange of experiences, more in-depth scientific review and incremental strengthening of reliable bottom-up climate mitigation efforts.

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## ID 1438 | INSTITUTIONAL INNOVATION OF URBAN REGENERATION IN CHINA: A COMPARATIVE STUDY OF GUANGZHOU, SHENZHEN AND SHANGHAI

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### 1 PLANNING TRANSFORMATION TOWARD REGENERATION PLANNING AND SUSTAINABLE DEVELOPMENT IN CHINA

China's 30 years' urbanization progress and economic growth is complicatedly interweaved with land developing policy changes featured by distinctive state-led governance (Tian, Ma, 2009). Land is not only a simple container of production for growth, but also one of the most effective financing approaches for the governments with monopolistic power to get money and fund urban development (Fan et al., 2016; He et al., 2014; Figure 1). Accompanied by the worldwide greatest population mobility from rural to cities (247 million in 2015) and the rapidest urbanization growth from 26.9% to 52.7% (Figure 2), the years from 1991 to 2012 has witnessed increasingly land expansion from 2.08×10<sup>4</sup> km<sup>2</sup> to 4.57×10<sup>4</sup> km<sup>2</sup>, which is criticized as "expanding land urbanization ignoring quality". (Wang et al., 2014; Yang et al., 2016; Ong, 2014; China's floating population report 2016).

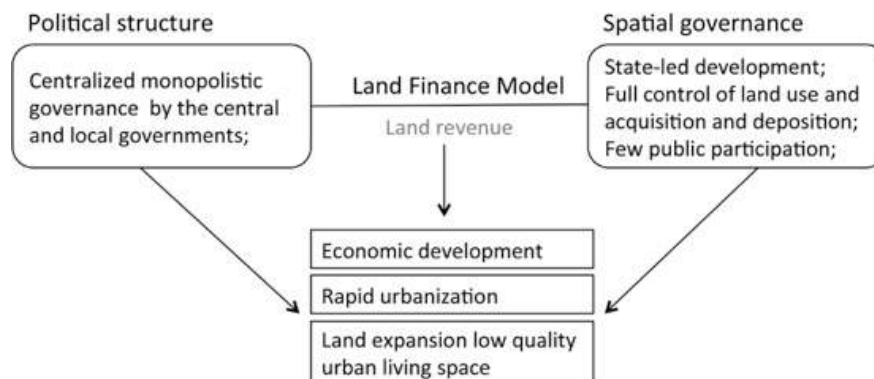


Figure 1 Logic of governance, land developing and economic development during China's reform stage