



PENN: CURRENT RESEARCH ON SUSTAINABLE URBAN DEVELOPMENT

The Changing Landscape of Climate Governance

The Role of Cities as Political Actors and Policy Implementers

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FINDING THE POLITICAL WILL TO ADDRESS CLIMATE CHANGE: GLOBAL, NATIONAL, AND LOCAL PERSPECTIVES

Addressing the impacts of climate change and limiting further impact is the most critical aspect of achieving global environmental sustainability, as laid out in the United Nation's SDGs and New Urban Agenda. The experiences of the past decades, however, have demonstrated that stopping climate change is a challenge not only of effective implementation of mitigation and adaptation techniques, but also of finding the political will to undertake bold moves needed to deal with existing climate change and limit future global warming. Climate change, often described as a problem of the global commons, requires commitment and coordination across most, if not all, nation states. The bold moves needed today require significant political will to drive cooperation where problems are complex, time-horizons are long, interests poorly aligned, and institutions weak.

Traditionally, climate politics has been focused at the international level of governance—through international institutions and international legal agreements among national governments that can work together to coordinate needed global responses (Bodansky 2001). International diplomatic meetings and agreements from Rio to Kyoto, Copenhagen to Paris, have been the locus of action for international political and legal commitments to address climate challenges. These nation states then seek to implement those agreements through national legislation, regulating individuals, firms, and other sub-state actors (Harrison 2010). While this traditional diplomatic and regulatory approach worked relatively well for some issues, such as the reduction of Chlorofluorocarbon (CFC) emissions through the Montreal Protocol, the political will to act on climate change through international institutions and agreements has proved lackluster and inadequate based on the primary climate goal: to keep warming below 2°C (Cass 2001; The Kyoto Protocol 1997). The ambitious hopes that motivated the 1997 Kyoto Protocol and the 2009 Copenhagen Accord have not been realized.

At the global level the problem is two-fold: gridlocked international institutions and lack of national political will to drive meaningful new commitments. As Tom Hale, David Held, and Kevin Young (2013) observe: “international negotiations in general are increasingly stalling in the face of growing differences among national interests... and the sheer complexity of involved in coming to agreement on issues that transcend national boundaries.” These challenges are particularly acute in the climate space, as evidenced by the Copenhagen negotiations, at which the UNFCCC as a whole was unable to reach agreement and even a separate side agreement between some key countries could not be endorsed by the broader membership (Bodansky 2010). As Bob Keohane and David Victor (2016) explain: “climate change politics, as currently structured, is not conducive to much cooperation. The structure of the problem—the patterns of interests and incentives for action or inaction facing states—is malign.” The result is, often, inaction or at least inadequate action at the global level of governance to meaningfully address climate change.

This global gridlock can be exacerbated by a lack of political will at the national level of governance, particularly as some key countries retrench. After all, action in international institutions depends on political pressures from constituent member states. Some countries, notably the United States, have walked back from existing climate commitments, throwing into doubt whether even the existing climate regime, however inadequate, can prove lasting and effective. Some speculate that Donald Trump's announcement on June 1, 2017 that the United States would withdraw from the Paris Agreement may well have dealt a critical blow to traditional global climate diplomacy. Even with the ratification of the Paris Agreement by 153 other nations, the withdrawal of the world's largest economy and world's second largest producer of carbon emissions casts doubt on the viability of the Paris commitments themselves and, more importantly, national political will to advance climate diplomacy. Even as other countries have reaffirmed their commitments to Paris, the U.S. withdrawal makes national level commitment and coordination far more difficult, as evidenced by the limited climate language in the 2017 G7 Leaders Communique (May 2017 G7 Leaders Communique at para 32). The result may be inadequate political will and national leadership to overcome gridlock within global institutions and international negotiations.



Even in countries that continue to affirm their commitment to Paris, significant political challenges remain for climate policy at the national level. Many individuals as well as political leaders find it difficult to accept climate change as a real and pressing issue due to cultural cognition, skewed risk perceptions, and future discounting (Leiserowitz 2006). Even where climate science is clear, the politicization of scientific uncertainty of climate change outcomes can undermine the development of the political will to act (McCright 2011). Moreover, voters generally make decisions based on short-term interests and direct economic consequences, whereas climate change is usually an over-the-horizon problem with long-term impacts (Harrison 2007). Most of these challenges of political will are difficult to overcome, both at the national and the sub-state levels.

Retrenchment by some states and “gridlock” in key international organizations has created new opportunity for sub-state actors to expand their roles not just in implementing climate change adaptation and mitigation techniques, but also in generating the political will necessary to advance national and international climate efforts. Trump’s withdrawal from the Paris Climate Accord may have catalyzed a nascent reorientation of climate policy away from traditional global diplomatic and international legal approaches toward cooperation, commitment, and implementation at the sub-state level among cities, firms, and NGOs. While action has been building at the sub-state level for some time, the newly re-emphasized limitations of traditional diplomatic approaches to climate policy have shown a new spotlight on sub-state approaches, which may ultimately enhance the effectiveness of the implementation of climate change mitigation policies and provide a new source of political will to drive climate action.

There are good reasons to believe that it may be easier to generate new political will to act on climate at the local or city level, as opposed to at the national or global levels of governance. Even as climate change leads to more manifest physical impacts, such as increased storms, floods, droughts, and other natural disasters, the impacts of such events often remain isolated, locally or regionally. As a result, most individuals and many political actors perceive those impacts as remote, and not directly relevant to them, limiting their national or global political impact. Notwithstanding intense national and international media coverage around disasters, such events rarely transform national political discourse or generate significant and sustained political commitment in national and global politics. For example, Hurricane Katrina in 2005 did not fundamentally transform U.S. climate policy, despite gaining significant national and international media coverage.

At the local political level, the inverse is often true. When events are closer to home, they are viewed by relevant audiences as more significant and eminent, increasing their political salience. Not only do citizens directly feel the impacts of increased flooding, droughts, intensification of storms, and other environmental events linked to climate change, but local economies suffer, leading to heightened political sensitivity to such issues. Such disasters serve as “focusing events” which can alter political agendas, mobilize constituencies and lead to policy change, particularly within the local polity directly affected by the disaster in question (Birkland 1998). Hurricane Katrina, for example, galvanized political will in New Orleans and the region to change its approach to disaster response and environmental policy. So too, Hurricane Sandy has been described as a “tipping point” for New York City, leading to “transformative adaptation due to the explicit inclusion of increasing climate change risks in the rebuilding effort” (Rosenzweig and Solecki 2014).

As a result of these differential perceptions of local and global impact of climate change, political will to act may be easier to generate locally—in community-, city-, or state-level governance. Of course, local actors are strongly incentivized to focus their responses to climate change on adaptation—to make their city more resilient to the pressures and impacts of climate change. These efforts will be important, but actually minimizing climate change requires meaningful mitigation efforts. Political will for action generated locally must ultimately be translated not just into adaptation efforts but also mitigation efforts. Such translation may be possible where cities undertake policies with co-benefits both for adaptation and mitigation. As Oscar Surpell (2017) notes: “pursuing integrative strategies at the city level is likely necessary if mitigation is to remain a priority for local governments.” It may also be possible, however, for local actors to focus their implementation efforts on mitigation, while also channeling upward political pressures toward mitigation.



This paper argues that the new roles being played by sub-state actors—most notably cities, but also firms and NGOs—are of growing importance to advancing efforts to address the climate challenge and have the potential to meaningfully shift the politics of climate policy. First, as this section has explored, sub-state actors may have especially strong motivations to act on adaptation efforts because, as first-hand witnesses to climate impacts within their communities, they can more directly feel the impacts of climate change. Second, these sub-state actors are increasingly playing a direct role on the global stage through new transnational networks of cities, businesses, and NGOs, in ways previously reserved for sovereign states. Third, while these city-based commitments are not be legally binding, they do create powerful political forces that can motivate national governments to act themselves. Fourth, consistent with principle of subsidiarity, which dictates that matters ought to be handled by the smallest, lowest or least centralized competent authority, local level actors are often better situated to undertake local-level, bottom-up policy changes, which are a key component of long-term climate adaptation and mitigation, particularly when coupled with national and regional efforts. Finally, sub-state actors, working together through more robust networks, may exchange best practices and create the upward political pressures needed to help spur otherwise stalled national and global responses forward, by altering the political calculations of national actors.

An expanded role for subnational action on climate is in no way a panacea for climate politics, much less climate change prevention. Of course, global agreements, particularly international treaties such as Kyoto, Copenhagen, and Paris, are essential to overcome international coordination challenges and hold national actors accountable under international law. So too, national-level regulation and coordination, such as the U.S. Clean Air Act, will remain important, even critical, to coordination and enforcement. While local impacts of climate change may lead to local political mobilization, impacted city and state governments have historically lacked the resources to undertake comprehensive adaptation policy responses and lacked the jurisdictional reach, coordination tools, and incentives to drive mitigation efforts. Yet, despite these limitations, local and city government engagement on climate change offers a promising prospect for an alternate source of political will and action in an era of national and global political gridlock and retrenchment.

THE RISE OF SUB-STATE ACTORS IN CLIMATE GOVERNANCE: OPPORTUNITIES FOR POLITICAL PRESSURE AND EFFECTIVE IMPLEMENTATION

Among the rising sub-state actors, cities hold significant potential for improving environmental sustainability and increasing economic prosperity. According to the United Nations, by 2050, 6 billion people will live in cities—more than 80 percent of the world's population. Cities today consume two-thirds of the world's energy and are responsible for creating more than two-thirds of the world's carbon emissions. Cities are, therefore, not only the locus of the problem, but also the source for greatest potential strides in achieving the benchmarks set out by the SDGs and New Urban Agenda. The importance of cities to addressing global climate challenges is underscored in SDG's Goal 11: "Make cities and human settlements inclusive, safe, resilient and sustainable."

Engagement by cities in global climate change efforts is not new. According to the World Bank, cities have long been understood as a key locus of action on climate, particularly given that cities demand the energy which, when consumed, results in roughly 80 percent of greenhouse gas (GHG) emissions and that many climate mitigation efforts require significant changes at the local level. What is, however, new and significant is that cities are beginning to play roles in the climate change response process previously reserved for national-level authorities, particularly through political commitments and transnational coordination. As noted above, commitments to climate response have traditionally taken the form of formal international lawmaking, a process reserved for states exclusively as the sole bearers of international legal personality. So, too, transnational coordination was largely reserved for national actors or, at least, national-level regulatory networks (Slaughter 2006). Today, however, subnational actors—most notably cities—are coming to play both of these roles, supplementing and even taking the place of national governments.

This growing role of cities in climate commitment and coordination traces its roots back to the launch of the C20 (now C40) initiative in 2005 by then London Mayor Ken Livingston. The initial goal of the C40, however, was limited and more closely aligned with the more traditional roles of subnational actors. More specifically, as Michele Acuto (2013) explains, the original goal of the C40 was to overcome cities' "limitations in exchanging expertise and coordinating efforts" to overcome "bureaucratic and political obstacles." To some degree, even at its inception, the C40 sought to create an alternative political space for climate action, conceived as a "space of engagement for cities" separate from international negotiations. It was, in short, the "city vs. the international." Cities were, essentially, separate from traditional global governance mechanisms, yet "obligatory passage points" through which action must pass. At most, cities might bypass the national level of governance through direct connections.

Over the past decade, however, the role of cities and subnational actors has begun to shift toward more explicitly supplementing the national level of government, at times even usurping the traditional roles played by national authorities. Many organizations have emerged to represent cities on the national stage, producing declarations and statements that closely track the form and structure of international legal agreements, building relationships with traditional state-based governance institutions, such as the United Nations, participating directly in the Conference of Parties (COP) under the UNFCCC, and partnering with the World Bank (Aust 2015). C40 Cities, the International Council for Local Environmental Initiatives (ICLEI), and many more similar organizations have allowed non-traditional actors to gain international influence on global governance.

Donald Trump's June 1, 2017 decision to withdraw from the Paris Accord catalyzed significant action by U.S. cities directly challenging the role of national authorities to make climate commitments. More than 350 U.S. Mayors responded with commitments to intensify efforts to address climate change, known as the "We Are Still In" Initiative. This mayoral statement was but one of a number of similar initiatives undertaken immediately after Trump's decision to withdraw from Paris. In July 2017, California Governor Jerry Brown and former New York Mayor Michael Bloomberg launched America's Pledge, "a new initiative to compile and quantify the actions of states, cities and businesses in the United States to drive down their greenhouse gas emissions consistent with the goals of the Paris Agreement."

Many have seen these efforts by cities in the climate space as nothing more than political hand-waving. After all, cities lack the international legal personality to make binding legal commitments. They often lack the jurisdictional reach to implement significant policy changes. And they lack the diplomatic tools for transnational coordination. Yet, as cities step further into the global politics, policy, and even international law of climate change, they are likely to generate significant upward political pressures for national governments to take more aggressive climate action themselves. The political science concept of "sovereignty costs" explains the generation of these pressures. Sovereignty costs are incurred when a national government surrenders control over national policies to other actors (Moravcsik 2000). This surrendering of control usually occurs when a national government joins an international institution or commits to an international agreement, through which "discretion over national policies" gives way to "the standards set by an international institution" (Halfner-Burton, Mansfield, and Peavehouse 2011). Sovereignty costs are very real—they limit policy discretion and impose political pressures on national governments.

While sovereignty costs are typically generated by the imposition of authority by or commitment to international institutions, the engagement in global politics of sub-state actors, largely cities, can generate what is termed here "bottom-up sovereignty costs." Bottom-up sovereignty costs arise where national governments are threatened by sub-state actors engaging in domains typically reserved for national authorities and/or cede policy control to subnational actors. Even the mere threat of such infringement or possible loss of control can be a powerful political motivator for national governments. One of us (Burke-White) has written extensively about the sovereignty costs imposed on national governments by the threat of the exercise of jurisdiction of the International Criminal Court (ICC) and how even the mere threat of the loss of control over aspects of the



domestic justice system can motivate national governments to undertake meaningful and costly changes to their national justice systems. (Burke-White 2007, Burke-White 2008). In this model, the goal of international institutions is to “provide structural incentives that shift the cost-benefit calculation” through the threat of sovereignty costs that “result in the use of a domestic process that would otherwise have been neglected.” (Slaughter and Burke-White 2006). Bottom-up sovereignty costs can have a similar effect, albeit with pressures from below rather than above.

As cities have tread into the climate policy space typically reserved for national governments through mayoral commitments that look and feel like international legal agreements, transnational city networks that seem like international organizations, and direct engagement with international institutions, they create meaningful bottom-up sovereignty costs for national governments, particularly those national governments that are lagging behind the soft commitments being made at the city level. These pressures may spur national governments to make new or more robust global commitments, to undertake more aggressive domestic regulation, or to provide additional financial support to local actors. While it remains premature to see the full impact of the U.S. Mayors’ statements in the wake of Trump’s withdrawal from Paris, those statements have, at the very least, increased the political costs of withdrawal for the Trump administration (Popovich and Schlossberg 2017).

While cities can create significant political pressures that push national governments on climate issues, they also are uniquely positioned to directly advance climate adaptation and mitigation efforts. Direct actions by cities are particularly significant because they are fully consistent with the principle of subsidiarity, according to which tasks should be performed at the lowest level of governance capable of undertaking them (Berman 1994). The benefits of subsidiarity are numerous and include efficiency, democratic participation, and experimentation. Cities are, often, the lowest effective level of governance on climate issues and, hence, present myriad opportunities to advance climate adaptation and mitigation.

As the U.S. Mayors commit to addressing climate change, it is important to highlight why these sub-state actors may have unique advantages with respect to some aspects of the climate challenge. First, cities are particularly well-placed to increase energy efficiency and reduce energy demand. As the majority consumers and producers of emissions, cities must be a key locus of reductions. Cities’ existing infrastructure provides greater opportunity to integrate more sustainable practices into daily lives. In addition to integrating more sustainable practices into developing urban areas, existing cities can more easily capitalize on their density, pre-existing networks, and locus of business and innovation to streamline climate mitigation and adaptation practices. With business and technology concentrating here, cities not only have the pre-existing infrastructure with which to execute climate mitigation and adaptation techniques, but also have the capital and technology resources to provide innovative and localized solutions.

Second, cities can play a key role in reducing emissions by decreasing the energy demand in transportation and industry. Though energy systems operate at the regional level and most of the actual decarbonization will take place at a larger scale, and often face jurisdiction issues outside of the city and even the state, streamlining consumers’ behaviors towards less energy-intensive choices proves most fruitful in urban areas where concentrated networks of people can more easily shift away from fossil-fuel intensive transportation and reduce home energy consumption through densification and efficiency measures.

How cities address carbon emissions reductions and climate policy implementation is and must be very diverse, based on the size, geographic location, and financial state of such urban areas. Additionally reductions must take place at the planning, policymaking, and individual levels. Planning has long been the foundation of development for cities, urban areas, and larger metropolitan regions. However, the development of long-term sustainability plans, which have begun to gain traction in the United States over the last decade, have importantly defined the path forward for cities towards greater sustainability practices, including but not



limited to reducing emissions and increasing renewable energy sources; decreasing waste and increasing recycling practices, expanding greenspace through planting street trees and developing more park space; reducing reliance on cars by promoting and providing alternative transportation options like walking, biking, train and rail, bus-rapid transit, and more; and targeting neighborhood development with a greater focus on equity and prosperity to improve the wellbeing of all residents.

New York City has played a leadership role in its planning efforts to both reduce demand and decarbonize energy use. As the first of its kind, PlaNYC, launched in 2007, explicitly set data-driven goals for the city of New York and provided a framework for measuring the implementation of sustainability measures around five categories: Land, Water, Transportation, Energy, Air and Climate Change. PlaNYC 2030 brought together more than 25 agencies across the city to incorporate sustainability and develop a “greener, greater city” (New York City Global Partners). Since then, other cities have undertaken similar processes across the globe. Notable examples include Auckland, New Zealand, Singapore, Amsterdam, Netherlands, and Copenhagen, Denmark. Though each plan varies according to the needs of the city, each takes a forward-looking planning approach to prioritize environmental sustainability, promote economic prosperity, and improve social equity, which are all fundamental tenets of climate governance. Importantly, according to the 2014 PlaNYC Progress Report, such long-term planning has produced tangible results in the mitigation of carbon emissions: “New York City set an ambitious goal to reduce citywide greenhouse gas (GHG) emissions by 30 percent below 2005 levels by 2030 (30 by 30). In just seven years, the City has reduced emissions 19 percent and is now almost two-thirds of the way toward achieving the 30 by 30 goal.”

Third, cities can reap significant co-benefit opportunities that both make contributions to the climate challenge and improve urban life. The co-benefits of urban environmental interventions also further incentivize cities to implement more sustainable practices. For instance, increasing connectivity through the development of subway, rail, bus, bike, and pedestrian infrastructure in urban areas can reduce emissions (by decreasing GHGs emitted by vehicles, reducing fossil fuel consumption, and improving the efficiency of freight and commercial vehicle use by decreasing traffic congestion); improve air quality (which decreases heat trapped by smog and reduces health impacts of pollution); facilitate connectivity (which increases economic prosperity and reduces social inequities); and promote citizen health and wellbeing (by expanding accessibility for all citizens, increasing safety and mobility by developing more walkable communities, and facilitating healthy lifestyles by expanding walking and biking). For example, Kolkata, India implemented the Solid Waste Management Improvement Plan to reduce unsanitary disposal practices. In diverting human waste from the main waste stream, they were not only able to eradicate the dumping and burning of human waste which significantly contributes to methane gas emissions, they were also able to improve public health and reduce the risk of air and waterborne diseases (Jha et al. 2008).

Because sustainability practices are intricately woven together, addressing one tenet of climate mitigation and adaptation can inherently address other tenets. For instance, many cities experience flooding from sudden heavy downpours, which leads to street flooding, combined sewage overflow (CSO) contamination, and infrastructure damage. With problems like this worsening with climate change impacts, cities must address all these issues. Fortunately, however, by employing sustainable solutions—such as green stormwater infrastructure (GSI)—they can simultaneously address each issue. In this case, GSI also provides additional benefits during non-rain periods, including reduction of Urban Heat Island effect (UHI), improvement of air quality, and contribution to citizen mental health (Bass et al. 2002; Dunn 2010; Sugiyama et al. 2008). In Denmark, a country made up of more than 400 individual islands prone to the impacts of sea level rise, policymakers created the Cloudburst Management Plan, which seeks to develop green streets and pocket parks as a natural rain infrastructure alternative to a cost prohibitive sewer infrastructure expansion. However, they acknowledge that the plan will bring important “environmental and economic co-benefits.” As C40 Cities explains: “The long-term goals of the project are to improve water quality in the city’s harbour; to mitigate the

Urban Heat Island Effect; to increase recreational opportunities for citizens; and to decrease air pollution. The plan is also a way to create growth, employment and a method of attracting new knowledge and businesses to the city" (C40 Cities).

Finally, and again consistent with the principle of subsidiarity, these city-based planning and implementation efforts may produce positive political feedback that influence higher-level governance structures. Participatory democracy is most effective within smaller polities and city-based efforts are more likely to engage individuals in both sustainability planning and direct implementation efforts. This direct engagement is one means of mobilizing political action by individuals which can, in turn, generate political pressures at other levels of government, creating a virtuous cycle of real action and political mobilization. Though by no means wholly capable of combating climate impacts alone, cities have a wide variety of both the tools to use for implementing climate adaptation, mitigation, and policy, especially in the face of stalled state and national political will, and also the potential for more successful outcomes. While these efforts cannot solve the climate problem alone, they present one increasingly important piece of the climate governance puzzle.

CHALLENGES OF SUB-STATE APPROACHES TO CLIMATE GOVERNANCE

Despite the rise of cities in climate governance, sub-state actors face many challenges to effectively designing and implementing lasting climate policy solutions. The institutions of global governance are generally designed to engage national governments and the connections between international, national, and local governance are often inadequate. Lacking international legal personality, cities cannot directly engage existing (albeit lagging) global climate initiatives. Moreover, the structures of problems of the global commons often makes individual city-based contributions too limited to have meaningful impact. Understanding and maximizing the potential of cities and other sub-state actors in addressing climate change requires a recognition of their limitations.

As a general matter, for cities and other sub-state actors to meaningfully address the climate challenge, high-level international goals must be translated to the city level. Although international frameworks, particularly the SDGs, explicitly desire to engage sub-state actors, there is little agreement on how best to facilitate greater engagement of cities in SDG implementation or how to measure that engagement. Following the adoption of the SDGs by the UN General Assembly in 2015, the organization United Cities and Local Governments produced a document called "The Sustainable Development Goals: What Local Governments Need to Know" that identified why each of these sustainable development challenges should be addressed by cities, but did not provide a relevant framework for doing so. The Sustainable Development Solutions Network later created the report "Getting Started with the SDGs in Cities" and the Global Taskforce of Local and Regional Governments produced "The Roadmap for Localizing SDGs: Implementing and Monitoring at the Subnational Level" as guides for translating these international agreements to local, actionable policy. None of these efforts, however, provide a fully developed framework for effectively engaging cities in the implementation of the SDGs. Even without a clear framework for engagement, cities' goals and incentives already focused on the health, wellbeing, economic prosperity, and environmental sustainability should be well aligned with international climate governance. Without better mechanisms for the direct engagement of cities in these global governance efforts, the SDGs and similar international governance institutions may only bolster activities that cities are already working on, rather than motivating them to reform current policymaking and planning.

In addition to the struggle to better link city policies to existing international governance frameworks, other significant challenges impede cities from making tangible contributions to climate mitigation and adaptation. These include: jurisdictional limits that do not align with the scope of the climate challenge, planning capacity constraints, implementation challenges, and resource limitations.



The first key limitation cities face in addressing climate is that cities' jurisdictional reach and authorities often do not align with the scope and structure of the climate problem. Depending on national legal structures, most cities have only limited legal authorities which are circumscribed by the territorial scope of the city itself. Climate mitigation efforts and even some climate adaptation efforts require coordinated action on a far broader scale than a city can facilitate, such as regional power generation or watershed-based flood prevention. As a result, some policy changes would be more effectively implemented by national actors, such as the 2014 U.S. Clean Power Plan (Chon 2015). Hence, some key aspects of climate policy and implementation will remain outside the reach of any city. Adaptation efforts, as opposed to mitigation efforts, are more likely to fall within a city's jurisdiction and legal authorities, increasing the possibility that cities will over-invest in adaptation at the expense of mitigation. Within their jurisdictions, however, there is much that cities can do both in terms of adaptation and mitigation, though the overall contribution of such efforts to the climate puzzle will remain limited.

Second, many cities lack the capacity to develop the kind of long-term sustainability planning practices necessary to make headway on either mitigation or adaptation. Such plans have only been implemented in larger, generally wealthy cities, such as New York, Copenhagen, and Singapore, in developed countries. In contrast, many of the rapidly urbanizing areas in developing countries lack the resources and bandwidth to create such plans. Most often, rapidly urbanizing areas do not have time to ensure current development happens in a healthy and sustainable way, much less plan for 10 to 20 years of development down the road. Without specific policymaking capacity and local actors seeking to identify safe development, many cities will be unable to develop policies and practices that address climate change.

Third, even where cities are able to engage in the kind of long-term planning needed to address climate change, they may not be able to effectively implement those policies. In the implementation of long-term sustainability plans many cities run into logistical, political, and financial barriers. Cities struggle to translate policy documents into something tangible and implementable. Implementation efforts are often further impeded by manpower and organizational constraints. Even within developed countries such as the United States, city governments have proportionally small and often disorganized offices dedicated to sustainability practices as compared to what is needed to execute their sustainability goals. Many cities have multiple departments working on overlapping issues and need to more effectively streamline their organization and maximize limited manpower. For example, city departments (though they may be named differently by city) that focus on Energy, Parks and Recreation, Planning, and Sustainability may all be working to tackle UHI. With multiple different departments with slightly different priorities working to address the same issue from different angles, cities may face redundancies, inefficiencies, and political gridlock.

Fourth, and most importantly, financial limitations prevent the execution of many large-scale projects. City budgets are both complicated and inadequate. With limited tax bases, cities need to fund basic infrastructure, maintain education programs, continue to encourage business and prosperity, and pay pensions. Often times they face more pressing concerns of basic needs of their residents, so sustainability projects do not receive adequate attention. Climate change mitigation and adaptation approaches range in scale, but often have high up-front costs, especially for large-scale overhauls of transportation, energy, and carbon reduction. Moreover, access to capital markets to fund such projects may be limited where cities have poor credit ratings. Land use regulation changes can most significantly impact carbon reductions for cities, but such policy changes may not be undertaken if they are seen to have negative impacts on development and city profits (Glaser and Kahn 2008).

One local example from Philadelphia illustrates many of the limitations facing cities—even in developed countries—in effectively implementing climate adaptation and mitigation efforts. Notwithstanding the best developed plans and intentions, cities such as Philadelphia are not making significant or adequate strides toward their goals. For example, in Philadelphia's 2009 inaugural long-term sustainability plan, called the



Greenworks Plan, the city's tree canopy was at 16 percent, with the goal to of planting 300,000 trees by 2015 as a steppingstone toward its goal to achieve 30 percent canopy by 2025 (Greenworks 2015 Progress Report). However, in 2014 (the period in which data was collected for assessment across all goals), less than half (120,388) of the desired trees had been planted. The department of Parks and Recreation for the city faced multiple challenges to successfully achieving their tree canopy goal in addition to lacking manpower to successfully identify where to plant trees, what types of trees to plant, and how to effectively maintain new and existing trees. Because of these challenges cities will never be the panacea for climate governance, but given the lack of national political will cities must make a more significant contribution. Doing so will require better resources, coordination, financing, and perhaps new political authorities.

FACILITATING COORDINATION AND GENERATING POLITICAL PRESSURES THROUGH NETWORKED GOVERNANCE

As the preceding section explained, cities face a number of challenges and limitations in making meaningful contributions to the problems of climate governance. The structure of the climate problem—like most problems of the global commons—requires coordinated action on a global scale. No single city alone can effectively address the myriad aspects of climate change nor provide effective governance of the issue. As discussed above, even the largest global cities have a circumscribed geographic jurisdiction, limited enforcement capacity, constrained resources, and no mechanisms for coordination across territorial borders. Hence, for cities to achieve their full potential as actors in the global climate space and capitalize on the numerous potential benefits of sub-state activity on climate, they must find a way to magnify their individual contributions, coordinate across borders, and harmonize the direction of their influence.

Recent moves by cities and their mayors to build intergovernmental networks of cooperative action may hold the potential to address, perhaps even overcome, some of these weaknesses. More specifically, cities are expressly engaging in global climate policy through ever-more dense and interconnected networks. As described in Part II, above, cities have created a number of networks, notably the C40, but also including the Climate Mayors and Climate Cities groupings, and ICLEI (Local Governments for Sustainability). Ultimately, it is these networks, rather than any single city, that have the potential to make significant contributions to climate policy, coordinate action across jurisdictions, and pressure national governments to take more aggressive climate action. New understandings of network theory in foreign policy help demonstrate the potential of network effects to make cities far more effective both at implementation of climate-favorable policies and at generating political will to advance broader climate efforts.

Emerging city-based networks engaged on climate issues perform a number of functions that directly address the inherent limitations of cities in global climate governance. Fundamentally, the power of networked governance flows from the fact that networks can span national borders, critically important for cities that are generally constrained by their own national governments and have limited jurisdictional reach. As early as 2004, Anne-Marie Slaughter documented the power of networks of national governmental officials, particularly regulators, working directly together across borders to harmonize state behavior and pressure national political leadership (Slaughter 2004). Networks of cities and mayors perform a similar function, albeit by linking officials in similar policy domains well below the national level of governance. More specifically, networks can solve the coordination problem, allowing cities and mayors to work together across borders to implement common solutions across jurisdictions (Slaughter 2016). Every meeting of the C40 or of ICLEI performs these functions.

By addressing the coordination challenge, networks may overcome two particular limitations of cities in climate governance. First, networks can allow cities to operate beyond their limited jurisdictional reach, even though those networks may have no formal policymaking role or authority. Where policies, best practices, or new strategies resonate through a network, behavior amongst cities can harmonize, yielding impact and results well



beyond any single city. Slaughter refers to such networks as “scale networks,” through which it is possible to “align the thousands of large and small organizations, groups, and individuals working on a particular [issue]...to coordinate their actions for the most impact” (Slaughter 2016, 135).

Second, the potential for scaling and harmonized behavior across networks of cities may ameliorate, in part, the adaptation-mitigation incentive problem discussed above. More specifically, one reason cities are likely to over-invest in adaptation efforts on climate at the expense of mitigation efforts is that mitigation efforts within a particular city’s jurisdiction are unlikely to have meaningful impact on climate change generally and the particular climate within the city. However, when those efforts are scaled through a network of cities that includes monitoring mechanisms to prevent defection, the marginal value of investment in mitigation increases precisely because the network’s collective mitigation efforts may be significant enough to impact the overall climate problem. For example, the commitment of any one city to buy zero emission busses is unlikely to have real mitigation impact. However, the collective commitment of 12 cities to do so through the C40’s Together4Climate summit is a more meaningful step that could have real effect on decarbonizing transportation if truly scaled globally through city-networks (Doyle 2017). This is not to say that coordinated city action can fully solve the mitigation-adaptation dilemma or that even fully coordinated action by cities alone can lead to effective city-based mitigation efforts, but the shift in incentives created through networked action may be a piece of the solution to better align incentives and investments.

Networks also have the potential to magnify the political pressures cities can generate for national governments through the “bottom-up sovereignty costs” discussed above. In short, networks such as the C40 give cities a locus for transnational connections through which they can tread into the diplomatic halls previously reserved for national governments. In addition, they serve as an echo-chamber that raises the profile of city-based actions and statements that, in turn, increase the political salience of city behavior. Third, where city networks are forward leaning on a particular issue, such as climate change, they can pull their members further forward on that issue based on the desire for acceptance, the requirements for inclusion, and the pressures of harmonization (Chayes and Chayes 1995). As cities act through and are influenced by the networks of which they are members, they increase the political costs of inaction or limited action by national governments. These networks realize a vision of power Hannah Arendt described as “power correspond[ing] to the human ability not just to act, but to act in concert” (Arendt 1970, 143) or what Anne-Marie Slaughter has more recently termed “power with” rather than “power over” (Slaughter 2016, 163). These networks create an alternate fora for climate governance, potentially motivating national governments to do more and more aggressively to avoid losing policy control not just to their own cities but also to the transnational networks of cities themselves.

Ultimately, the greatest contribution of cities to the climate problem may be that, when they operate through networks they can play an outside political game, side-stepping their national governments so as to influence those national governments, other governments, and international institutions. That is exactly what the Climate Mayors statement in the wake of the U.S. withdrawal from Paris sought to do. That document will not formally bind cities to the terms of Paris, but it can name, shame, and pressure national governments to do so. Similarly, the C40’s annual Mayor’s Summit allows mayors to cooperate and collaborate directly, without working through national governments. While the impact of these efforts in climate governance remain to be seen, similar outside political games have been extremely effective in the global human rights space where networks of non-governmental actors have been able to bring meaningful pressure on national governments to improve human rights practices through what Margaret Keck and Kathryn Sikkink (1998) have termed a “boomerang effect.” Networks of cities may well hold even more promise for exerting the kinds of pressures seen in the human right space, pressuring national governments because cities are simultaneous inside and outside actors. Through networks cities can serve as outsiders, advocating to influence national governments. Within their own jurisdictional remit, they are also direct actors, able to implement certain policies themselves.



The result, as we have begun to see in climate governance, is a fairly dense web of interlocking commitments at different levels of governance—global international legal rules, national regulations, industry commitments, as well as state and city-based efforts. Bob Keohane and David Victor (2011) have described a “Regime Complex for Climate Change” consisting of a number of overlapping international institutions and legal instruments. This regime complex, however, must also be understood to include not just intergovernmental agreements but also networks of sub-state actors that can both have direct impact and generate powerful upward political pressures.

CONCLUSION

Cities have a yet-to-be-fully-realized potential to play a more significant role in global climate governance and the implementation of climate interventions that provide for both adaptation and mitigation. This role is two-fold. Cities are the direct implementers of a considerable number of local interventions that can make a contribution to solving the climate puzzle. To do so, however, they will need to become more effective and more efficient, to harness resources and engage in more strategic planning. In addition, and perhaps more significantly, cities are also a potential source of new political pressures to drive national governments to make needed legal commitments and policy changes. Particularly when operating through transnational networks, cities can play both an outside political game, generating pressures on national governments and an inside game of direct implementation of climate interventions.

While cities have come into the spotlight in recent years for their role in pushing forward climate governance, they cannot be the sole drivers of global climate policy. As the locus of potential for effective climate mitigation efforts and network building, cities are destined to play a prominent role in pushing forward sustainable policy agendas. Challenges in coordination, implementation, and scope will continue to plague sub-state actors such that they cannot successfully address the impacts of climate change alone. Their incentives may lead to over-investment in adaptation at the expense of mitigation. They are, however, uniquely positioned to drive upward political pressure and proactivity around climate policy when nations are dragging their feet, and to force cooperation among the many actors to drive climate governance forward. More research will be needed in the years ahead to fully understand the scope and impact of those pressures and to develop best practices to harness cities’ potential as both political actors and direct implementers of climate policy.

- Acuto, Michele. "The new climate leaders?" *Review of International Studies* 39, no. 4 (2013): 835-857.
- Arendt, Hannah. *On violence*. Houghton Mifflin Harcourt, 197
- Aust, Helmut Philip Aust, Shining Cities on a Hill? The Global City, Climate Change, and International Law, 26 *European J. Int'l L.* 2015 (262).
- Bass, Brad, Scott Krayenhoff, Alberto Martilli, and Roland Stull. "Mitigating the urban heat island with green roof infrastructure." *Urban Heat Island Summit: Toronto* (2002).
- Bermann, George A. 1994. "Taking subsidiarity seriously: federalism in the European Community and the United States." *Columbia Law Review* 94(): 331-456.
- Birkland, Thomas. 1998. "Focusing Events, Mobilization and Agenda Setting." *Journal of Public Policy* 18(1): 53.
- Bodansky, Daniel. 2001. "The History of the Global Climate Change Regime." In *International Relations and Global Climate Change* 23, edited by Urs Luterbacher and Delef Sprinz.
- Bodansky, Daniel. 2010. "The Copenhagen climate change conference: a postmortem." *American Journal of International Law* 104(2): 230-240.
- Burke-White, William W. "Proactive complementarity: The International Criminal Court and national courts in the Rome system of international justice." *Harvard International Law Journal* 49 (2008): 53.
- Burke-White, William W. "The Domestic Influence of International Criminal Tribunals: The International Criminal Tribunal for the Former Yugoslavia and the Creation of the State Court of Bosnia-Herzegovina." *Columbia Journal of Transnational Law* 46: 279.
- Climate Mayors. 2017. "Statement from the Climate Mayors in Response to President Trump's Withdrawal from the Paris Climate Agreement, June 1, 2017." Available at <https://medium.com/@ClimateMayors/climate-mayors-commit-to-adopt-honor-and-uphold-paris-climate-agreement-goals-ba566e260097>.
- Chayes, Abram, and Antonia Handler Chayes. *The new sovereignty*. Harvard University Press, 1998.
- Chon, Janice. 2015. "Clean Power Plan." *Environmental and Earth Law Journal (EELJ)* 7.
- Doyle, Alister. "Twelve big cities to buy zero emissions buses, extend green areas." Reuters. October 23, 2017. <https://www.reuters.com/article/us-climatechange-cities/twelve-big-cities-to-buy-zero-emissions-buses-extend-green-areas-idUSKBN1CS13J>
- Dunn, Alexandra Dapolito. "Siting green infrastructure: legal and policy solutions to alleviate urban poverty and promote healthy communities." (2010).
- Hale, Tom, David Held, and Kevin Young. 2013. *Gridlock: Why Global Cooperation is Failing When We need It Most*.
- Harrison, Kathryn and Lisa McIntosh Sundrsum. 2007. "The Comparative Politics of Climate Change." *Global Environmental Politics* 7(4): 1-18.
- Harrison, Kathryn and Lisa McIntosh Sundrsum, eds. 2010. *Global Commons, Domestic Decisions: The Comparative Politics of Climate Change*. Cambridge, Mass: The MIT Press.
- Jha, Arvind K., C. Sharma, Nahar Singh, R. Ramesh, R. Purvaja, and Prabhat K. Gupta. 2008. "Greenhouse gas emissions from municipal solid waste management in Indian mega-cities: A case study of Chennai landfill sites." *Chemosphere* 71(4): 750-758.
- Keck, Margaret E., and Kathryn Sikkink. *Activists beyond borders: advocacy networks in international politics*. TPB, 2004.
- Keohane, Robert O., and David G. Victor. 2016. "Cooperation and discord in global climate policy." *Nature Climate Change* 6(6): 570-575.
- Keohane, Robert O., and David G. Victor. 2011. "The regime complex for climate change." *Perspectives on politics* 9(1): 7-23.
- Leiserowitz, Anthony. 2006. "Climate Change Risk Perception and Policy Preferences: The Role of Affect, Imagery and Values." *Climatic Change* 77.
- McCright, Aaron M. and Riley Dunlap. 2011. "The Politicization of Climate Change and Polarization in the American Public's Views of Global Warming 2001-2010" 52 *Sociological Quarterly* 52(2): 155-194. Moravcsik, Andrew. 2000. "The Origins of Human Rights Regimes: Democratic Delegation in Postwar Europe." *International Organization* 54(2): 217-52.
- Popovich, Nadja, and Tatiana Schlossberg. "How Cities and States Reacted to Trump's Decision to Exit the Paris Climate Deal." *The New York Times*. June 02, 2017. <https://www.nytimes.com/interactive/2017/06/02/climate/trump-paris-mayors.html>.
- Ramanathan, V., Molina, M.J., Zaelke, D., Borgford-Parnell, N., Xu, Y., Alex, K., Auffhammer, M., Bledsoe, P., Collins, W., Croes, B., Forman, F., Gustafsson, Ö, Haines, A., Harnish, R., Jacobson, M.Z., Kang, S., Lawrence, M., Leloup, D., Lenton, T., Morehouse, T., Munk, W., Piccolotti, R., Prather, K., Raga, G., Rignot, E., Shindell, D., Singh, A.K., Steiner, A., Thiemens, M., Tittley, D.W., Tucker, M.E., Tripathi, S., & Victor, D. 2017. *Well Under 2 Degrees Celsius: Fast Action Policies to Protect People and the Planet from Extreme Climate Change* September 2017. <http://ramanathan.ucsd.edu/files/FULLLowre-sWellUnder2DegreesDigitalVer.pdf>
- Rosenzweig, Cynthia and William Solecki. 2014. "Hurricane Sandy and Adaptation Pathways for New York: Lessons from a First Responder City." *Global Environmental Change* 28: 395-408. 395