# WE SIGN ON

# Bottom-Up Policy Diffusion

A Transformative Approach to Climate-Oriented
Policy Change

Bottom-Up Policy Diffusion: A Transformative Approach To Climate-Oriented Policy Change
Patrick McHeffey, 2023

**Abstract**

Cities have become the focal point of international climate change efforts. As a result, much attention has been given to the climate efforts of major global cities. But cities are much more than mere jurisdictional areas. A city, especially in terms of climate change politics, can be understood as a broad region, tied to a central place through economic and transit ties. Through this lens, it becomes clear that governments far beyond the jurisdictional lines of major cities have a role to play in addressing the causes and effects of climate change.

This paper sets out to define the role of elected officials in urban areas in relation to climate-oriented policy change. Specifically, this paper considers how localized policy action can affect governments beyond jurisdictional borders. To get there, we first explore the idea of an urban area as a collection of governments. With this framework in mind, we look at the concept of policy mobility, and apply it to a more local level of government than it has been applied in the past. Next, we explore how these concepts relate to a real-world case study – Complete Streets policy adoption in the NY-NJ-PA Metropolitan Statistical Area. Finally, considering lessons learned through application of the concept, we explore the viability of local government action in urban areas on a related climate-relevant policy – land use reform.

**Introduction**

This paper was born out of a personal struggle. Like many other millennials, the climate crisis is the defining theme of my life. The environmental movement, as we know it today, took root in our youth. We are the grandchildren of the Greatest Generation, who saved the world – and we are the children of the 1960's generation, who reimagined it. Our superheroes didn't just fight crime – they fought environmental crimes. The hit movies of our youth were not just classic love stories, or films about teen angst – they were stories of a dystopian future, where the actions of one individual could salvage society.

But when I entered adulthood, I found that, for the most part, life didn't find me in such dramatic, history-changing scenarios. I was primed to believe that I had a moral responsibility to serve the world. But as a new parent, I mostly just found myself alone, in the middle of the night, worrying about the unfolding environmental crisis and wondering how I could do anything at all that could help move the needle. Environmentalism became the organizing principle of my life, and I wanted to make sure that I did everything possible to repair the world for my new baby. The only problem was, I had no idea what that looked like.

I became involved with my local government, a New York municipality with about 13,000 residents. It was a step in the right direction, but I still needed to understand how our work tied into the bigger picture – how the efforts of one community could contribute to international progress. I felt I had a duty to understand how to maximize my contribution (and that of elected officials like me) to the challenge of our time. But still, no one had any answers to offer. A local government was seen as an appendage to larger efforts. It was nice to have us on board, every little bit helped. But we were far from the focus of the international climate change community.

Perhaps more alarmingly, I began to encounter an attitude that I had thought was long gone. Let's call it, climate apathy. I heard those cringe-worthy aphorisms that you would hope to never hear uttered in the halls of government: "That'll be your generation's problem to fix," or "Oh well, I won't be around to see it." Perhaps I was too judgmental of those who uttered such nonsense. After all, they were likely as perplexed as I was about what our role was and how we could fulfill it. But it was the combination of these feelings – the desire to prove that that apathy was misguided, and the belief that there was, yet a responsibility to fulfill – that prompted a deeper exploration of these topics.

We are living through not only the greatest challenge that humanity has ever faced, but also our greatest opportunity for change. The relationship of humanity to the living earth can be transformed – it must be transformed. What I have found – what this research uncovers – is that that work is not solely the domain of a president, nor of the United Nations, nor of big businesses, nor even of the best-known environmental organizations. It is also the work of the

most local forms of government, places where everyday people often work part-time, for little or no pay. Not only do such governments have a role to play, they also have the ability to make a unique contribution that no one else will – and oftentimes, no one else can. If we are to transform government rapidly and at an impactful scale, then we need everyone on board, and we must understand the unique contribution that everyone, including local governments, can make.

But lest we be accused of speaking in platitudes, let's dive right in. The world is a big place, and climate change is a complex issue. There are millions of factors contributing to climate change, and we can focus on any single one of them. Why focus solely upon cities?

## Cities are Growing

The world population is growing, and with it, the importance of cities. By 2050, 2.5 billion more people are expected to live in urban areas. [1] [2] This growth, which will be driven by overall population growth, is expected to increase cities' share of global population. With this population shift toward cities, the power to steer change will also shift toward urban areas.[3] The 2018 World Urbanization Report, produced by the United Nations Department of Economic and Social Affairs, provides a glimpse of just how dramatically human settlement patterns are changing. In 2008, for the first time in human history, more people lived in urban areas than lived in rural areas[4] [5] This shift is expected to accelerate through 2050, at which point 68% of the World Population is expected to live in urban areas.

As society has begun to shift, so too have greenhouse gas emissions (GHG). Since 2010, total GHG emissions have been increasing across all sectors, with an increasing share attributable to urban areas.[6] This shift toward cities will be accompanied by an increased ability to influence GHG emissions – either positively or negatively.

[1] https://population.un.org/wup/Publications/Files/WUP2018-KeyFacts.pdf
[2] https://journals.sagepub.com/doi/epdf/10.1177/0956247810392270
[3] https://www.tandfonline.com/doi/full/10.1080/21622671.2019.1632220
[4] https://www.un.org/en/un75/shifting-demographics,
[5] https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap8_FINAL.pdf
[6] https://report.ipcc.ch/ar6/wg3/IPCC_AR6_WGIII_Full_Report.pdf

Given both the growing importance of urban areas, and their increasing contribution to GHG emissions, experts have begun to recognize the important and unique role urban governments play in fighting climate change. Policy and regulation are two powerful tools many urban governments have at their disposal, and appropriately designed policy has been shown to avoid, reduce, and in some cases, even remove GHG emissions.[7] Cities have been found to be both small enough to implement such policy in an effective way, and large enough that their impact is meaningful on a global scale.[8] Similarly, international reports, such as the assessment reports of the Intergovernmental Panel on Climate Change (IPCC), have begun to recognize the central role of cities in mitigation and adaptation efforts.[9] Following this, international frameworks, such as the Paris Agreement and the United Nations Sustainable Development Goals, have been designed to foster action at the sub-national level.[10] [11]

**A Need for Action**

As the global population grows and shifts toward urban areas, low- and middle-income nations, where most of the world's largest cities are located, and where three-quarters of the world's urban population already reside, are experiencing unprecedented challenges.[12] Amplifying these challenges, the majority of future urban population growth is expected to occur in developing countries and least-developed countries.[13]

Given this, urban governments in more developed nations, many of which will experience slower population growth and thus, less volatile challenges, should seek to understand their unique ability to make a positive contribution to global climate change efforts.

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[7] IPCC, 2018: Summary for Policymakers. In: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 3-24, doi:10.1017/9781009157940.001.

[8] Hoornweg, Sugar, and Trejos Gómez, "Cities and greenhouse gas emissions: moving forward," **PAGE NUMBERS.**

[9] https://www.ipcc.ch/report/ar5/wg2/urban-areas/)

[10] Vanesa Castán Broto, "Climate change politics and the urban contexts of messy governmentalities," *Territory, Politics, Governance,* 8, no. 2 (2020): 241-258, DOI: 10.1080/21622671.2019.1632220.

[11] https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_Chapter08.pdf

[12] https://www.ipcc.ch/report/ar5/wg2/urban-areas/

[13] https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_Chapter08.pdf

Alright, so, human population is growing, and that growth is fueling a shift toward cities. With that shift, cities are contributing more to global GHG emissions. We're now beginning to recognize that cities are not just part of the problem, they're essential to the solution. But there are thousands of cities all over the world. Can the actions of one city really mean much on a global scale? How? Enter the concept of Policy Mobility.

**Ripples on Water**

As the international conception of cities' role in fighting climate change has evolved, so too has the understanding of actions taken by cities. The actions of cities are no longer viewed as single, discrete, disconnected contributions to a global effort. Rather, they have increasingly been conceptualized as ripples upon water – each action sending out waves that interact with, compliment, and even strengthen the actions of other cities.[14] Given these observations, it becomes apparent that the actions of urban governments are neither created nor executed within a vacuum; they exist instead within a web, being informed by, and in turn, informing the actions of peer cities. The actions of urban governments, in other words, have impact far beyond jurisdictional lines. Public policy, it turns out, is not static; it is mobile, and it evolves as it moves.[15]

In this way, every climate action taken by an urban government can serve two purposes: to contribute one isolated piece to the global puzzle of addressing climate change, and, more importantly, to inspire, inform, and support the actions of other urban governments around the world. Considering this, cities today should consider themselves not merely observers of global efforts to combat climate change, but rather, as active participants.[16]

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[14] Eugene McCann, "Urban Policy Mobilities and Global Circuits of Knowledge: Toward a Research Agenda," *Annals of the Association of American Geographers,* no. 101, Issue 1 (2011): 107-130. DOI: 10.1080/00045608.2010.520219.

[15] Fabrizio Gilardi and Fabio Wasserfallen, "Policy Diffusion: Mechanisms and Practical Implications," Paper for presentation at the Governance Design Network (GDN) Workshop, National University of Singapore, Singapore, Feburary 17-18, 2017: **Pages**. https://www.fabriziogilardi.org/resources/papers/Gilardi-Wasserfallen-2017.pdf.

[16] Ruiz-Campillo, Xira, "The drive to sustainability: A way in which local initiatives diffuse internationally," *Politics & Policy* Volume 50, no. 5 (October 2022): Pages 887-1066. DOI: 10.1111/polp.12496.

Urban governments in the most developed nations should use their unique, advantaged position in this global web of cities, to both develop and normalize policy geared toward climate change.

Got it. The population is growing and shifting toward cities, as are GHG emissions. Actions taken by cities don't occur in a vacuum; they ripple out across the globe, informing the actions of other cities. So, if cities are such a big deal, is everyone else off the hook? Well, not exactly. Actually, not at all.

**What is a city, anyway?**

The definition of "city" varies greatly, both over time and across cultures. A city can be understood as a geographic area, a jurisdictional area, or an economic area, to name just a few conceptions. Furthermore, the definition of the term can vary between different researchers and disciplines. In terms of Public Policy, researchers have concentrated largely upon cities as jurisdictional areas. Even the concept of Policy Mobility, which focuses specifically upon movement of policy from one city to another, has centered largely upon well-known, jurisdictional cities.

These concepts have been applied much less to alternative conceptions of the city. One major opportunity is the application of the concept of Policy Mobility within cities as "urban areas." An urban area is an important conception of the city, which has been employed, most notably, for these purposes, by the United Nations in the Sixth Assessment (AR6) of the Intergovernmental Panel on Climate Change (IPCC). AR6 is the sixth report in a series of reports published by the IPCC. It is organized into three main sections, The Physical Science Basis of Climate Change; Impacts, Adaptation, and Vulnerability; and Mitigation of Climate Change. Similar to the Fifth Assessment, and subsequent international agreements, AR6 focuses on the role of cities over the coming decades, both as contributors to GHG emissions, and as potential agents of progress toward climate change goals. IPCC reports serve as bedrock documents for international, national, and even sub-national climate action; the importance of the IPCC understanding of "urban area," therefore, cannot be overstated.

AR6 uses a conceptual framework known as the "Urban Systems" approach. An Urban Systems approach goes beyond a mere jurisdictional understanding of cities, and instead considers the multiple, overlapping linkages between systems within urbanized areas, as well as with other urban areas around the world. Similar to the definition employed in the 2020 report "A New Perspective on Urbanization" by the European Union (EU) and the Organization for Economic Co-operation and Development (OECD), AR6 views cities more as commuting patterns then as jurisdictional areas.[17] With this approach, the Sixth Assessment concentrates on "…Cities, city regions, metropolitan regions, megalopolitans, mega-urban regions, towns, and other types of urban configurations." This lens allows the report to consider a wider perspective of both the sources of urban GHG emissions, and the potential impact of urban mitigation options, then would an approach that merely considered jurisdictional cities.

In the United States, this perspective aligns most closely with the US Census Bureau's definition of Metropolitan Statistical Areas (MSAs), which are defined as "…A core area containing a substantial population nucleus, together with adjacent communities having a high degree of economic and social integration with that core," which are comprised of one or more entire counties.[18] MSAs have served as the basis for international climate change reports, as well as related studies, such as the 2018 World Urbanization Report of the UN.

MSAs are organized around a core area, which is most often the Primary City, in jurisdictional terms, of that MSA. But by definition, an MSA contains much more than just a single jurisdictional city. Rather, an MSA is comprised of multiple governmental jurisdictions, at different scales, containing different populations, resources, and legal authorities. The governing bodies of these jurisdictions can be contained within others, can stand independent of one another, or can overlap one another. In some cases, hundreds of such governing bodies exist within a single MSA.

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[17] https://www.oecd-ilibrary.org/docserver/d0efcbda-en.pdf?expires=1677340898&id=id&accname=guest&checksum=F28DFAC25DA9314935AF3A48E911EA97

[18] https://www.census.gov/programs-surveys/popest/guidance-geographies/terms-and-definitions.html

Researchers have typically conceptualized such sub-MSA places as appendages of core areas and Primary Cities, serving as resource providers, whether in terms of workers, agricultural products, raw materials, or entertainment. Such a framework is beneficial in understanding the economic function of urban areas but fails to recognize the potential of such places as hubs of political innovation and testing grounds of policy and regulation – something that becomes important when society wants to introduce drastic policy and regulatory changes rapidly and at scale. In other words, the traditional framework - thinking of areas outside of primary cities as mere appendages – becomes an obstacle when trying to meet the climate change goals of the international community.

## Bottom-Up Policy Change

This research applies the concept of policy mobility, not to only to primary, jurisdictional cities, but also, to the lesser-known jurisdictional entities within MSAs. In doing this, the research attempts to establish a strategy of policy development that can trickle upward, from the most local levels of government, throughout an MSA, and, potentially, beyond.

Whereas the traditional conception of policy change in an urban area focused upon a limited number of government entities, this alternative conception shifts the levers of change outward and downward, to include not only major cities – but every governing body throughout a region. This shift means that elected officials at the most local levels of government are not merely observers of climate change efforts; they are, instead, powerful (if lesser known) actors in a global dialogue of social and political change. Moreover, it means that the parties responsible for climate change mitigation and adaptation are not limited to well-known, distant figures at the head of city, state, and national governments – they also include people from every walk of life, serving on village boards, town councils, and county legislatures. In other words, local governments should be viewed not as mere appendages to major cities, but rather, as strategic leverage points, from which global policy change can be initiated. Now let's try applying this concept to a real-life example.

## Case Study: "New York City"

The largest MSA in the United States is that area surrounding New York, NY. The MSA of the area, known as the NY-NJ-PA Metropolitan Statistical Area, had an estimated 2021 population of 19,768,458, or nearly 6% of the nation's estimated population of 331,893,745. That's roughly 1 in 17 Americans. New York City, the primary city of the MSA is often seen as a leader in terms of climate change policy and regulation, both nationally and internationally. A change implemented in New York City will influence other urban governments around the world through the magic of policy mobility.

But the MSA is made of much more than just New York City. In fact, 57% of the population lives outside of the city limits. This portion of the population resides largely in more suburban settings, oftentimes with a higher rate of GHG emissions. However, while the 43% of the population residing within the city falls under the jurisdiction of a single government, the 57% of the population residing outside of the city fall under the jurisdiction of hundreds of different governing bodies, including (to use the Census Bureau's very user-friendly terminology) counties, county subdivisions (largely townships and boroughs) and incorporated places (mostly villages). Each of these governing bodies has the ability to take actions that could not only improve sustainability within its borders but inspire change throughout the MSA and beyond. Moreover, there are certain climate actions that literally cannot be taken by anyone else.

Figure: Population residing within and outside of Primary City, NY-NJ-PA Metropolitan Statistical Area (Uses data obtained from the US Census Bureau)

| Jurisdiction | 2021 Population Estimate | Percent of Total |
|---|---|---|
| NYC | 8,467,513 | 42.83% |
| Outside of NYC | 11,300,945 | 57.17% |
| Total | 19,768,458 | 100.00% |

Figure: Forms of Government within the NY-NJ-PA Metropolitan Statistical Area (Uses data obtained from US Census Bureau, the State of New York, and the State of New Jersey Library)

| Forms of Government within the NY-NJ-PA Metropolitan Statistical Area | |
| --- | ---: |
| | |
| New Jersey | 370 |
| Borough | 191 |
| City | 23 |
| County | 12 |
| Town | 10 |
| Township | 131 |
| Village | 3 |
| New York | 204 |
| City | 8 |
| County | 10 |
| Reservation | 2 |
| Town | 43 |
| Village | 141 |
| Pennsylvania | 14 |
| Borough | 2 |
| County | 1 |
| Township | 11 |
| Grand Total | 588 |

**Policy Analysis in Case Study Area:**

Diffusion of Complete Streets Policy throughout NY-NJ-PA Metropolitan Statistical Area

According to Smart Growth America, "Complete Streets is an approach to planning, designing, building, operating, and maintaining streets that enables safe access for all people who need to use them, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities."[19] Complete Streets regulations often take the form of policies, laws, resolutions, and

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[19] https://smartgrowthamerica.org/what-are-complete-streets/

binding ordinances. [20] Model Complete Streets policies, "…Ensure streets are safe for people of all ages and abilities, balance the needs of different modes, and support local land uses, economies, cultures, and natural environments.[21]

Viewed through the lens of climate change adaptation, Complete Streets policies are significant, in part, because they enable and encourage multiple modes of transit, thus providing an environment in which people can choose transportation options other than GHG emitting vehicles. Complete Streets policies are significant in the case study area, due to its size and its traditional reliance upon GHG emitting vehicles. The MSA is considered the largest urban area in the world by landmass.[22] According to NYS Department of Environmental Conservation's 2022 Statewide GHG Emissions Report, Transportation was the second largest contributor to statewide GHG emissions, contributing 29% of the total.[23]

According to data obtained from Smart Growth America, New York City was the first government in the NY-NJ-PA MSA to take a Complete Streets Action, when, in 2008, it adopted a Sustainable Streets Strategic Plan. Immediately thereafter, policy diffusion began to take place, as ordinances, policies, and resolutions were adopted by a broad spectrum of governments within the MSA. By 2022, according to the data, 166 complete streets actions had been taken by governments within the MSA.

The most significant Complete Streets Action was taken on August 15, 2011, when then Governor Andrew Cuomo signed into law Senate Bill S5411A, "An act to amend the highway law, in relation to enabling safe access to public roads for all users by utilizing complete street design principles. [24] [25] According to Vision Long Island, a regional advocate of smart-growth principles, in a then-published newsletter,

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[20] https://smartgrowthamerica.org/what-are-complete-streets/
[21] https://smartgrowthamerica.org/resources/elements-complete-streets-policy/
[22] https://www.worldatlas.com/amp/articles/largest-cities-in-the-world-by-land-area.html
[23] https://www.dec.ny.gov/docs/administration_pdf/ghgsumrpt22.pdf
[24] https://www.nysenate.gov/legislation/bills/2011/S5411
[25] https://legislation.nysenate.gov/pdf/bills/2011/S5411A

> *"The New York State bill amends the state highway law and applies to the planning, design, construction, reconstruction and rehabilitation of roadways that receive federal or state funding, mandating that Complete Street design guidelines are at least considered. Design features include sidewalks, bicycle lanes, lane striping, share the road signage, crosswalks, bus pull outs, curb cuts, traffic calming and more. To date, over 15 municipalities in New York State have passed local Complete Streets laws, including five towns on Long Island ...These policies only apply to local roads, which necessitated a broader state policy as many of the most dangerous roads are state roadways.*[26]

This case study demonstrates two important aspects of bottom-up climate policy action. First, it demonstrates the utility of introducing new policy concepts at a local level, where they can be tested, iterated, and showcased, before moving upward to larger forms of government. Even though adoption at the State level happened relatively early in the diffusion process, the concept was still established first at the city and municipal level – giving people a chance to become familiar with it.

Second, it highlights the unique roles played by various forms of government. NYS Senate Bill S5411A applies only to those projects receiving State or federal funding. Local action not only paved the way for passage of this bill but filled the gap everywhere that bill did not apply. According to a 2013 publication of the NYS Department of Health, Support the Prevention Agenda by Promoting Complete Streets, "New York State has a Complete Streets law, but a recent study shows that local policies are important to ensure adequate implementation across all New York roads."[27]

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[26] https://www.cnu.org/publicsquare/nys-complete-streets-bill-passes-unanimously

[27] https://www.health.ny.gov/prevention/prevention_agenda/2013-2017/plan/chronic_diseases/ebi/docs/complete_streets_fact_sheet.pdf

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Figure: Complete Streets Actions Taken Within the NY-NJ-PA MSA (uses data obtained from Smart Growth America)
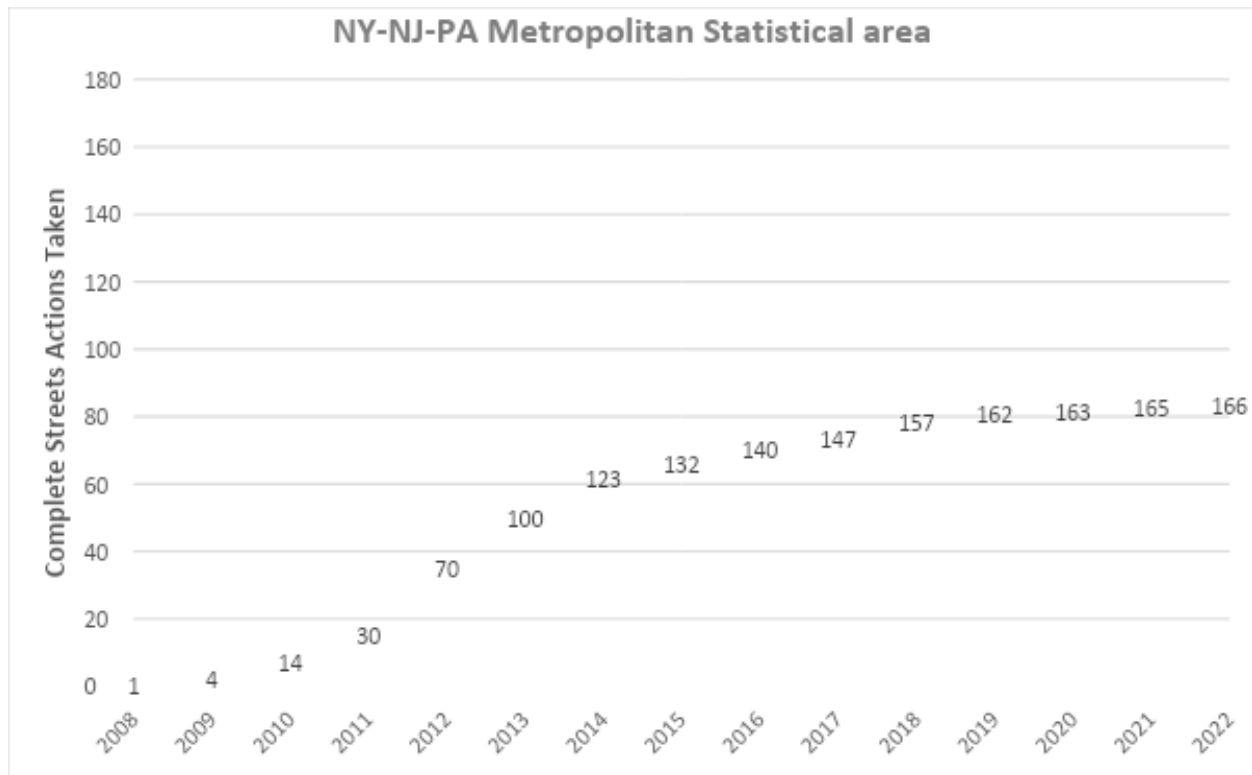


## What's Next?

The diffusion of Complete Streets policies through the case study area is a step in the right direction. But street design is only one variable influencing transport emissions in urban areas. The flip side of that coin is everything on the other side of the street curb – which we'll refer to broadly as Land Use. Land Use, for our purposes, includes both the density and use of the built environment.

We can create the best designed streets in the world, but if the Land Use does not create an environment where people want to be, then we're missing the point. Researchers have found that the extent to which people choose to use streets as pedestrians (as opposed to using them as vehicle drivers) is significantly affected by street network configuration, street design and the

surrounding land uses, especially the presence of ground floor non-residential uses.[28] Clear links have been observed between land use, density and travel behavior.[29] [30] There is a growing need for changes to the built environment that can facilitate behavioral change. Infrastructure changes that facilitate transit behavior, for example, choosing to walk, ride, or take public transit rather than driving, are becoming increasingly important.[31] [32]

But Land Use is not constant – it varies significantly from place to place, particularly as one moves toward the exurban parts of metropolitan areas.[33] And, remember those hundreds of local governments that exist within a single "urban area?" Every single one of them retains some degree of control over their own land use, through their power to institute zoning laws. Zoning laws, once thought to be purely intended to keep "noxious" uses (like tanneries and slaughterhouses) away from residential houses, have just as frequently been used to prevent those very components that affect transport emissions – things like density and mixed uses. If we are to move from a car culture to more of a multi-modal culture, then there is an urgent need to rewrite zoning laws across the country. But who will do this? Who *can* do this? Generally, no one but local elected officials.

It's a daunting problem. But, applying the concept of Policy Mobility, it becomes a bit more digestible. Choosing a few key governments to serve as leverage points – governments that are amenable to change, or perhaps even desired change anyway – the ripples of policy mobility can start to flow. Over time, these policies can be iterated and improved as they trickle upward and outward across metropolitan regions – similar to the case of Complete Streets.

At the very least, attempting such action could decrease a municipality's own contribution to GHG emissions. But if that policy is iterated and improved, as it trickles upward

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[28] https://jag.journalagent.com/itujfa/pdfs/ITUJFA_12_3_189_207.pdf).
[29] https://www.mdpi.com/2071-1050/6/9/6467/htm
[30] https://www.tandfonline.com/doi/abs/10.1080/01944360408976383
[31] https://report.ipcc.ch/ar6/wg3/IPCC_AR6_WGIII_Full_Report.pdf
[32] https://furmancenter.org/files/NYUFurmanCenter_RespondingtoChangingHouseholds_2014.pdf
[33] https://www.sciencedirect.com/science/article/abs/pii/S0169204608001990

across an entire urban region, there's a chance that it just might go farther to peer cities around

the world – where it can inspire and inform global efforts to fight climate change.

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Bibliography (in process):