The Impact of Transnational Climate Policy in Vancouver and Hong Kong

by

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Abstract

This thesis evaluates the impact of the C40 Cities Climate Leadership on two of its members, the City of Vancouver and the Hong Kong Special Administrative Region, and suggests ways that policy-sharing between them can be made more effective. Through documentary analysis and semi-structured interviews, the research explores how the influence of the C40 operates in each case and what value they derive from their membership. While these findings only apply to two members, they suggest that C40 has both influence on and value for both cites, variously facilitating technical knowledge sharing, leverage in both global and local political contests, and acting as a source of inspiration to political and technical actors. Possible actions the C40 and its members could take to increase efficacy include: greater connectivity with national governments, trans-boundary regions, and between 'Innovator City' members.

Preface

This thesis is an original intellectual product of the author, George Patrick Richard Benson. The interviews reported in Chapters 3-5 were covered by UBC Ethics Certificate number H15-01429.

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Chapter 1: Introduction

"The challenge the Anthropocene poses is a challenge not just to national security, to food and energy markets, or to our "way of life" — though these challenges are all real, profound, and inescapable. The greatest challenge the Anthropocene poses may be to our sense of what it means to be human."

— Roy Scranton. "Learning to Die in the Anthropocene," *NYT,* 2013

1.1 Introduction

With the failure of national governments to enact a successful global programme on climate change mitigation, many non-state actors have become prominent in taking action. Cities, and networks of cities, have come to form an integral and powerful part of global efforts to mitigate greenhouse gas (GHG) emissions.[1] My work here explores one-such network of cities, the C40 Cities Climate Leadership Group, and two of its members, the City of Vancouver and the Hong Kong Special Administrative Region (SAR). In addition to their membership in the C40, both cities share a history of British colonial urban planning, constraints on land supply and territory, and unique governance arrangements within their respective jurisdictional contexts that make their experiences of climate policy interesting and worth studying. From both their differences and their similarities, I hope that my findings around how C40's influence operate and what value both cases derive from it will be useful to urban climate policy researchers and practitioners. I am focused on understanding what impact the C40 has on climate policy in Vancouver and Hong Kong and to see what opportunities, if any,

[1] Hsu, Angel, Andrew S. Moffat, Amy J. Weinfurter, and Jason D. Schwartz. "Towards a new climate diplomacy." *Nature Climate Change* 5, no. 6 (2015): 501-503.

there might be for both the cities and the network to enhance their coordination and respective capacities.

This research may be significant for two reasons. Firstly, successfully mitigating human GHG emissions sufficiently to prevent further damage to the planet will require all scales and sectors of human society to dramatically alter their conduct. Cities are an important part of that network of actors and entities because of their involvement in the practices and sectors — e.g., waste, parks, water quality, storm-water management, etc. — that are most readily impacted by and help create climate change. Secondly, the C40, represents an important contemporary example of transnationalism in contemporary global governance arrangements. Deeper understanding of the opportunities, pitfalls, and future prospects of these transnational entities can have significant pay-outs for the future of how we run both our cities and how we respond to climate change. The findings from these explorations will ideally serve the case-study cities in improving their collaboration within the network and effectively implementing policies from it, as well as with the future shape and direction of the C40 itself.

1.2 The Context of Cities, Climate Change, and Governance

Following two centuries of gradually increasing human-caused changes in the environment, we have only very recently come to view our planet's changing climate as a problem. Various statistical and computational climate models anticipate a range from another 2 degrees to as much as 6 degrees of additional warming by the end of this

century.[2] For humans, dependent on reliable crop returns, the safety of dikes and various waterworks, and the regulation of the vast technical and organic machines we call human settlements, the accompanying temperature and precipitation changes will wreak immense havoc – and indeed they already are.[3] The intensity of these changes will increase — and may grow exponentially — as the temperature rise increases.[4] After an unknown stress-point, our existing energy- and material-intensive, globally interlinked civilization will cease to function. Naturally, all of us hope to never find what that point is, but, if current (in)action is any indication, we may yet.

The fact that there is any action at all, however, is perhaps remarkable. Our systems of problem-solving, that is to say, our various forms of government, are profoundly ill-suited to deal with a problem that has been (though it is less and less so) as gradual, as dispersed, and as unpredictable as climate change. Since the 1970s, there have been a sequence of different meetings between nation-states on how to address human impacts on the complex of natural systems that create and maintain the earth's climate. The first global meeting on the topic took place in 1972, when the United Nations-sponsored

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[2] Anderson, Kevin, and Alice Bows. "Beyond 'dangerous' climate change: emission scenarios for a new world." *Philosophical Transactions of the Royal Society of London A: Mathematical, Physical and Engineering Sciences* 369, no. 1934 (2011): 20-44.

[3] United States Department of Defence. *National Security Implications of Climate-related Risks and a Changing Climate.* (Washington, D.C.: 2015) Pg., 14 Accessed from: <http://archive.defense.gov/pubs/150724-congressional-report-on-national-implications-of-climate-change.pdf?source=govdelivery>

[4] Hitz, Samuel, and Joel Smith. "Estimating global impacts from climate change." *Global Environmental Change* 14, no. 3 (2004): 201-218.

Ackerly, David D., William K. Cornwell, Stuart B. Weiss, Lorraine E. Flint, and Alan L. Flint. "A Geographic Mosaic of Climate Change Impacts on Terrestrial Vegetation: Which Areas Are Most at Risk?." *PloS* one 10, no. 6 (2015).

Jordan, Andrew, Tim Rayner, Heike Schroeder, Neil Adger, Kevin Anderson, Alice Bows, Corinne Le Quéré et al. "Going beyond two degrees? The risks and opportunities of alternative options." *Climate Policy* 13, no. 6 (2013): 751-769.

Hansen, James, Makiko Sato, Paul Hearty, Reto Ruedy, Maxwell Kelley, Valerie Masson-Delmotte, Gary Russell et al. "Ice melt, sea level rise and superstorms: Evidence from paleoclimate data, climate modeling, and modern observations that 2 C global warming could be dangerous." *Atmospheric Chemistry and Physics* 16, no. 6 (2016): 3761-3812.

'Conference on the Human Environment' met in Stockholm. Since that time, the UN has convened numerous times in different fora to discuss human impacts on the global environment. One of the most meaningful thrusts of this action was the creation of the UN Framework Convention on Climate Change (UNFCCC) at the 1992 'Earth Summit,' and the subsequent meetings of the Conference of Parties (COP) to that agreement. The COP would negotiate the 1997 Kyoto Accord (coming into force in 2002), which set carbon emissions targets for parties based on their existing development and emissions profiles. The Accord has a mixed legacy, with European Union member-states continuing to hold true to their commitments, while many of the other major parties, including Canada, Australia, and Russia, have since abandoned their efforts officially or unofficially.

Parallel to the environmental policy inertia amongst national governments, from the late 1980s onwards there was growing activity in non-state and sub-state spaces.[5] Amidst increasing competition against one another, the 'downloading' of services from higher orders of government, cities still found common cause to cooperate on environmental issues during the 1990s and the harsh socio-economic challenges of neoliberalism.[6] The creation of the International Coalition for Local Environmental Initiatives (now known as 'ICLEI – Local Governments for Sustainability') in 1990 was a

[5] Chiu, Nikita. "Networked Cities' Responses to Global Problems: A Typology," *Journal of Comparative Politics* 4, no. 2 (2011): 111.

[6] Dewing, Michael, and William R Young. *Municipalities, the Constitution, and the Canadian Federal System.* Report to the Political and Social Affairs Division, Government of Canada. (Ottawa, 2006).
Sassen, S. *Cities in a World Economy*, (Thousand Oaks, CA: Pine Forge Press, 2006)
Kresl, P., and E. Fry. *The Urban Response to Internationalization*. (Cheltenham, UK: Edward Elgar, 2005)
Douglass, M. "From global intercity competition to cooperation for liveable cities and economic resilience in Pacific," *Asia: Environment and Urbanization*, Volume 14(1), 2002. Pg., 53–68.
Van der Knaap, G.A. (Bert). "Urban network development under conditions of uncertainty," chapter in *Cities in Globalization: Practices, Policies, and Theories,* Peter J Taylor, Ben Derudder, Pieter Saey, and Frank Witlox, eds. (London; New York: Routledge, 2007), Pg., 84-85

watershed moment.[7] The pioneering work of this organization helped spur and support municipal action on environmental issues throughout the world, though their efficacy has sometimes been questioned. These increasingly varied and complex city-to-city engagements and the growing array of other non-state actors involved in climate action are conceptualized by Harriet Bulkeley and others as 'transnational climate change governance.'[8]

The 'transnational' of transnational climate change governance refers to systems of decision making and control (with varying degrees of effectiveness and intensity) that exist between and around of the borders of nation-states and that do not strictly, or only tangentially, involve nation-states themselves.[9] These systems are "diffused and overlapping" and involve a whole constellation of "instruments, sources of authority, and practices."[10] In short, these are systems of governance that transgress the tradition of Westphalian, state-to-state, or state-to-organization international collaboration. Organizations like ICLEI, C40, 100 Resilient Cities, the Carbon Neutral Cities Alliance (CNCA), and many others, have all risen both to fill in the gaps left state parties in responding to climate change, but also as part of the growth of cities' own responsibilities and ambitions.

Whether they see themselves as acting in pursuit of global climate justice, or as attaining competitive advantage vis-a-vis a stronger sustainability or resilience

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[7] Tjandradewi, Bernadia Irawati, and Peter J. Marcotullio. "City-to-city networks: Asian perspectives on key elements and areas for success." *Habitat International* 33, no. 2 (2009): 165-172.
[8] Andonova, Liliana B., Michele M. Betsill, and Harriet Bulkeley. "Transnational climate governance." *Global environmental politics* 9, no. 2 (2009): 57-58
[9] Djelic, Marie-Laure, and Kerstin Sahlin-Andersson, eds. *Transnational governance: Institutional dynamics of regulation.* Cambridge University Press, 2006. Pg., 2-4
[10] Bulkeley, Harriet, Liliana Andonova, Michele M. Betsill, Daniel Compagnon, Thomas Hale, Matthew J. Hoffmann, Peter Newell, Matthew Paterson, Charles Roger, and Stacy D. VanDeveer. *Transnational climate change governance*. (Cambridge: Cambridge University Press, 2014.) Pg., 45

framework, these city-led networks are of growing importance. The central problem to which these networks attempt to respond is the mismatch of collective and individual gains, in this case, at the scale of geographical institutions. This problem was originally formulated in environmental discourse by Garrett Hardin in 1968 as the "Tragedy of the Commons," where, both metaphorically and literally,

> the rational herdsman concludes that the only sensible course for him to pursue is to add another animal to his herd. And another; and another... But this is the conclusion reached by each and every rational herdsman sharing a commons. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit--in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all.[11]

The earth's atmosphere is another commons that may be exploited (in this case, filled with GHGs), where "our particular concept of private property, which deters us from exhausting the positive resources of the earth, favours pollution."[12] Though we all benefit from a stable climate, rewarding those who actually uphold its integrity is quite obviously something our current system of global environmental management (or lack thereof) is unable to do. Cities face this conundrum both internally, with their citizens, and horizontally, as they compete economically with one another yet also sometimes attempt to converge their environmental policies. Moving forward is difficult, but the alternatives are stark: further global environmental and climatic degradation, and large-scale systemic instability and failure.

There is a lively body of literature on both the broad field of transnational climate change governance, and within the specific area of 'transnational municipal climate

[11] Hardin, G. "The Tragedy of the Commons," *Science*. Vol 12, No 16 (1968) Pg.,1243–1248
[12] Ibid

networks' (TMCNs), which has been deeply influenced by the pioneering research of Harriet Bulkeley, Michelle Betsill, Michele Acuto, and others. Early work within the field was largely first attempting to categorize what exactly these networks were and how they operated.[13] Latter research has become more granular, studying distinctive structure and impacts of different networks.[14] Despite all of this research, Harriet Bulkeley's call to action in 2010 still rings largely true: "We simply do not know what the impact of many of the initiatives that have been undertaken over the past two decades has been or what these achievements might amount to collectively."[15] Combining the high-level policy literature with the intuitions and experiences of individual practitioners will generate a clearer sense of the efficacy of these networks and their possible futures. Because climate change is such an intense, cross-cutting problem, cities clearly have a role to play in its resolution; but what role, and how it, whatever 'it' might be, can be made effective and just is something I hope to help uncover.

[13] Bulkeley, H. & Betsill, M. Rethinking sustainable cities: multilevel governance and the 'urban' politics of climate change. Environmental Politics. 2005;14:42-63.
Stewart, Richard B. "States and cities as actors in global climate regulation: unitary vs. plural architectures." *Ariz. L. Rev*. 50 (2008): 681.
Andonova, Liliana B., Michele M. Betsill, and Harriet Bulkeley. "Transnational climate governance." *Global environmental politic*s 9, no. 2 (2009): 52-73.
[14] Lee, Taedong, and Susan Van de Meene. "Who teaches and who learns? Policy learning through the C40 cities climate network." Policy Sciences 45, no. 3 (2012): 199-220.
Abbott, Kenneth W. "The transnational regime complex for climate change." Environment and Planning C: Government and Policy 30, no. 4 (2012): 571-590.
Trencher, Gregory, Vanesa Castán Broto, Tomoko Takagi, Zoe Sprigings, Yuko Nishida, and Masaru Yarime. "Innovative policy practices to advance building energy efficiency and retrofitting: Approaches, impacts and challenges in ten C40 cities." Environmental Science & Policy 66 (2016): 353-365.
Li, Zhijie, María José Galeano Galván, Wim Ravesteijn, and Zhongying Qi. "Towards low carbon based economic development: Shanghai as a C40 city." Science of The Total Environment 576 (2017): 538-548.
[15] Bulkeley, Harriet. "Cities and the governing of climate change." *Annual Review of Environment and Resources* 35 (2010): Pg., 248

1.3 Research Questions and Methodology

Planning research, by its very nature, is broad and cross-disciplinary. The task I have set for myself here stretches the normal boundaries of what planning research entails. My project aims to contribute to better understanding how policy transmission in global fora takes place, and how these processes, and implementation thereafter by practitioners, might be improved and strengthened in certain cases. The C40, while an exceptionally robust and interesting exemplar of transnational climate change governance, is, at its core, about increasing municipal capacity and impact through the sharing of ideas and alignment of action. In this sense, my work can be situated in a familiar milieu of planning research, even at the same time as it attempts to expand it.

Much of the existing research on this topic has noted the novelty of this kind of action, particularly those undertaken by political scientists interested in the supposed declining influence of the state, but a directly normative viewpoint, particularly from planners, has been somewhat absent.[16] Using the C40 members Vancouver and Hong Kong I will look to uncover that transmission and germination process, and identify key facets of this process. Along these lines, my overarching research goals are:

- Understand, through interviews and primary and secondary document analysis, where the influence of the C40 has been felt in the case-study cities, looking at how that influence was exerted and what outcomes it is believed to have led to;

[16] Chiu, Nikita. "Networked Cities' Responses to Global Problems: A Typology," *Journal of Comparative Politics* 4, no. 2 (2011): 111.
Djelic, Marie-Laure, and Kerstin Sahlin-Andersson, eds. *Transnational governance: Institutional dynamics of regulation*. Cambridge University Press, 2006.

- Identify barriers, gaps, or other challenges amidst this policy-making and sharing process and make recommendations as to how these might be overcome or otherwise mitigated;

Beyond these immediate aims, this research may also help in speculating on the possible future of the C40 and what future role it may play in the future of climate change mitigation policy.

The methodological approach to these questions is, much like the subject matter, broad and varied. Overall, I see my project as an enterprise in critical policy analysis. This is to say that, while my work attempts to reach usable conclusions for policy-makers that will hopefully be utilised to directly create policy, it casts a critical eye on both the values and the epistemic framework within which the project and its subjects operate. Frank Fischer conceptualized and operationalised this in research as "reflexive deliberation," where the values and normative positions are not only laid out at the start of the analysis, but also are fed back into the research iteratively. [17] The ultimate aim of all of this to combine "the empirical data, the normative assumptions that structure our understanding of the world, the interpretive judgements involved in the data collection process, the particular circumstances of a situational context [...] and specific conclusions" in the judgements about which policy directions the researcher believes should be taken. [18] Fischer argues that this kind of approach involves four levels of logic in its undertaking, which range from the concrete technical questions of a policy's efficacy, to whether or not that policy is relevant under a particular context, to how it fits

[17] *Handbook of Critical Policy Studies.* Fischer, Frank, Douglas Torgerson, Anna Durnová, and Michael Orsini, eds. (Northampton, MA, USA: Edward Elgar, 2007). Pg., 57

[18] Fischer, Frank. *Reframing public policy: discursive politics and deliberative practices: discursive politics and deliberative practices*. (OUP Oxford, 2003) Pg., 191

into the structure and process of an existing social system, and, finally, whether or not it meets the broad normative ideals of the researcher(s).[19]

Undertaking this kind of analysis will require a combination of approaches, including the 'classic' policy analysis Fischer identifies, along with document analysis, summarization of scientific material, interviews of practitioners, and political analyses of power-relations and outcomes. To undertake these, I will review a selection of primary documents from the cities and C40, as well as various other pieces of policy and academic literature produced about these entities. I will also perform interviews of actors in each of the cases, where available, varying from city-staff, political figures, academics, and others where relevant. The questions for these interviews are attached in Appendix I. In terms of the case study cities themselves, I will also try to express their urban development (and how that relates to their subsequent sustainability and climate policy efforts) as a crucial aspect of the story. The physical and political landscape of both cities are, particularly in terms of my practice as a planner, crucial characters whose stories must also unfold as part of both cities pathways to joining C40, and their experiences within it.

The overall approach of my project is one of increasing granularity. Moving to establish first a context, then delve into the two case studies, and then highlight particular, meaningful aspects of practice in each – with recommendations on these aspects to follow. At the initial, highest levels, this means addressing the theoretical challenges to the idea and the nature of government that climate change presents. While a meaningful exploration of this is beyond the scope of my work, it is important to frame

[19] *Handbook of Critical Policy Studies.* Fischer *et al.*, eds. (2007). Pg., 59

this challenge in order to express why cities and their transnational networks have emerged as relevant global actors, and what value they may add. Pursuant to this, it is important to state, both in terms of governance systems and technical solutions, that there is no 'silver bullet' to climate change. There is not a single policy-choice or other action that society can undertake to return our individual or collective relationship(s) with our climate to previous profitable, sustainable situation. Humans are stuck in the unenviable position of having profoundly entrenched forms of governmental arrangements and suddenly finding that these arrangements must now change in heretofore unimaginable ways. Further challenging is the fact that we will wish to maintain much of the form and many of the outcomes of our current governments, at the same time as the features of these — e.g., unfettered resource consumption through spatially fragmented management systems — have been the very vehicles that have brought us to our current existential predicament.

Methodologically, this is important in relation to the normative intentions of my project. Any master's thesis which prescribes an overarching, normative solution to the morass of global environmental governance is staking a bold — one might even say megalomaniacal — claim. Yet my project, which aims not only to analyse the efforts of cities to work together on climate change policy but support their efforts by offering ideas for increased efficiency, does implicitly takes an affirmative position on the presence of cities and transnational climate change governance. There are a number of arguments – organizational, ideological, and otherwise -- to be made on whether or not there is a necessary pre-eminence for national governments, or supranational entities, as the legitimate and most efficient means of actually saving and stabilizing the earth's

climate and biosphere. To summarize, let alone respond to, these arguments would require another entire work of even greater length and scope than the one I am undertaking here.

At a very high level, however, I believe that the concerns of those making a state-centric argument hinge on two key issues: reliability and scale. In terms of the former, the question centres on how easily 'captured' are cities or local governments by factions or forces perceived as obstructionist or unjust in their climate policies. Marxist theorists have sometimes held that these units are so small and so easily overpowered that they are inherently subject to capital and cannot break free without a larger forces or allies. On the latter count, the question is whether or not climate change, which involves natural forces that are inherently global in scope, can ever be effectively met by institutions that are inherently local in focus and knowledge, have fewer resources, and can be challenging to coordinate in large numbers. My thesis inherently accepts these clear and inarguable *limitations* to the role of cities and local governments in climate policy. There is an incontrovertible case to be made that national governments and supranational and intergovernmental entities, like the European Union (EU) and United Nations, must be actively engaged in the global response to climate change. Indeed, without them, our climate will very likely change in cataclysmic ways. This being said, however, my thesis also emphatically takes the position that cities and all sub-national governments are crucial, *inherently necessary partners* to national governments in the pursuit of the effective climate policy. It is already clear that cities have already and are likely to continue to act as innovators in the area of climate policy, and that they may yet

do so in other areas of governance, as well. This can and should pay meaningful dividends to other questions of (global) governance now and in the future.

1.4 Where we go from here

From this point onwards, this thesis steadily increases in granularity. I first intend to argue, from a brief history of climate science to the challenges and responses of governments to this threat, why cities have a role to play in the resolution of the climate crisis. In order to achieve this, I will explore the particular circumstances that have arisen to create contemporary forms of urban climate governance, as well as to identify the specific rise of the C40 and Vancouver and Hong Kong's participation in it.

From this contextual positioning, I will spend the two case study chapters exploring the various forces, events, and actors that drove each case study city in its pursuit of sustainability policies and how this relates to their joining of the C40. Within each of these case-study chapters, I will also look at the recent history of activity of both cities and the C40, through a combination of policy and primary document analyses and subject interviews with city-staff. My central aim here will be to explore what influence the C40 has had on the creation and implementation of climate policy in both case study cities and to identify potential gaps or challenges in their collaborations. Beyond this, where possible, I will speculate on what the network and the cities might do to resolve or improve on these challenges. My last chapter will discuss my findings in both cases and offer suggestions to both cities, and to the network as a whole. These will focus on increasing the impact of their policies as responses to climate change, and what future mechanisms, whether financial, operational, or otherwise, may be used to achieve these ends. I will conclude with an exploration of how the initial characterization of the field

and the actors at figures into the larger world of transnational climate change governance, amongst cities and other entities, and the challenges still present in realising a world without catastrophic climate change damage.

Chapter 2: Literature Review and Context

"There was no such thing as the Scientific Revolution, and this is a book about it."
—Steven Shapin. *The Scientific Revolution.* (University of Chicago Press, 1996)

2.1 Introduction

Climate change represents a fundamental, existential threat to human civilisation. The direness of this threat has only grown — and often dramatically — since it was first discovered, and as the scientific consensus around it has grown, so, too, has accompanying cultural and political turmoil.[20] To many of the global policy elite, anxieties about crime, poverty, or other societal problems, have either given way to, or become intermixed with, broader recognition of the direct challenge posed by a warming planet.[21] In 2015, climate change was ranked as the number-one perceived threat in a survey of 40 nations, beating out terrorism, economic instability, and other challenges.[22] Despite these anxieties, governance systems remain largely in a state of flux around climate change. Whether it is a question of carbon pricing, regulatory approaches, or even technological solutions, governments around the world have yet to solidify a complete policy regime on a global level. Indeed, this is true at the national level in many cases, as well. Amidst this failure, considerable activity exists. The actions

[20] Trexler, Adam. *Anthropocene fictions: The novel in a time of climate change*. (University of Virginia Press, 2015.)
Kvaløy, Berit, Henning Finseraas, and Ola Listhaug. "The publics' concern for global warming: A cross-national study of 47 countries." *Journal of Peace Research* 49, no. 1 (2012): 11-22.
McCright, Aaron M., and Riley E. Dunlap. "The politicization of climate change and polarization in the American public's views of global warming, 2001–2010." *The Sociological Quarterly* 52, no. 2 (2011): 155-194.
[21] "Obama: climate change is our greatest threat," *BBC,* August 3, 2015. Accessed from: < http://www.bbc.com/news/world-us-canada-33764762>
[22] Carle, Jill. "Climate change seen as top global threat." *Pew Research Centre* (2015). Accessed from: <http://www.pewglobal.org/files/2015/07/Pew-Research-Center-Global-Threats-Report-FINAL-July-14-2015.pdf>

of cities and other sub-nationals, previously actors with a perceived limited ability to act on climate policy, are now ascendant.

This chapter aims to express some of the fundamental obstacles to governments – in the Foucauldian sense of all those responsible for guiding the 'conduct of conduct' – that climate change raises. I do this firstly through a reminder of some of the science around and impacts of climate change, as well as the conceptual and operational challenges that responses to it pose. From this, I proceed to express the reasons why cities have a meaningful role to play in climate policy, both as a vehicle for moving public demand for action, and as an ideal scalar unit to address many thematic climate change drivers. I then move into an exploration of the history and politics of local governments and cities' actions in the climate policy space, particularly since the Rio 'Earth' conference of 1992. In particular, I highlight some of the initial networks, such as ICLEI – Local Governments for Sustainability (first known as the 'International Coalition for Local Environmental Initiatives'), and their relevance to the emergent field of transnational climate change governance, as outlined by Harriet Bulkeley and others. Coming on the heels of these initiatives and against the backdrop of an increasingly frail-looking Kyoto Protocol, what would become the C40 Cities Climate Leadership Group was born in 2005. Then-Mayor of London, Ken Livingstone's offer to invite twenty mayors to his city to discuss climate change, while then inauspicious, proved a significant occurrence. I explore the creation and subsequent development of C40 from 2005 onwards and how it relates to the broader field of transnational climate change governance. I conclude the chapter with a look at the two selected city case studies,

Hong Kong and Vancouver, and what opportunities and limitations lie in their comparison, and in the field of comparative urban climate change policy in general.

2.2 The Challenge Posed by Climate Change in Conceptual and Practical Terms

Climate change, to refer to the full International Panel on Climate Change (IPCC) definition, refers to:

> a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, *whether due to natural variability or as a result of human activity* [emphasis added].[23]

As the emphasis indicates, this includes both natural- and human- (anthropogenic, to use IPCC vernacular) driven changes in the climate. Different international instruments and organizations, such as the United Nations Framework Convention on Climate Change (UNFCCC), use a human-only definition; this is driven by a desire to encourage reductions of greenhouse gas emissions and thus halt or prevent 'unnatural' changes in climatic variation. To anthropogenic warming there are two key responses: adaptation, which refers to immediate measures to better align populations, assets, or systems to respond to and recover from the changes, positive or negative, that have been caused by climate change. Alternatively, or additionally, one can mitigate climate change (i.e., reduce future impacts) by taking action to reduce the amount of greenhouse gases that arise from anthropogenic sources, and to create or bolster systems that process or store carbon (i.e., sequestration in natural or man-mad carbon sinks).

[23] Intergovernmental Panel on Climate Change. "Synthesis Report," *IPCC Fourth Assessment: Climate Change 2007*. (Geneva: 2007) Pg., 30

Climate science, as a discipline, has its roots in the natural scientists who studied weather patterns and observed geological formations and changes on and around the surface of the planet. These explorations include contributions from all the known scientific traditions of humankind, their thought ranging from trying to explain the potential impact of humans on planetary systems (and vice versa), to how particular long-term shifts in observed weather patterns might be explained.[24] The more formal, constrained study of 'the climate of the planet Earth' is a more recent feature of scientific exploration, shaped by Western explorations in physics and geology, in particular. French physicist Fourier was one of the first to raise the idea abstractly as he considered the heating of planets and solar radiation. He his theorization that "the effects of human industry and all the accidental changes of the Earth's surface *modify the temperature of each climate* [emphasis added]," explored by fellow-travellers like John Tyndall and Svante Arrhenius, was given further theoretical support by Syukuro Manabe and Richard T Wetherald in 1967, and observational support in 1976 by Charles D Kelling *et al.*[25] The findings that arose here and in subsequent findings were startling yet conceptually straight-forward: doubling the amount of C02 in the atmosphere achieved a corresponding 2.3C degree rise in average global temperatures. What's more, paleoclimatological data and other observations soon showed that global C02 levels were increasing. [26]

[24] Dove, Michael R., ed. *The Anthropology of Climate Change: an Historical Reader.* (John Wiley & Sons, 2013). Pg., 2

[25] Fourier, Jean-Baptiste Joseph. *Report on the Temperatures of the Terrestrial Sphere and Interplanetary Space ("M´emoire sur les Temp´eratures du Globe Terrestre et des Espaces Plan´etaires,"* in *M´emoires d l'Acad´emie Royale des Sciences de l'Institute de France VII 570-604, 1827.),* trans R. T. Pierrehumbert (Chicago, 2004).

[26] Manabe, Syukuro, and Richard T Wetherald. "Thermal equilibrium of the atmosphere with a given distribution of relative humidity," *Journal of Atmospheric Sciences*, Vol 24, No. 3 (1967) Pg., 254

Table 1. Impacts of Climate Change on Natural and Human Systems (Source, IPCC, 2014; National Academy of Science, 2011)

Impacts on Natural Systems	Impacts on Human Systems
Increase in average global temperatures	• Shift in locations of current ideal and marginal crop-land • Greater incidences of heat related illnesses • Inefficiencies or destruction of mechanical or other technical systems due to hot weather • Greater incidences and intensity of wildfires
Change in frequency and intensity of precipitation patterns	• Greater likelihood of flooding events in human settlements • Lessened ability to predict extreme weather events • Lessened ability to predict precipitation for water usage planning, particularly for agriculture
Melting of Antarctic and Arctic sea and land ice	• Increases in global average sea level, from as little as 1M by 2100, to as much as 3.5M by 2050 • Forced migration of people living in coastal or low-lying areas • Changes in previously navigable areas due to sea level rise • Alteration or destruction of cropland due to sea-level rise-caused saltwater intrusion
Thawing of permafrost	• Alteration or destruction of migratory hunting patterns in remote communities • Destruction or destabilization of buildings located in permafrost
Desertification	• Forced migration of current human settlements due to a future lack of access to resources or unfavourable temperatures • Destruction or marginalization of cropland • Destruction or marginalization of ecosystem services currently used by human settlements — e.g., water filtration by estuaries or bogs • Potential conflict in water- and food-stressed regions over limited resources
Migration or extinction of terrestrial, fresh-water, and oceanic animals	• Changes to the favourability of areas inhabited by humans due to intrusion of certain harmful animals, plants, or other natural features — e.g., changes in the 'mosquito zone' • Extinction or migration of traditional food sources, particularly for Indigenous peoples
Changes to the PH balance of the ocean	• Elimination of habitat for marine food sources • Destruction of marine ecosystems that provide immediate, non-food benefits for nearby human settlements — e.g., reefs serving as breakwaters

In the 1960s the impacts of this increase were marginal, but today, with carbon in that atmosphere at record highs for human history, it is important here to note humanity's present reality: climate change is not only something that will happen in the future, but is something has already happened, is happening currently, and will continue to do so for the unforeseeable future. Climate change is therefore an *ongoing, active process, harming both humans and natural systems.*[27] This is a crucial point, not just for conceptual clarity but for how we respond to these problems as well. Actions taken to 'prevent' it (read: mitigation of anthropogenic greenhouse gas emissions) are actually acting against future warming and its impacts, since historical emissions are responsible for the changes ongoing in the climate today and their associated impacts.[28]

Even if humanity were to end all anthropogenic greenhouse gas emissions today, warming and other changes would continue. As Zickfield *et al* note:

> [Modelled] restoration of atmospheric CO_2 from RCP to pre-industrial levels over 100–1000 years requires large artificial removal of CO_2 from the atmosphere and does not result in the simultaneous return to pre-industrial climate conditions, as surface air temperature and sea level response exhibit a substantial time lag relative to atmospheric CO_2.[29]

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[27] Hansen, Gerrit, and Dáithí Stone. "Assessing the observed impact of anthropogenic climate change," *Nature Climate Change* (2015).
Kelley, Colin P., Shahrzad Mohtadi, Mark A. Cane, Richard Seager, and Yochanan Kushnir. "Climate change in the Fertile Crescent and implications of the recent Syrian drought." *Proceedings of the National Academy of Sciences* 112, no. 11 (2015): 3241-3246.
Mouginot, J., E. Rignot, B. Scheuchl, I. Fenty, A. Khazendar, M. Morlighem, A. Buzzi, and J. Paden. "Fast retreat of Zachariæ Isstrøm, northeast Greenland." *Science* (2015)

[28] Frölicher, Thomas Lukas, Michael Winton, and Jorge Louis Sarmiento. "Continued global warming after CO2 emissions stoppage." *Nature Climate Change* 4, no. 1 (2014): 40-44.
Hansen, James, Mki Sato, Reto Ruedy, Pushker Kharecha, A. Lacis, R. Miller, L. Nazarenko et al. "Dangerous human-made interference with climate: a GISS modelE study." *Atmospheric chemistry and physics* 7, no. 9 (2007): 2287-2312.

[29] Zickfeld, Kirsten, Michael Eby, Kaitlin Alexander, Andrew J. Weaver, Elisabeth Crespin, Thierry Fichefet, Hugues Goosse et al. "Long-term climate change commitment and reversibility: An EMIC intercomparison," *Journal of Climate* 26, no. 6 (2013): 5782-5809.

Therefore, preventing further dangerous warming (generally agreed to be below 1.5C) is the desired, first-order goal, but this only gets humanity so far. If we do that, and make the staggering investments needed to successfully adapt to climate change, we (potentially) stave off civilizational collapse. But that still leaves the reality of a dramatically altered, and in some cases far less human-friendly, world than the one our species came to dominance in. In order to achieve long-term human civilisational stability, the next task after the stabilization of the global climate at 1.5C, and the subsequent adaptation necessary to withstand those changes, is to look at how to rebuild. Human and ecological systems the world over will have been damaged and in some cases destroyed by even just the lowest amount of warming deemed possible.[30] If we wish to increase our overall civilizational health and stability, this should mean global efforts at rehabilitation and restoration of the climate and of its various impinged systems – i.e., rebuilding carbon sinks, artificial removal of Co_2 from the atmosphere (carbon capture and sequestration, or CCS), and grappling with challenges such as ocean acidification. Indeed, on this last count, action may be impossible.[31] From our present standpoint, then, whether we realise it or not, we're embarking upon a multi-generational project, first to prevent our immediate destruction, and second, to repair as much of the damage as we have done.

One might assume that the existential threat of climate change – one backed by one of the most significant scientific programmes in human history – would ease the decision-making process around preparations and solutions. While there is clearly an

[30] As an example, see: Rawat, J. S., M. Kumar, V. Viswas, V. S. Rawat, and N. Gahlaut. "The Impact of Climate Change on the Shifting of the Vegetation Line in the Indian Himalaya: A Case Study from the Kutiyangti Watershed." In *Globalization and Marginalization in Mountain Regions*, pp. 191-198. Springer International Publishing, 2016.

[31] Kolbert, Elizabeth. *The Sixth Extinction.* (Henry and Holt, 2014)

"uncertainty monster" that pesters the scientific community and creates doubts, political disagreement, and other challenges amongst them, one could be safe in assuming that the public policy apparatus might be less motivated to question the margins and focus on the central threat.[32] Yet as the past twenty years of climate change negotiations have shown, this is not the case. Beyond obfuscators with an obvious short-term interest in the status quo, this is because of the expected and ongoing impacts that science has predicted — a global food crisis, rising sea levels, staggering losses of biodiversity — and the proposed solutions – near or total decarbonization of human society, significant restructuring of all global resource-use, and population control, among the most common. Climate change science, then, creates a governance problem that asks us to rely on the confidence of science and scientists to make decisions with not just multi-generational impacts, but to do so in a dynamic, non-linear system. Furthermore, we must do this in the context where, very likely, the fate of our species rests in the balance.

2.3 Climate Change as a Governance Problem

If we accept the scientific climate around anthropogenic global warming, then climate change demands that leaders and institutions with relatively short decision-horizons make multi-generational planning decisions — complex on an unimaginable scale, even when taken locally — and to do so with unclear expectations of the impact of this work. Collectively, these challenges are what Levin, Webster, Maréchal and Lazarus,

[32] Curry, Judith A., and Peter J. Webster. "Climate science and the uncertainty monster." *Bulletin of the American Meteorological Society* 92, no. 12 (2011): 1667.

and others have categorized as a "super wicked problem."[33] Building on the famous 1976 work of Ritell and Webber around wicked problems, they identify a further four features of a "super" wicked problem wherein: (1) time is running out, (2) those seeking to the end the problem are also causing it; (3) there is no central authority, and (4) policies created discount the future irrationally.[34]

From a systemic level then, it is clear that climate change represents a problem not only of catastrophic societal importance, but one which threatens most of the current operational practices of governments. This is because, and in keeping with feature (2) of a super wicked problem,

> The leading industrialized countries are also oil states. Without the energy they derive from oil their current forms of political and economic life would not exist. Their citizens have developed ways of eating, travelling, housing themselves and consuming other goods and services that require very large amounts of energy from oil and other fossil fuels. These ways of life are not sustainable[...][35]

It is not difficult, and indeed is imperative, to extend this implication of industrial states, to almost all contemporary states, their subsidiaries, subjects, partners, and interlocutors. Indeed, the interlocking whole of the neoliberal system, and all of the

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[33] Levin, K. Cashore, B., Bernstein, S, and Auld, G. "Playing it Forward: Path dependency, progressive incrementalism, and the "super wicked" problem of global climate change," Paper Presented at the International Studies Association Convention, Chicago, IL, USA, February 28th, 2007.
Webster, M. "Incorporating path dependency into decision-analytic methods: an application to global climate-change policy," *Decision Analysis*. 5:2 (2009) Pg., 60-75
Maréchal, K. "Overcoming Inertia: Insights from evolutionary economics into improved energy and climate policies," *Climate Policy,* 10:1 (2010), Pg., 103-119
Lazarus, R.J. "Super wicked problems and climate change: Restraining the present to liberate the future," *Cornell Law Review,* 94: (2009), Pg., 1153-1234

[34] Levin, Kelly, Benjamin Cashore, Steven Bernstein, and Graeme Auld. "Overcoming the tragedy of super wicked problems: constraining our future selves to ameliorate global climate change." *Policy Sciences* 45, no. 2 (2012): 123-152.
Rittel, H.W.J and Webber, M.M. "Dilemmas in a General Theroy of Planning," *Policy Sciences,* 4:2 (1973). Pg., 155-169.

[35] Mitchell, Timothy. "Carbon Democracy," *Economy and Society,* 38:3 (2009). Pg., 399

various forms of government within it, depend on the movement of energy-dense fossil fuels to all its sprawling limbs.

In Foucauldian terms, government is the 'conduct of conduct.' Government is not only a singular institution, but refers to the broad array of activities that may be undertaken by numerous entities or networks, including (nation-)states, municipalities, families, religious bodies, corporations, professional associations, among many others. The concern of government, Foucault argues, is the "welfare of the population, improvement of its condition, the increase of its wealth, longevity, health, et cetera."[36] This includes interventions into the vast expanse of the world, both human and natural:

> "men in their relations, their links, their imbrication with [...] wealth, resources, means of subsistence, the territory with all its specific qualities, climate, irrigation, fertility, et cetera; men in their relation to [...] customs, habits, ways of acting and thinking, et cetera; and lastly, men in their relation to [...] accidents and misfortunes such as famine, epidemics, death, et cetera."[37]

Climate change, with its endless feedback loops and uncertain long term effects, makes more difficult the long-term goals of government, and interrupts both subtly and directly the various instruments of these goals.

This is not to say that governments have lacked credible responses and attempts to capture or control these uncertainties or threats, but it is very clear that, despite the increasing sophistication of these measures — carbon markets, technological innovation, and vast public education campaigns — the underlying stability of these

[36] Foucault, Michel. "Governmentality," in *The Foucault Effect: Studies in Governmentality.* Graham Burchell, Colin Gordon, and Peter Miller, eds. (Chicago: Chicago University Press, 1991). Pg., 87, and 100

[37] Ibid. Pg., 94

mechanisms remains existentially threatened.[38] If proper action is not taken and global temperatures continue to rise, then many, if not all, of these governments will fail.

Confronted with this kind of challenge, all forms of government have had several different types of responses. Some actors, faced with this threat, have attempted simply to ignore or obfuscate on it. Major fossil fuel companies like ExxonMobil and numerous other 'climate deniers' have worked to forestall climate policy on the claimed basis of "uncertainty" or of possible undesirous effects. This was at the same time as much of their internal research showed clear evidence that it would threaten the climatic stability and the long-term existence of their business.[39] There is much that could be said about the politics of obfuscation that many actors have engaged in to prevent GHG mitigation activities, but these actions, while interesting, do not themselves represent a meaningful long-term governmental response to climate change. Even in the most chilling visions of a planetary system run out of control, some mitigative and adaptive actions still have to be taken to stabilize the climate and biosphere.[40]

When conceptualizing current and possible mitigative action on climate change, there are a number of possible responses, broadly separable into three typologies:

i. Technological responses to avoid or reverse climate change drivers or effects.

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[38] Keskitalo, E. Carina H., Sirkku Juhola, and Lisa Westerhoff. "Climate change as governmentality: technologies of government for adaptation in three European countries." *Journal of Environmental Planning and Management* 55, no. 4 (2012): 435-452.
Adelman, Sam. "Tropical forests and climate change: a critique of green governmentality." *International Journal of Law in Context* 11, no. 02 (2015): 195-212.

[39] Gillis, Justin and Clifford Klaus. "Exxonmobil Investigated for Possible Climate Change Lies by New York Attorney General," *New York Times,* November 5th, 2015. Accessed from: <http://www.nytimes.com/2015/11/06/science/exxon-mobil-under-investigation-in-new-york-over-climate-statements.html>

[40] For a particularly stark view of this as a thought exercise, see: Frase, Peter. *Four Futures: Life after Capitalism*. Verso Books, 2016.

ii. Alteration of individual or aggregate behaviours by the state through (a) regulatory changes, or (b) restructuring of financial incentives through pricing mechanisms (e.g., carbon pricing).

iii. Destruction, either wanton or programmatic, of existing power relations and systems which perpetuate practices deemed environmentally (and often socially) destructive.

With varying intensity, these typological responses challenge the current operation of some governments, and the very existence of others. Angela Osele, for example, has considered this with regards to the different approaches and techniques of governments ('governmentalities') that the climate change issue may be framed through. As she says:

> Whether climate change is rendered governable by biopower or by advanced liberal government has important implications for the available policy options. Climate change in a regime of biopower is produced by experts as an issue requiring global management, thereby making government interventions look inevitable. [...] Advanced liberal government, on the other hand, renders climate change governable as an issue of state failure requiring market-based solutions or the creation of markets. [Decisions around climate change become] a matter of cost-benefit analysis. If the costs of destruction caused by climate change exceed the costs of preventing it, taking action is legitimate.[41]

While this framing is especially stark, it lays out an essential point for the typologies that I have laid out: each one has distinctive logics, values, trade-offs, perceived political possibilities, and uncertainties associated with it. As she Osel argues, understanding this may prevent us from representing any one response (or the governmentality that

[41] Oels, Angela. "Rendering climate change governable: From biopower to advanced liberal government?." *Journal of environmental policy & planning* 7, no. 3 (2005): 185-207.

produces it) as inherently necessary or a foregone conclusion. With this in hand and further towards my purposes, we may be able to "identify what constitutes subversive strategies that do not reinforce existing limitations and blind spots."[42]

From the action typologies that I have laid out, naturally some actors are more likely to take on some of these than others. As I will explore more as cities become the central focus of this work, actors with relatively little power in the current system of power relations will be more likely to take on transformative action if it appears to advance their position in both relative and absolute terms. Therefore, insofar as states are caught within a neoliberal and energy intensive international order, cities may be harbingers of a more heterodox system, which may overlap, reform, or directly supplant the existing system. Furthermore, while the unravelling of the climate indeed threatens government existentially, successfully pursuing most of these actions can even deepen the level of control that governments have over their subjects. If one considers ever-deepening surveillance and ever more microscopic variations of bio-politics to be concerning, or at least worthy of public discussion, this possibility must also be considered.

Of each of these typologies, the most popular response has undoubtedly been to seek technological solutions to either combat climate change's future impacts through direct mitigation policies (e.g., investments in renewable energy and energy efficiency incentives), or, to reverse its current trend lines through carbon capture and sequestration (CCS). Less commonly, some advocate for a more aggressive programme of geoengineering, either on the basis of cost-effectiveness when compared against

[42] Oels, Angela. "Rendering climate change governable: From biopower to advanced liberal government?." *Journal of environmental policy & planning* 7, no. 3 (2005): Pg., 207.

traditional mitigation policies, or because of a perceived opportunity to mute perceived inefficiencies or malformations of nature.[43] In its broadest forms, a technological response to climate change provides perceived benefits to multiple political constituencies and, because of its perceived apolitical nature, is the most broadly palatable solution to both the public and the political classes.[44] For most actors, this kind of programme attractive because it is fundamentally unthreatening to the neoliberal economic and political framework that most states and other actors act within. Not only will the climate be 'saved,' but, as part and parcel of this, (either some or all) humans will enjoy longer lives, greater wealth, and many of the paradigms of consumption and extraction remain unchanged. A significant and popular body of literature has arisen around these ideas, wherein a semi-utopian political situation (generally some sort of Nordic-style welfare state with burgeoning eco-industry) emerges after some amorphous technological paradigm shift.[45] Even in the case of geoengineering, whether through dispersal of different aerosols in the atmosphere to alter albedo effect or other, more intensive, measures, the fundamental narrative is by-and-large friendly to how most governments currently operate and indeed either maintains or expands their control over natural systems.

In his lectures at the College de France, Foucault argued that government created a new category upon which it could exercise control: population. Unlike sovereignty,

[43] Crutzen, Paul J. "Albedo enhancement by stratospheric sulfur injections: a contribution to resolve a policy dilemma?." *Climatic change* 77, no. 3 (2006): 211-220. <https://www.heartland.org/sites/default/files/sites/all/modules/custom/heartland_migration/files/pdfs/22381.pdf>

[44] Garman, David, Kerry Emanuel, and Bruce Phillips. "Breaking the Climate Deadlock," *Issues in Science and Technology* 30, no. 4 (2014): 75.

[45] Anderson, Kevin. "The Hidden Agenda: How Veiled Techno-Utopias Shore Up the Paris Agreement," *Kevin Anderson: Comment on Climate Change* (Blog), January 6, 2016. Accessed from: < http://kevinanderson.info/blog/the-hidden-agenda-how-veiled-techno-utopias-shore-up-the-paris-agreement/>

which's only end was to exercise itself, government afterward the eighteenth century increasingly came to oversee and influence subjects, their welfare and behaviour.[46] Subtly performed, these activities reframed political action, enabling easier production of subjects that would perform the tasks desired by the government in question. Influencing individual and collective choices, often from the standpoint of consumption and production, is one of the hallmarks of much of contemporary climate action and at the heart of the second typology.

Most popularly argued for and practiced within the second typology are new pricing signals. Ecological pricing, most commonly for carbon, often runs parallel or overtop of technologically-focused policies, generally manifesting the neoliberal mantra 'user pays' (in this case, its better-liked cousin 'polluter pays'). A measure widely uncontested in theory (at least outside of the United States), disagreements over this measure tend to focus on scope, intensity, and timing, rather than whether or not it should be undertaken. Since 2006, with the British Government's commissioning of the *Stern Review on the Economics of Climate Change,* the momentum behind the idea of carbon pricing has grown considerably. With the December 2015 meeting of the UNFCCC Conference of Parties (COP21), increasing numbers of countries have pledged their willingness to sign onto programmes of carbon pricing. A global price, or prices, on carbon is beginning to emerge as a mid-term possibility. Its effectiveness as a behaviour-influencing technique is widely accepted, though there are still many methodological disagreements over its relative efficiency, necessary scope, and so on. Carbon pricing makes use of almost all of the existing machinery of governments, state

[46] Foucault, Michel. "Governmentality," in *The Foucault Effect: Studies in Governmentality.* Graham Burchell, Colin Gordon, and Peter Miller, eds. (Chicago: Chicago University Press, 1991). Pg., 100

and otherwise. And while these prices are largely state-enforced (though it should be noted many corporations have a 'shadow price' that they utilize for long-term planning purposes), such actions are by-and-large legible to the many other interlocutors.[47] At the very least, they are easily inserted into the professional apparatus of accountants and auditors who communicate between entities. Carbon (or sometimes 'ecological services') as a price-able commodity becomes the governance object. Making it additionally attractive, pricing regimes have a high degree of scalability; a national carbon budget can be accounted, measured, and priced, while also apportioned neatly to subjects, be they political subdivisions, corporations, or individuals.

While Lövbrand and Stripple and others argue that pricing maintains, and in some senses expands, the neoliberal paradigm of governments, the unfolding of this can take numerous forms.[48] The political constituencies and 'arts of government' that emerge within this framework can be widely different. In British Columbia, for example, low-income households have seen their net tax-burden decrease, and Indigenous communities have seen their political power grow immensely vis-a-vis 'social licence,' while in Denmark, carbon pricing now help to support a thriving commercial wind industry, now itself a political constituency wedded to the policy.[49]

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[47] Sustainable Prosperity. *Shadow Carbon Pricing in the Canadian Energy Sector.* Policy Brief. (Ottawa, March, 2016) Accessed from: <http://www.sustainableprosperity.ca/sites/default/files/publications/files/Shadow%20Carbon%20Pricing%20in%20the%20Canadian%20Energy%20Sector.pdf>

[48] Lövbrand, Eva, and Johannes Stripple. "Making climate change governable: Accounting for carbon as sinks, credits and personal budgets." *Critical Policy Studies* 5, no. 2 (2011). Pg., 198
Monbiot, George. "Putting a Price on Nature? We Must Stop this Neoliberal Road to Ruin," *The Guardian*, July 24th, 2014. Accessed from: <http://www.theguardian.com/environment/georgemonbiot/2014/jul/24/price-nature-neoliberal-capital-road-ruin>

[49] *Is British Columbia's Carbon Tax Good for Households?* Noel Melton, ed. (Vancouver: Navius Research, 2013). Pg., 9

Varyingly parallel to and at odds with pricing mechanisms are legal mandates to alter behaviour. These can take the form of state-enforced bans of practices and products, or in different forms of support to encourage a desired activity or activities. Broad policies like a carbon price by their very nature do not have an inherently disruptive effect on the machinery of most governments. Political constituencies change over time, but existing governments and socio-economic paradigms can continue to intermingle on roughly contiguous terms. More directed, focused action towards particular sectors of the economy (e.g., the energy industry), consumer groups (e.g., large home-owners), or practices (e.g., banning of particular chemicals), can have far-reaching impacts and can constrain, reorient, or even destroy old regimes of government. As an example: aggressive renewable energy mandates in some jurisdictions have worried traditional fossil fuel companies and their pricing and capital maintenance models will collapse under continued regulatory and market-based stress.[50] What this means for their 'legacy infrastructure,' such as intra-city natural gas pipelines, if they do indeed fail will be a problem of immense political consequence in the near future.

Related to this, one of the most recognisable instances of this typology is green industrial policy. Green industrial policy can refer to either to the state mandating or incentivizing of more environmentally sustainable practices within an industry, such as natural gas producers halting the release of methane during refining, or to the *creation* of new industries through direct state intervention with funding, procurement choices,

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Sovacool, Benjamin K. "Energy policymaking in Denmark: implications for global energy security and sustainability." *Energy Policy* 61 (2013). Pg., 835

[50] Robinson, Matt. "Energy Battle Heating Up: FortisBC complains as city phases out fossil fuels," *Vancouver Sun*, November 28, 2016. Accessed from: < http://vancouversun.com/news/local-news/energy-battle-heating-up-fortisbc-complains-as-city-phases-out-fossil-fuels>

or bans on undesirous practices or products.[51] A recent example of this kind of action is President Obama's directive through the Environmental Protection Agency (EPA) to close most coal-fired power plants in the United States. The Government of Alberta, for example, simply priced carbon and allow market mechanisms to decide whether the plants were profitable. But because of the expediency of executive action amidst legislators' opposition, President Obama had the EPA directly intervene to effectively mandate the shutting down of many coal-fired plants, creating immense opportunities for nascent solar and wind producers.[52] Both instances of this typology remain contested, particularly insofar as they represent state intrusion into the market, but from the larger perspective of a linkage between the state and corporations (like the current one in the form of fossil fuel and automotive subsidies), the fundamental connection remains largely unchanged. For both states and other governments, this typology represents not only the opportunity to arrange new political coalitions, but enables action against perceived 'problem child' industries either for competitive purposes, or where a broad-based environmental mechanism would not be politically palatable.

All previously mentioned policy typologies generally err on the side of the politically palatable and represent a governmental calculus that is largely preservative, rather than destructive. But insofar as there are a plurality of governments taking action, and insofar as there is not (yet) a singular governmentality of climate change, it

[51] International Institute for Sustainable Development. *Industrial Policy for a Green Economy.* Johannes Schwartzer, ed. (Winnipeg, 2013) Pg., 32, 34

[52] Davenport, Coral, and Harrisaug, Gardiner. "Obama to Unveil Tougher Environmental Plan With His Legacy in Mind," *The New York Times,* August 2nd, 2015.
Government of Alberta. "Carbon Levy and Rebates," from the Alberta Climate Leadership Team. Accessed May 20th, 2016: <http://www.alberta.ca/climate-carbon-pricing.cfm>

remains possible for arts of government to exist that are truly destructive and yet still emerge from a governmental power-centre. Naturally, because of the interrelationship between most state governments and extractive capitalism, this is something largely enacted by non-state actors. Green industrial policy, when it aims to close out a 'sunset industry' completely, can come close to this kind of action, but the relevant distinction for green industrial policy versus a 'destructive' action, comes in the epilogue. A 'sun-set' plan for a no-longer desired industry generally involves some kind of transition for what is to be done instead or afterwards. The type of action that I wish to draw attention to here does not clearly, or at all, speak to this kind of planning. The most common actions of this type are the numerous (and growing) negative responses to resource extraction projects that are occurring primarily from local and indigenous governments. The so-called 'Blockadia' movement, where community and some sub-national leaders, largely throughout the Pacific Northwest, have repeatedly stalled resource extraction and export projects, represents an instructive case study here.[53]

In terms of a legal dismantling of destructive regimes of power, emergent constitutional relations, again largely amongst Indigenous communities, but also some developing countries, such as Bolivia, have created discursive and policy spaces in which environmental degradation is not legally allowed to occur.[54] The central thesis of many

[53] The term 'Blockadia' initially emerged from Naomi Klein's *This Changes Everything: Capitalism vs the Climate* (Simon and Schuster, 2009):
"''Blockadia is not a specific location on a map but rather a roving transnational conflict zone that is cropping up with increasing frequency and intensity wherever extractive projects are attempting to dig and drill, whether for open-pit mines, or gas fracking, or tar sands oil pipelines.'' Pg., 294-295
Bradshaw, Elizabeth A. "Blockadia Rising: Rowdy Greens, Direct Action and the Keystone XL Pipeline." *Critical Criminology* 23, no. 4 (2015): 433-448.
[54]Fenelon, James V. "Indigenous Alternatives to the Crisis in the Global System." *Overcoming Global Inequalities* 34 (2015): 143.

of these kinds of actions, diverse though they may be, appears to be equal parts political and ontological: diverse actors, but particularly Indigenous voices, who have arguably gained the least from capitalism, see the conceptualization and practical form of the current state-market relationship as inherently anti-ecological and anti-human. The inherent, fundamental framing of so many Western, or alternatively, Modern, institutions, they might argue, creates systems of oppression wherein the planet is always seen as a resource to be harvested. In this line of thought, the dualism of nature and humanity, Subject and Object, Person and Other, far from discrete objects, are in fact overlapping positionalities the separation between which must be destroyed, both physically and intellectually. At the broadest level, their argument seems to suggest that building a new world that is sustainable and just requires, as Audre Lord said of defeating the patriarchy, a fundamentally new paradigm and new tools.[55]

These ideas, however, remain largely untested. Many more may yet emerge. Most states and governments, with rare, outlying exceptions, are not going to embark upon this kind of pathway because of how embedded they are within neoliberal politics. Even the farthest reaching national climate leaders, like Denmark, Sweden, and Costa Rica, have all still generally framed their GHG-reduction strategies in neoliberal terms – the idea of so-called 'green growth' or, 'climate capitalism.'[56] Challenging neoliberal conceptions of economic growth, where energy and financial flows continue to increase within our global economic system, remains an outsider's crusade. Few nations yet

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Espinosa, Cristina. "The advocacy of the previously inconceivable: A discourse analysis of the Universal Declaration of the Rights of Mother Earth at Rio+ 20." *The Journal of Environment & Development* 23, no. 4 (2014): 391-416.

[55] Lorde, Audre. "The master's tools will never dismantle the master's house." *Feminist postcolonial theory: A reader* 25 (2003): 27.

[56] Sapinski, Jean Philippe. "Constructing climate capitalism: corporate power and the global climate policy-planning network." *Global Networks* 16, no. 1 (2016): 89-111.

seemingly accept the premise that economies will be structured radically differently in a world where there is a stable climate, rebounding biodiversity, and healing natural systems.

While there are a wide number of opinions on the ideal responses to climate change, at some level, each of these typologies are necessary. Insofar as radical, 'destructive' action is necessitated, in order to achieve the desired 1.5C of warming envisioned in Paris, the closure and 'sun setting' of the fossil fuels industry would seem to be the most obvious locus of action.[57] Scientists such as Kevin Anderson are becoming increasingly bold in their warnings that this kind of transformative, radical action is necessary in order to achieve even the least ambitious climate change goals.[58] The problem here is clearly a political one; scientists may indeed become more involved in struggles for political action, but from the vantage point of 2017, radical state-sponsored action, at least from the largest polluters, looks unlikely. Amidst the shifting balance of these three typologies of action, and regardless of which remain momentarily ascendant, I argue that, *at the very least*, there is a need for increased action from all governmental actors in the first and second typologies, which cities must necessarily be involved in. I argue this for two reasons:

Firstly, the more that these actions are 'stacked' on top of one another, the less our overall emissions will be – even if we do overshoot our intended threshold of

[57] McGlade, Christophe, and Paul Ekins. "The geographical distribution of fossil fuels unused when limiting global warming to 2 [deg] C." *Nature* 517, no. 7533 (2015): 187-190.
[58] Rogelj, Joeri, Michiel Schaeffer, Malte Meinshausen, Reto Knutti, Joseph Alcamo, Keywan Riahi, and William Hare. "Zero emission targets as long-term global goals for climate protection." *Environmental Research Letters* 10, no. 10 (2015): 105007.
Anderson, Kevin, and Alice Bows. "A new paradigm for climate change." *Nature Climate Change* 2, no. 9 (2012): 639-640.

warming.[59] This is the material manifestation of the idea of cities as "global climate governors," as David Gordon has shown C40 and others have tried to install.[60] I remain uncertain as to the ideal *relative* power arrangement between different scales of governments, but I assert here that so long as different government's overlapping efforts do not hamper one another, there are real, material emissions reductions to be gained as cities take individual and collective action.

Indeed, C40's most recent organizational strategy, *Deadline 2020*, says this explicitly. In the document, agreed to in the lead up to COP22 in Marrakech, C40 lays out an aggressive strategy for all cities over with 100,000 people lowering their emissions dramatically to meet the 'emissions gap' between the commitment in Paris to limit to 1.5C and existing climate action plans. Most crucially, they note that "the next 4 years will determine whether or not the world's megacities can deliver their part of the ambition of the Paris Agreement" and that "without action by cities the Paris Agreement cannot realistically be delivered."[61] The commitments of all C40 cities within the agreement run along emissions trajectories with, in striking similarity to Kyoto, common but differentiated responsibilities: wealthy cities 'bend' their emissions early, while poorer cities 'peak' and then decline more slowly. Crucially, and further to the point about stacked mitigation possibilities, they note that around half of the total urban-created emissions reductions can be achieved by cities alone. They will need further collaboration between all levels of government, private actors (such as utilities),

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[59] United Nations. *Advancing Climate Ambition: Cities as Partners in Global Climate Action.* Report by UN Secretary-General from the UN Secretary General's Special Envoy for Cities and Climate Change. (September, 2014)
United Nations Environment Programme (UNEP). *The Emissions Gap Report, 2016.* (UNEP, 2016) Pg., XX
[60] C40. *Deadline 2020: How Cities Will Get the Job Done.* (2016).
[61] Ibid. Pg., 7

and businesses if a 1.5C scenario is to be achievable. [62] This speaks to the fundamental necessity of overlapping and cross-cutting engagement between actors of all scales and sectors.

Secondly, the greater the total number of actions taken around climate change can have the effect of normalizing increasingly radical action. By radical action, again, I mean the actions discussed in my third typology – those which destroy existing systems and power-relations (the total possibilities of which are still unknown). This idea is inspired by the study of social movements, wherein the "radical flank effect" describes the influence of different sub-factions within larger movements. In situations with a "positive radical flank effect," after a break in a movement between moderate and radical forces, the latter's agitations *may* create an imperative for authorities to negotiate with more modest demands.[63] In climate action, this has already shown to have occurred with reference to pipelines, and the normalization of actions like a '100% renewable' energy policy have the possibility to be even more transformative.[64] Relevant to both these areas of action are cities. Their capacity to overlap – and often to directly fill gaps of – action by other scales and types of government is readily apparent and increasingly noted by the global policy making apparatus.[65] In addition, their ability to both incite and embark upon transformative action, such as a commitment to zero- or negative-emissions, is clearly also directing mitigation policy conversations in more

[62] C40. *Deadline 2020*. (2016) Pg., 7
[63] Gupta, Devashree. "Radical flank effects: The effect of radical-moderate splits in regional nationalist movements." In *Conference of Europeanists, March*, (2002). Pg., 7
[64] Hiatt, Shon R., Jake B. Grandy, and Brandon H. Lee. "Organizational responses to public and private politics: An analysis of climate change activists and US oil and gas firms." *Organization Science* 26, no. 6 (2015): 1769-1786.
[65] United Nations Framework Convention on Climate Change. "Cities, Towns, Regions Partner to achieve Paris Goals," *Global Action at COP22*. UNFCC Newsroom at COP22 Publication. (2016) Accessed from: <http://newsroom.unfccc.int/climate-action/cities-towns-regions-partner-to-achieve-paris-goals/>

aggressive directions. From this vantage point, cities have a powerful role to play both in immediate policy implementation terms, but also within the context of larger political and ideational battles, and it is from here that my project progresses.

2.4 Conceptualizing Cities and Climate Change

Fascination with the local seems a particular pastime of the moment. Parallel, and I believe not unrelatedly, to feminist discourses centring personal experiences ("the personal is political"), politics which are 'community-facing' have taken on a broad appeal. These politics have a number of empirical and theoretical justifications, but I fear that as a popular discourse this has sometimes become an unthinking reflex — a counter-current to globalization made affective, rather than analytical. It is my hope that I have articulated a justification for local government having a crucial role to play in climate change governance (and whatever governments that emerge afterwards). To restate: each policy typology for climate change, and each governmental actor that initiates that response, has a complex of logics, potential positive and negative impacts, and values laden within it. No matter which typology is pursued, I believe cities have a role to play. My project here focuses on cities as a distinctive form of local government, in contrast to regional governments and other semi- or sub-urban actors (e.g., local improvement districts), which I believe also have a meaningful to play in the effective tackling of climate change. In terms of the typologies of action laid out already, cities are clearly capable of each — from the palatably techno-centric, to the outright destructive. With few exceptions, most cities have opted to adopt mostly technical and policy solutions that at least appear aesthetically apolitical, certainly according to Michele

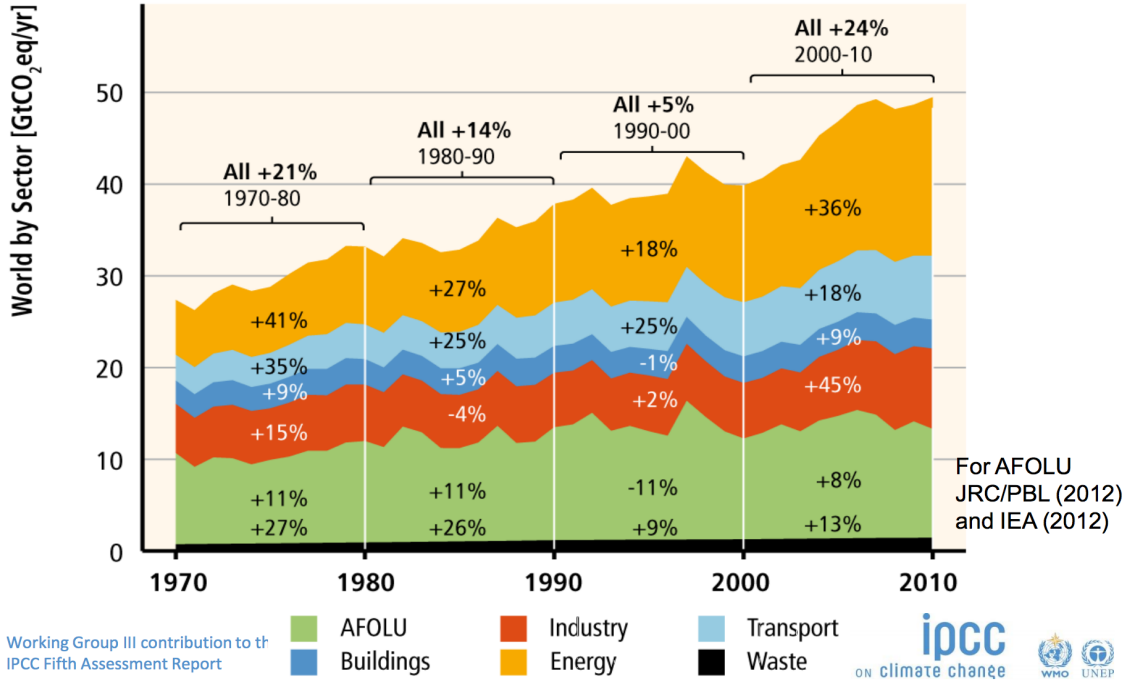
Acuto.[66] But the 'Blockadia' example, particularly relevant for Vancouver and the City of Burnaby, which have taken an increasingly vocal role in arguing against intense resource extraction, shows that cities are capable of attacking existing systems of power relations directly. As climate politics become more fraught with the likelihood of greater physical and financial disruptions in the future, the range of possibilities for urban action is very likely to grow.[67]

Whatever their intentions, it is important to state their trade-offs clearly: cities are a more discrete entity, for which it can be easier for citizens to directly control the levers of power. Their pedigree of progressive action, as David Harvey has long argued, is both long-standing and "stunning" in its success.[68] Once a climate-focused politics has taken hold in an urban entity, it is clear that they also hold powers that are well-suited to combat climate change. Transportation, waste, and buildings, all three of which are all municipal responsibilities (in Canadian, and many other contexts) either directly or indirectly, are three areas of significant emissions (see Figure 1). Efforts made in most of these areas have numerous ancillary impacts in other areas of environmental concern. In terms of the impacts of climate change, as well, cities face many challenges already from ongoing impacts and their closeness to these challenges makes them all the more likely to tackle the problem head-on. Naturally, there are staggering variations in resources, political will, institutional and cultural contexts, and even the threat-level faced by climate change itself, amongst cities. But as an existing actor with a mandate,

[66] Acuto, Michele. "The new climate leaders?." *Review of International Studies,* 39, no. 04 (2013): Pg., 855
[67] The World Economic Forum. *The Global Risks Report 2016: 11th Edition.* (Davos: WEF, 2016). Pg., 6
[68] Harvey, David. *Rebel Cities: from the Right to the City to the Urban Revolution.* (London; New York: Verso, 2012) Pg., 115-116

resources, and pragmatic reasons to care about the challenge, it is clear that cities have distinct and meaningful mitigative possibilities.

Figure 1. Historical trend-line of sectoral impacts on global GHG emissions; cities have either direct control over, or immense say in, buildings, transportation, and waste. (Source, IPCC 2014)



There are very obvious rebuttals to the possibilities of cities that I have laid out above. It is clear, after all, that cities and those who work in cities played a crucial part in the desperate situation the world now finds itself in. Both as a corporate entity, and as the intersection of numerous different power networks — such as the professional standards organizations, or the real estate development industry — cities have in the past (and many continue to) drive environmental degradation and create frameworks within which greater GHG emissions are possible. Harvey Molotch perhaps captured this best with his classic 1976 "The City as a Growth Machine," but empirical research continues to buttress this conceptual discovery to this day. Indeed, this history is reflected in many of the structures that cities are bound within.

Within the British Columbian context, for example, the *Local Government Act* makes it difficult for cities to exist and grow sustainably, since their finance mechanisms encourage continuous, suburban-style development.[69] North American cities are generally indicted most frequently for these kinds of 'growth machine' style policy regimes, but even places like Hong Kong, which is often respected in conservation circles for protecting 40% of its land base, are still highly biased towards land development.[70] These kinds of built-in logics of operation make it difficult, though not impossible for the city machinery to turn away from an unsustainable course. The election of transformative candidates, who wish to tear down old paradigms, can sometimes upset this — as Vancouver saw with the 1979 election of the TEAM slate — or new political or economic coalitions can take shape which themselves prize some new paradigm of sustainable development.[71] For either case, there are plenty of actions that may be taken to trample or destroy these efforts at redirecting away from unsustainable practices. Cities, while a distinct place of political possibility for progressive forces, are also a place where capital and niche political forces (from local strong-men to 'NIMBYs') may also become entrenched. As a result, many local politics are of course distinctly status-quo oriented.

[69] Proft, Joanne. *Smart Growth.* (n.d.) Pg., 41 Accessed from: <http://www.smartgrowth.bc.ca/portals/0/downloads/j1_toolkitpart_ii.pdf>
[70] Tang, Wing-Shing. "Hong Kong under Chinese sovereignty: social development and a land (re) development regime." *Eurasian Geography and Economics* 49, no. 3 (2008). Pg., 351
[71] Cameron, Ken, and Mike Harcourt. *City making in paradise: Nine decisions that saved Vancouver*. (D & M Publishers, 2009). Pg., 52

2.5 The History of Cities and Climate Change

At the onset of serious global policy discussions around climate change with the 1979 World Climate Conference, and came in the wake of the fight against ozone depletion and acid rain, the anticipated role of cities in this work was effectively non-existent. Early action was largely concentrated in North America, where cities in Canada and the United States were influenced by the Vienna Convention for the Protection of the Ozone Layer. The initial connections to the issue were largely individual, with those tied to existing environmental research or initiatives, leading a charge for the involvement of their communities in the earliest forms of climate change work. The Canada- and UN-sponsored "Our Changing Atmosphere: Implications for Global Security" Conference in 1988 was one such moment. Orchestrated Canadian Environment Minister Tom McMillan and UN Ambassador Stephan Lewis, with the attendance of Prime Ministers Brian Mulroney and Gro Harlem Brundtland, the "Toronto conference" acted as a lightning rod for the climate change issue. It was successful insofar as it brought climate change into the minds and mouths of world leaders, and for generating a platform for scientists to organize themselves globally to study the challenge (the final crystallization would occur in 1990 in the form of the International Panel on Climate Change, or IPCC). The final summit document noted with distress "the unintended, uncontrolled, globally pervasive experiment" that climate change represented "whose ultimate consequences could be second only to a global nuclear war." The agreed-upon "Toronto Target" was a 20% reduction of GHGs below 1988 levels by 2005, and there were recommendations on the possibilities of a global

fossil fuels levy to finance an 'atmospheric fund,' among a host of other policy recommendations.[72]

City-leaders were not the drivers of this conversation, but there were more than a few present. There had been an emergent order of local government participation and representation in the international order prior to 1990, heralded by organizations like the International Union of Local Authorities (IULA) and the World Federation for United Towns and Cities (UTO), but none of these had an explicitly environmental focus.[73] The participation in Toronto of some local leaders in Our Changing Atmosphere proved important. After the conference, the City of Toronto made a bold, idealistic commitment to reduce its GHGs by 20% by the year 2000. In addition, Toronto City Councillor Tony O'Donohue was so inspired that he, along with then-Councillors Jack Layton and Dan Leckie spearheaded the creation of the Toronto Atmospheric Fund to help combat ozone depletion and climate change.[74] Vancouver followed in 1989 with the creation of a 'Task Force on Atmospheric Change,' to understand the problem and find local solutions. It released the *Clouds of Change* report in 1990, detailing actions the city could take to fight climate change, acid rain, and ozone depletion.[75] With these actions, Canadian cities became much of the vanguard of action on climate change from the start, many of them being present in 1990 for the founding of the International Coalition

[72] *The Changing Atmosphere: Implications for Global Security.* Conference Statement. June 30th, 1988. Information Unit on Climate Change (IUCC). "The Second World Climate Conference," *UNEP Webpage,* March 1, 1993. Accessed from: <http://unfccc.int/resource/ccsites/senegal/fact/fs221.htm>

[73] Labaye, Adrien. "ICLEI and Global Climate Change: a local governments' organizational attempt to reframe the problem of global environmental change." (Master's Thesis, Université Pierre Mendès France, 2010). Pg., 31-32

[74] Toronto Atmospheric Fund. "About Us," TAF website. Accessed from: <http://taf.ca/about-us/#taf-timeline>

[75] Punter, John. *The Vancouver achievement: Urban planning and design*. (Vancouver: UBC Press, 2010) Pg., 152-154

for Local Environmental Initiatives (later strictly ICLEI) and Toronto acting as its global headquarters for many of its early years.[76]

ICLEI's early formation was symbolically and operationally laden with several streams of both international politics and the political ambitions of numerous governments and individuals. Energized by environmentalists, pacifists, anti-nuclear activists, and many others, both inside and outside of city halls, the ICLEI founding in Geneva at the United Nations had an air of grandiosity about it that suggested new beginnings.[77] Jeb Brugmann, then a noted environmentalist from Irvine, California and ICLEI's first Secretary General, comments that "during the very first months [Cities for Climate Protection] and the Local Agenda 21 were already there"[78] These would be the first two key initiatives out of ICLEI, and its entrance points into global negotiations two years later at the Rio "Earth" Summit in 1992. Here was where, in part through ICLEI's advocacy, cities were identified as a crucial actor in helping achieve sustainable development goals and — in line with the 1976 Vancouver Declaration — as needing mechanisms that would better organize their actions. ICLEI became identified with two of the major initiatives coming out of Rio: Agenda 21, around sustainable development, and climate change, managed after 1992 by the United Nations Framework Convention on Climate Change (UNFCCC).[79] Agenda 21 was unique in that it specifically recognized the role of local governments in achieving sustainable development. And while the

[76] Donoso, Pedro, Francisco Martinez, and Christopher Zegras. "The Kyoto Protocol and sustainable cities: potential use of clean-development mechanism in structuring cities for carbon-efficient transportation."*Transportation research record: Journal of the Transportation Research Board* 1983 (2006): 158-166.
[77] Labaye, Adrien. "ICLEI and Global Climate Change: a local governments' organizational attempt to reframe the problem of global environmental change." (Master's Thesis, Université Pierre Mendès France, 2010). Pg., 40
[78] Ibid
[79] "First Steps to a Safer Future: Introducing the UN Convention Framework on Climate Change," *UNFCC.* (2014). Accessed from: <http://unfccc.int/essential_background/convention/items/6036.php>

UNFCCC had no such explicit call-out, that did not keep it off the action programme of ICLEI. [80] The following year in 1993, ICLEI created its 'Cities for Climate Protection (CCP)' programme, building on its earlier 'Urban C02 Project'.[81]

First to the table and significant in its impact, ICLEI was just the first crest in an initial wave of these kinds of locally-oriented organizations, it was followed soon after by the Climate Alliance of European Cities with Indigenous Rainforest Peoples, and Energie-Cités, both in 1990. Typologically speaking, these were examples, and in some cases remain so, of a 'municipal voluntarism,' where cities and other actors (e.g., NGOs, Indigenous groups, corporations) chose to become involved in an otherwise uncommon policy area or type that others found unbeneficial or risky. In some cases, such as with the Federation of Canadian Municipalities, a partnership enabled the creation of an internal (often national) mechanism to promote climate action. In the FCM's case, this resulted in the creation of the Partners for Climate Protection (PCP) with ICLEI.[82] As a single network, ICLEI has had wide-ranging influence, helping to partner with the creation of internal mechanisms as well as other networks. These actions internal to national organizations, like FCM or the National League of Cities, are not transnational in the traditional sense, but their connectivity to international efforts is often quite pronounced.

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[80] Bulkeley, Harriet. "Down to earth: local government and greenhouse policy in Australia." *Australian Geographer* 31, no. 3 (2000). Pg., 290

[81] Kousky, Carolyn, and Stephen H. Schneider. "Global climate policy: will cities lead the way?." *Climate Policy* 3, no. 4 (2003). Pg., 360

Wheeler, Stephen M. "State and municipal climate change plans: the first generation." *Journal of the American Planning Association* 74, no. 4 (2008): Pg., 483

[82] Chenier, John A. "The evolving role of the Federation of Canadian Municipalities." *Canadian Public Administration* 52, no. 3 (2009): 395-416.

Parallel to these transnational connections, professional practice within cities was also changing. Planning, shaped by disagreements in much of its social and economic operation throughout the twentieth century, was also increasingly embroiled in the struggles over the role of planning and environmental stewardship, brought to the fore with international conversations in HABITAT and elsewhere. The discourse of sustainability in planning had grown noticeably in the 1990s and, at least to some, brought back a sense of purpose and vision for the profession.[83] Increasingly powerful movements within the profession, such as the New Urbanists, focused on neighbourhood design, contextual architecture, and environmental conservation, would weave many sustainability themes into their work, though they were not always clear on its exact nature.[84] But as Simin Davoudi argues, "sustainability" was never a monolithic construct, varyingly carry ideas within it from technocrats, environmental radicals, and business-minded moderates.[85] There were two currents of note: one was around so-called "ecological modernization," where technological progress was believed to lead inherently towards fewer impacts on the environment and even greater economic success. The other, based on a more fundamental assessment of modern, industrial civilization and the contradictions of some of its central tenants: namely, unending and uneven economic growth.[86] Despite significant discursive emphasis on sustainability within planning in the 1990s and 200s, the elasticity of its meanings, and political

[83] Hall, Peter. *Cities of Tomorrow*: *An Intellectual History of Urban Planning and Design Since 1880.* (London, John Wiley and Sons: 2014). Pg., 10
[84] Calthorpe, Peter. *Urbanism in the Age of Climate Change*, (Island Press/Center for Resource Economics, 2011.) Pg., 2
[85] Davoudi, Simin. "Sustainability: a new vision for the British planning system." (2000): Pg., 129
[86] Davoudi,. "Sustainability: a new vision for the British planning system." (2000): Pg., 129

challenges of globalization and neoliberalization, meant that much of its potential radicalism was stripped away when practically applied.[87]

Despite the difficulties and disagreements in its implementation, sustainability discourse has remained a dominant force in urban planning over much of the past two decades. As the nature of climate change has become more apparent and its impacts more pernicious, an explicit focus climate change has developed among planners. Sustainability's discursive power within planning is outsized, but not entirely hegemonic. Particularly as discourses around climate change adaptation have become more prominent, so, too, have ideas around "resilience." Itself a contested, polymorphous term, it has had varied impact on cities, turning them towards 'systems thinking approaches,' and the integration of various prerogatives around resource use, disaster preparedness, infrastructure planning, and societal health. More than anything, it seems emblematic of the various currents of increasingly deep technical knowledge both *around* and *in* cities that professionals and leaders have to contend with – and something that organizations like the C40 will both navigate and contribute to. [88]

[87] Hall, Peter. *Cities of Tomorrow.* (2014). Pg., 465

[88] Davoudi, Simin, Keith Shaw, L. Jamila Haider, Allyson E. Quinlan, Garry D. Peterson, Cathy Wilkinson, Hartmut Fünfgeld, Darryn McEvoy, Libby Porter, and Simin Davoudi. "Resilience: a bridging concept or a dead end?"Reframing" resilience: challenges for planning theory and practice interacting traps: resilience assessment of a pasture management system in Northern Afghanistan urban resilience: what does it mean in planning practice? Resilience as a useful concept for climate change adaptation? The politics of resilience for planning: a cautionary note: edited by Simin Davoudi and Libby Porter." *Planning Theory & Practice* 13, no. 2 (2012): Pg., 308

2.6 The Form of Transnational Climate Change Governance Networks

With specific reference to the global networks, however, these 'transnational municipal networks' showcase some broad similarities in terms of their internal structure. Bulkeley and Kern identified three key characteristics: "member cities are autonomous and free to join or leave;" "such networks are often characterized as a form of self-governance [for cities]," because of their "non-hierarchical, horizontal and polycentric" appearance. Finally, "decisions taken within the network are directly implemented by its members."[89] Many of these organizations have a secretariat that performs much of the day-to-day running of the organization, along with a membership-driven General Assembly or Presidency system, and the members of the organization themselves. Bulkeley and Kern argue that, "joining a TMN is seen to have advantages for cities, ranging from the exchange of experience to access to funding and the development of direct links between the local and the [global level]." Furthermore, "the representatives of the most active cities, which are often founding members of the network, participate in meetings of the General Assembly, contact the secretariat relatively frequently and build the necessary bridges between the relevant local policy networks and the secretariat and/or board."[90]

This observation does beg an especially important question, relevant for all of the networks discussed: why get involved in the first place? Many cities are arguably in the enviable political situation of having almost no statutory obligation to perform climate action (though this is slowly changing), but are still able to critique higher orders of

[89] Kern, Kristine, and Harriet Bulkeley. "Cities, Europeanization and Multi-level Governance: Governing Climate Change through Transnational Municipal Networks*." *JCMS: Journal of Common Market Studies* 47, no. 2 (2009). Pg., 309-310

[90] Ibid Pg., 315-316

government for their intransigence. The reasons why cities specifically have become involved in these fights are extremely wide-ranging. In some cases, as Vancouver and Toronto saw in the 1990s, the personal experiences of civic leaders drove some involvement. For London, action was heavily influenced by the private sector's desire for a new energy purchasing paradigm.[91] In broad terms, however, free riders still form a profound systemic problem for achieving unified action from cities, and also a conceptual challenge in explaining this action in the first place. Krause's 2010 empirical research on the subject argued the reasons were inherently contextual, including "several demographic, economic, and city government characteristics."[92] Zahran *et al*'s earlier work emphasised the presence of civic institutions which heavily engage the public in further motivating a city's action on climate policy from their study of American cities.[93] In terms of systemic conditions, on top of local contexts, the vacancy of federal leadership in North America has clearly motivated many cities to take action — as a way to claim political space, but also to attempt to secure greater resources or power from higher orders of government.[94] In the European Union, in contrast, cities working together and with other actors, has been sometimes understood as an outgrowth of Europeanization.[95] Finally, perhaps most insidiously, is the possibility of neoliberal rationale for such action: cities, either through real or perceived climate

[91] Bulkeley, Harriet, and Heike Schroeder. "Beyond state/non-state divides: global cities and the governing of climate change." *European Journal of International Relations* 18, no. 4 (2012): 743-766.
[92] Krause, Rachel M. "Policy innovation, intergovernmental relations, and the adoption of climate protection initiatives by US cities." *Journal of urban affairs*33, no. 1 (2011): 45-60.
[93] Zahran, Sammy, and Himanshu Groever, Samuel D. Brody, and Arnold Vedlitz. "Risk, Stress and Capacity: Explaining Metropolitan Commitment to Climate Protection," *Urban Affairs Review*, 43, no. 4 (March, 2008): 447-474
[94] Gore, Christopher D. "The limits and opportunities of networks: Municipalities and Canadian climate change policy." *Review of Policy Research* 27, no. 1 (2010): 27-46.
[95] Kern, K. and Harriet Bulkeley. "Cities, Europeanization and multi-level governance: governing climate change through transnational municipal networks." *JCMS: Journal of Common Market Studies,* 47, no. 2 (2009), pp. 309–332.

action, 'resilience building,' and sustainability measures more broadly, may achieve competitive advantage on the global market-place. Certainly for large cities, especially ones like Hong Kong, that are not in a region which is suggestive of the characteristics that drive climate action, this may be a particularly powerful motivation.[96]

Regardless of the reasons that their members are drawn to them, these networks share similar features in terms of how they disseminate policy. Koski characterizes networks such as these as diffusers of policy, acting as knowledge brokers that both create and share expertise, rather than only lobbying some other order of government (though some networks also do this as well). In addition, they are able to create what he calls a 'policy kernel' which has a baseline of intended features and high-level goals, but can be adapted to local circumstances. In this way, they are able to advance policy that is contextual and permeable across jurisdictions.[97] The policies that they promote and the ways in which they perform these actions can be immensely varied. Koski focuses on what he calls 'low salience' policies, which do not have significant attention or political backing, and suggests that knowledge networks can be effectively in promoting both these kinds of policies that might not have a local constituency. Climate policy, however, is inherently contentious, so, many of the actions taken by these networks involve some significant political calculation. Even policies which are likely to arouse little disagreement, like the C40's "Green Growth" programme, involve deeply political

[96] Whitehead, Mark. "Neoliberal urban environmentalism and the adaptive city: Towards a critical urban theory and climate change." *Urban Studies* 50, no. 7 (2013): 1348-1367.
Hodson, Mike, and Simon Marvin. *World cities and climate change: producing urban ecological security*. McGraw-Hill Education (UK), 2010.
[97] Koski, Chris. "Greening America's Skylines: The Diffusion of Low-Salience Policies." *Policy studies journal* 38, no. 1 (2010): 93-117.

considerations.[98] In the post-Paris years, where organizations like C40 and the Carbon Neutral cities Alliance (CNCA) have committed to especially robust mitigation targets, this understanding of salience has to be contextualized within whatever is contemporaneously conceived as variously 'best practices,' 'radical,' 'necessary,' and generally political feasible.

From the initial emergence of these networks in the 1990s the next phase came in the mid-2000s, after the emergence of Kyoto out of the UNFCCC discussions. And while it is easy back-cast the Protocol as a failure, it did further create an international policy architecture to discuss climate change within and to take action through further to the UNFCCC.[99] The 1997 initial agreement created two 'Annexes' of countries, the first of which included all developing and underdeveloped countries, while the second included all industrial, developed states. The Annex B countries were to meet mandatory reductions in their emissions over a defined 'budgetary' period of 1990-2012, either through direct mitigation of emissions, the creation of carbon sinks, or by 'offsetting' their emissions by creating projects in other countries that reduced their emissions. Annex A countries, ranging from emerging industrial states like Mexico, India, and China, to highly vulnerable island nations like Tuvalu, were all to agree to future reductions at the second budgetary period after 2012.[100] Countries in each of the Annexes were granted differentiation in how they pursued climate change reduction, generally through targeted national-level plans, but there was also latitude to pursue

[98] Temenos, Cristina, and Eugene McCann. "The local politics of policy mobility: learning, persuasion, and the production of a municipal sustainability fix."*Environment and Planning A* 44, no. 6 (2012): 1389-1406.
[99] Nordhaus, William D. "Economic Analyses of the Kyoto Protocol: Is there Life After Kyoto?" Chapter in, *Global Warming: Looking Beyond Kyoto*. Ernesto Zedillio, ed. (Brookings Institution Press, 2008) Pg. 91
[100] "A Summary of the Kyoto Protocol," *United Nations Framework Convention on Climate Change* (2014). Accessed from: <http://unfccc.int/kyoto_protocol/background/items/2879.php>

multilateral action through mechanisms created by the Accord. There was International Emissions Trading, where emissions were packaged together as "assigned amount units" and could be sold as credits between countries that had excess capacity and those who needed to account for their growth in emissions.[101] Then there was the Clean Development Mechanism, which "allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol (Annex B Party) to implement an emission-reduction project in developing countries," thus earning 'certified emissions credits' which could be counted against Kyoto targets.[102] Finally, there were also Joint Initiatives, which allowed an Annex B country to make an investment in emissions reduction in another country in the same annex.

These three main mechanisms were interwoven by monitoring and evaluation systems that were built into the agreement. Over time, particularly as the COP continued their subsequent meetings, these would grow more sophisticated. The negotiations that had created the Kyoto Protocol were tense, both morally and operationally fraught, and this trend continued right up to the 2005 ratification of the Protocol by Russia, bringing it into force.[103] Even when the agreement finally became ratified, and despite the action taken by some actors, especially the European Union, during this interregnum, the Kyoto Accord's tangible achievements in emissions

[101] "International Emissions Trading," *United Nations Framework Convention on Climate Change* (2014). Accessed from:<http://unfccc.int/kyoto_protocol/mechanisms/emissions_trading/items/2731.php>
[102] "Clean Development Mechanism," *United Nations Framework Convention on Climate Change* (2014). Accessed from: <http://unfccc.int/kyoto_protocol/mechanisms/clean_development_mechanism/items/2718.php>
[103] Henry, Laura A., and Lisa McIntosh Sundstrom. "Russia and the Kyoto protocol: seeking an alignment of interests and image." *Global Environmental Politics* 7, no. 4 (2007): Pg., 47

reductions by 2005 were highly suspect.[104] The UNFCCC reported in 2015 that the carbon emissions by the Annex B actors had achieved a 22.5% reduction against 1990 levels of emissions, but without the United States as a ratifier and significant growth in Annex A emissions, this still meant at a 40% rise in global GHG emissions.[105]

It is easy to read into the failure of nation states in the early 21st century and say that leaders of C40 and other organizations, such as the US Mayors Compact on Climate Change (also launched in 2005), anticipated them and acted accordingly. But to say so would be overstate the strategic decision of some of the actors involved. Despite the global uneasiness around the political nature of the Protocol, especially after the US withdrawal in 2001, implementation was moving ahead on numerous fronts. Mayors were aiming to help with the stated goals of Kyoto and fulfil their role as agents of sustainable development under Agenda 21, in addition to their increasingly varied and complex position with an ever-more competitive neoliberal global economic and political order.[106] Many leaders were not especially happy with this, and this is clearly reflected in the language of the Mayors' Compact for large American cities, where national leadership was considered a sham at best, and a direct threat at worst. The spiritual birthplace of the C40, the World Cities Climate Summit, held in 2005 in

[104] Klepper, Gernot; Peterson, Sonya. "The European Emissions Trading Regime and the Future of Kyoto," Chapter in *Global Warming: Looking Beyond Kyoto.* Ernesto Zedillo, ed. (Brookings Institution Press, 2008) Pg., 101

[105] An exact number here is difficult to agree on, but it is commonly held to be over 40% see: Environment and Climate Change Canada. *Canadian Environmental Sustainability Indicators: Global Greenhouse Gas Emissions.* (Ottawa: Ministry of Environment and Climate Change, 2016) Pg., 4
US Environmental Protection Agency. "Climate Change Indicators and the United States," *Environmental Protection Agency.* (2015) Accessed from:
<https://www3.epa.gov/climatechange/science/indicators/ghg/global-ghg-emissions.html>

[106] Bulkeley, Harriet, and Peter Newall. *Governing Climate Change*, 2nd Edition. (London: Routledge, 2016). Pg., 70-71

parallel to the G8 meeting in Gleneagles, Scotland, marked an evolution in this kind of strategic thinking.

2.7 C40 Cities Climate Leadership Group

By the mid-2000's, there were significant shifts ongoing in climate politics. While the Kyoto Protocol was ratified in 2005, there were already signs that its reach would be flagging. Other international mechanisms, such as the 'Reducing Emissions from Deforestation and Forest Degradation' (REDD, now REDD+) conference, which was in negotiation after Kyoto's ratification in subsequent COP meetings, were also facing challenges. Particular actors, including those in the corporate and sub-national sectors, were prepared to act in the absence of a coherent global solution to climate change. In terms of municipalities, Bulkeley *et al.* refer to this as a shift from the initial 'municipal voluntarism' found in the 1990s, to something more strategic and focused. Davidson and Gleeson refer to this as "strategic urbanism" characterized "by the linking of climate change responses to an economic issue."[107] This is achieved by the creation of "multilevel government partnerships: blending of public and private authority, and a renewed interest in the ways in which both public and private actors might create new forms of low-carbon cities."[108] This blended authority has two key aspects, firstly, the cementing of an 'audit culture,' through information sharing, accounting, and certification. Secondly, through the creation of "carbon markets." Davidson and Gleeson argue that these markets are not only a further advancement of the neoliberalization of

[107] Davidson, Kathryn, and Brendan Gleeson. "Interrogating Urban Climate Leadership: Toward a Political Ecology of the C40 Network." *Global Environmental Politics* (2015). Pg., 22
[108] Ibid Pg.,25

cities, but parallel to this are also a means through some urban actors may realize their own agendas by amassing greater resources.[109]

The C40 is emblematic of this shift in almost every way: an invitational network, established by key actors of both global political and environmental circles, and aimed at achieving both symbolic and tangible victories that could be leveraged on a global scale. The initial meeting was hosted by Ken Livingstone, the then-Mayor of London, through his staff in the Greater London Authority with support from ICLEI and British non-profit the Climate Group.[110] It was imagined as a parallel summit to the Group of Eight meeting in Gleneagles, with invitations sent to eighteen of the world's largest cities to come and participate. As Michele Acuto argues, Livingston felt that "metropolises were already pioneering best practices in [climate policy] and the drawback was instead to be found in their limitations in exchanging expertise and coordinating efforts. Forming a network established around the indispensable role of large cities as delivery ends of environmental policy seemed the winning strategy."[111] The G8 meeting had been embroiled in controversy before it even started as the expectation (and eventual outcome) of the meeting was that US President George W. Bush would block further climate action, including stalling mechanisms that had been agreed upon in Kyoto.[112] The Mayors intended to counter this.

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[109] Davidson, Kathryn, and Brendan Gleeson. "Interrogating Urban Climate Leadership: Toward a Political Ecology of the C40 Network." *Global Environmental Politics* (2015). Pg., 25

[110] Acuto, Michele. "The new climate leaders?." *Review of International Studies,* 39, no. 04 (2013): Pg., 839

[111] Ibid. Pg. 40

[112] Watts, Susan. "Blair's Climate Change Challenge," *BBC News*, July 4, 2005. Accessed from: <http://news.bbc.co.uk/2/hi/programmes/newsnight/4637615.stm>
Townsend, Mark. "New US Move to Spoil Climate Accord," *The Guardian,* June 19, 2015. Accessed from: < https://www.theguardian.com/science/2005/jun/19/greenpolitics.environment1>

Their meeting produced a communiqué with six key commitments that all of the cities present agreed to work on before meeting again in eighteen months:

i. *"Commit to work together to set ambitious collective and individual, targets for reducing greenhouse gas emissions;"*
ii. *"Commit to ensure that we have highly effective agencies or programs dedicated to accelerating investments in municipal and community greenhouse gas emissions reductions and adaptation;'*
iii. *"Commit to develop, exchange, and implement best practices and strategies on emissions reductions and climate adaptation;"*
iv. *"Commit to develop and share communications strategies that sensitize citizens and stakeholders to climate change issues;"*
v. *"Commit to create sustainable municipal procurement alliances and procurement policies that accelerate the uptake of climate friendly technologies and measurably influence the marketplace, including products containing greenhouse gases such as certain CFCs not covered by the UNFCCC;"*
vi. *"Meet again within 18 months in New York City to measure our progress and report back to the U.N."*[113]

This communique while broad and resonant in its declarations, particularly its arrayment against a perceived fecklessness of national leaders, lacked a practical internal framework for further collaboration.[114] The cities that had gathered were all interested to some extent in climate change policy, yet did not yet have a clear idea of what it would mean for them to get involved at the global scale, and what their goals might be.

[113] *Communiqué from C20: World Cities Climate Change Summit.* (London, 2005). Accessed from: <http://openpolitics.ca/C20+Climate+Change+Summit+Communique,+2005-10-05>
[114] Acuto, Michele. "The new climate leaders?." *Review of International Studies,* 39, no. 04 (2013): Pg., 840-842

David Gordon charts the course of the C40's life from its effective birth in 2005 to 2014 as a process of "convergence" around common norms and beliefs. As late as 2008, the network was riven with internal divisions and a lack of clarity around what its central focus should be.[115] Gordon argues that, with the ascendency of Michael Bloomberg as Chair and then President, the signing of the strategic relationship with the Clinton Climate Initiative, and then the reconfigurations in 2011, the C40 came to normalize around four shared norms:

i. That cities could be "global climate governors,"
ii. That successful climate governance rests on a "liberal environmentalist" impulse to "fus[e] ecological and economic growth imperatives;"
iii. That cities should pursue "active governance" of climate change as autonomous leaders;
iv. That successful climate change governance would have cities "globally accountable," both to each other and external audiences.[116]

The emergence of these norms took time, and amidst the increasing deadlock of global climate negotiations, particularly in 2009 and 2010 at Copenhagen and Cancún, respectively, there was an ongoing disagreement within the C40 as to what the governing norms of the organization would be. This contest was waged both between cities within the network, including amongst those predisposed toward aggressive climate action and those more removed from it, as well as between other actors in C40's "governance field," such as the Clinton Climate Initiative (CCI).[117]

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[115] Gordon, David. *From Global Cities to Global Governors: Power, Politics and the Convergence of Urban Climate Governance* (PhD dissertation, University of Toronto, 2015) Pg., 2
[116] Ibid Pg., 3-4
[117] Ibid Pg., 148-149

After the 2007 New York City meeting, these conversations came increasingly to a head, with significant disagreement between the CCI and the city-led C40 Secretariat and Steering Committee.[118] The CCI had been an implementing partner of the C40 since 2006. Its association with the former President and First Lady provided it with significant "political heft" that it quickly attempted to mobilize. It brought on a range of corporate sponsors, helped lead the creation of partnerships around procurement and energy efficiency.[119] The initial summit in New York City had connections with a number of energy companies, for example, including BP, RWE Group (a European energy company), and EDF Energy (a major British utility), though the participation of these types of companies declined somewhat as time went on as the role of cities as governors unto themselves was asserted more and more forcefully.[120] Overall, the CCI focused on three key avenues of support for their partnership with the C40: technical and analytical assistance, project assistance (e.g., helping gather relevant stakeholders, etc.), and purchasing and financial assistance (e.g., institution-to-business introductory meetings, discounts on bulk purchases, etc.).[121]

Even while disagreements continued over where the organization should be headed and what the exact value proposition of the different members was, what was now the C40 would continue to grow. It went from twenty to forty cities in its first year,

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[118] Gordon. *From Global Cities to Global Governors.* (2015) 149, 151

[119] Lundkvist, Kristen. *The Power of Cities in International Relations*. Simon Curtis, ed. (Routledge, 2014). Pg., 170

[120] "World Cities Leadership Climate Change Summit," *Environment — Mayor of London,* (2005). Accessed from: <http://web.archive.org/web/20070509114949/http://www.london.gov.uk/mayor/environment/climate-summit/documents.jsp >
"Sponsors," *New York Climate Change Summit* (2009). Accessed from: http://web.archive.org/web/20090328162229/http://www.nycclimatesummit.com/sponsors.html

[121] Sovacool, Benjamin K. "Rising to the Challenge of Sustainability: Three Cases of Climate and Energy Governance," Chapter in *Energy, Sustainability and the Environment: Technology, Incentives, Behavior.* Fereidoon P. Sioshansi, ed.(Elsevier, 2011).Pg., 552-554

and embarked upon a range of city-specific actions in its members.[122] Failure in at COP15 in 2009 generated a sense that future progress might be driven by a polycentric, and possibly more grassroots, 'regime complexes;' this was the C40's moment.[123] Up until this point, the C40 had showcased features of what Mikael Román called a "hybrid governance structure," which "combine traditional public institutional structures with market-based arrangements, organizationally and qualitatively governing from the middle."[124] In short, the organization was fairly absorptive of positions it took, and there was not yet a strongly articulated central vision for action. There was a disagreement procedurally, as well, particularly between the CCI's approach, which stressed city-by-city success stories as a means to global legitimation, and the C40 Secretariat's, which was more focused on building the profile of the organization as a whole.[125] Once Bloomberg was elected as the organization's Chair, the Mayor focused on building the capacity of the C40 as a whole institution and strategically invested money from his foundation into the organization to build capacity and increase resources.[126] New York City had increased its own climate change capacities steadily since 2006, when Bloomberg had created the Office of Long-term Planning and Sustainability (OLTPS). The 2007 release of its strategic planning and policy document, *PlaNYC*, which contained several climate change goals and metrics, further signalled New York City as a

[122] Gordon. *From Global Cities to Global Governors.* (2015) Pg., 42
[123] Jordan, Andrew J., Dave Huitema, Mikael Hildén, Harro Van Asselt, Tim J. Rayner, Jonas J. Schoenefeld, Jale Tosun, Johanna Forster, and Elin L. Boasson. "Emergence of polycentric climate governance and its future prospects." *Nature Climate Change* 5, no. 11 (2015): 977-982.
[124]. Román, Mikael. "Governing from the middle: the C40 Cities Leadership Group." *Corporate Governance: The international journal of business in society* 10, no. 1 (2010): 73-84
[125] Gordon. *From Global Cities to Global Governors.* (2015) Pg., 146
[126] Ibid. Pg., 154

climate leader. Bloomberg's focus on actionable goals and a highly data-centric approach bled into the C40's work quickly.[127]

In 2011, the nascent structure of the C40 grew further solidified, as Bloomberg's normative claims around cities as active, global governors gained resonance, and the resources from his Philanthropic organization ($6 million per year in 2011, rising to $10 soon after), gained purchase.[128] The partnership with the Clinton Climate Initiative ended as the New York money and political capital subsumed CCI's influence in the network. More broadly, however, CCI had never gained ascendance because, again according to Gordon, cities inherently rejected it's narrative "that positioned cities as inter-linked webs of experimentation and market-based transformation – as passive objects of coordination rather that partners in coordination."[129] Almost immediately after Bloomberg's rise, new staff were hired (many of them former OLTPS), old CCI positions let go or absorbed into the C40 structure, and a study was commissioned by global engineering and planning firm, ARUP, to understand the capacities of the network and to understand where action could best be taken. At the summit in 2011, new membership categories were formalized, as well as a commitment for all members to report out on their climate change activities.[130] There was also now an expansion of the C40 staff beyond an immediate secretariat, to a larger, global corpus, including those seconded to serve various roles in member cities.[131] Gordon claims that, after this, the permanent secretariat was largely marginalized, as more "formal and permanent organizational positions" (e.g., Executive Director, Directors of Research, Initiatives and

[127] Gordon. *From Global Cities to Global Governors.* (2015) Pg., 157
[128] Ibid Pg., 159
[129] Ibid Pg., 138
[130] Ibid Pg., 162
[131] Ibid Pg., 293

City Support, City Programs, Global Initiatives, Administration, Communications) would come to have increasing power.[132]

Especially relevant to my study is the change in membership structure that began in 2011. Acting as Chair, Bloomberg announced that "the time has come to provide clear definitions around membership requirements, services and benefits to ensure the transparency of our processes," and that there are "appropriate expectations for cities that want to join C40." The announcement laid out three categories of membership: "Megacities," which either currently, or by 2025 were projected to, cross a population threshold of either three million urban, or ten million metropolitan, or have one of the twenty-five largest GDPs in the world. "Innovator Cities" would be cities that did not qualify as megacities, but have "shown clear leadership" and are "internationally recognized for barrier-breaking climate work, a leader in the field of environmental sustainability, and a regionally recognized 'anchor city for the relevant metropolitan area." Finally, "Observer Cities," were recognised as a "short-term category for new cities applying to join the C40 for the first time." It was decided that "all cities applying for Megacity or Innovator membership will initially be admitted as Observers until they meet C40's year-one participation requirements, for up to one year."[133] The arrangement of these categories was an explicit recognition of the different roles that cities could play within the network, but also provided further clarification as it underscored the driving possibilities of the actions of Megacities as both global governors, and as accountable, self-actuating sites of climate policy.

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[132] Gordon. *From Global Cities to Global Governors.* (2015) Pg., 294

[133] C40. *C40 Announces New Membership Guidelines*. (2012) Accessed from: <http://c40-production-images.s3.amazonaws.com/press_releases/images/25_C40_20Guidelines_20FINAL_2011.14.12.original.pdf?1388095701>

The evolution of the C40 up to 2014 was, as Gordon argues, one of convergence. He is careful to note that that "convergence would not have taken place in the C40 absent the unique and contingent configuration of New York/Bloomberg between 2011 and 2014."[134] His role now as Chair of the Board of Directors of the organization, one he has held since relinquishing his position as C40 Chair, and the intimacy of C40's connection with Bloomberg Philanthropies, indicate that he still has considerable influence over the organization. And while they are far from his ideas alone, the role that Bloomberg and New York City played in institutionalizing the four norms that Gordon highlights is clear: the C40's recognition political and culturally as a significant institution is at its highest point since its formation, and many of the members themselves have come to imbue these four norms in much of their practice.[135]

The most crystalized example of the C40's increased discipline, capacity and focus is the 2016 release of its report, *Deadline 2020: How Cities Will get the Job Done*. Written in collaboration with ARUP, the report synthesizes a significant body of research regarding the activities of each of the member cities, building on the three preceding *Climate Action in Megacities* reports created since 2014, and details a clear pathway to meeting the "emissions gap" between commitments in the 2015 Paris Agreement and the reductions necessary to limit warming to 1.5C. As already noted, the document bears a striking resemblance to Kyoto Protocol's agreement around "common but differentiated responsibilities," where wealthy cities will (in theory) work harder and faster to reduce their emissions than less wealthy, developing-country cities. This

[134] Gordon, David. *From Global Cities to Global Governors: Power, Politics and the Convergence of Urban Climate Governance* (PhD dissertation, University of Toronto, 2015) Pg., 185

[135] Two recent editorials: Doyle, Alister. "In Race to Curb Climate Change, Cities Outpace Governments," *Reuters,* March 14, 2017.
Biggers, Jeff. "Cities Must Lead on Climate," *New York Times,* November 30, 2016

doctrine, long criticized, and frequently pronounced ineffective, seems alive and well in the planning of these cities. Commentary will have to wait until 2020 to see if it is successfully executed.

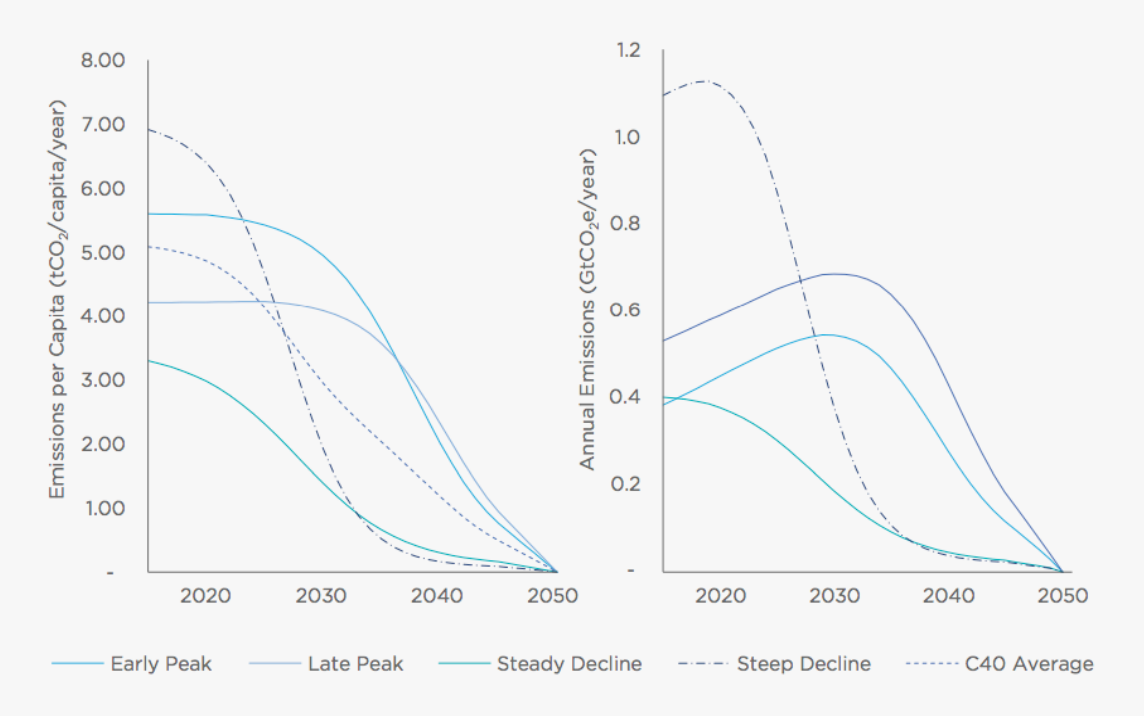

Figure 2.. Projected average emissions per capita (left) and total annual emissions (right) for different emissions reductions typologies under the 1.5 degree scenario. (C40, 2015)

As Harriet Bulkeley and her collaborators have argued at length, transnational climate change governance, of which the C40 is certainly an emblematic example, is an emergent locus of power with myriad new intersections of actors and new policy and power arrangements.[136] With its intensity of interactions, depth of resources, and exclusivity, C40 is also clearly unique in global, local, and even transnational governance streams – though not one beyond critique. As Michele Acuto has noted, the

[136] Bulkeley, H., Andonova, L.B., Betsill, M.M., Compagnon, D., Hale, T., Hoffmann, M.J., Newell, P., Paterson, M., Roger, C. and VanDeveer, S.D., 2014. *Transnational climate change governance*. (Cambridge University Press, 2014.) Pg., 178-179

C40's depoliticising tendencies — the rendering of political decisions into globally dispersed, data-centric, technical ones — "diminishes governments' (not just national but also regional and local) privileges to implement and formulate policy autonomously as mandated by their constituencies."[137] Furthermore, he argues that the governmental logic of the C40, and of many other transnational efforts like it, is to "bypass" the current, ineffective climate governance regime, rather than "contest or ameliorate [its] shortcomings."[138] Acuto closes by saying, and with which I deeply agree, that there are broad operational, even transformative, possibilities in this expanded, transnational role for cities, but that "the environmental (if not, more broadly, the international) role of cities should not go unscrutinised."[139]

2.8 Global Cities in a Global Network: Hong Kong and Vancouver

This study uses two case studies to review how the C40 has interacted with its members, and what gaps remain between its stated goals and the reported impacts by those cities. The cities selected – the Hong Kong Special Administrative Region (HK SAR), and the City of Vancouver, Canada – were chosen first and foremost for reasons of access. Due to past research projects in both cities, I had existing familiarity with both cases, in addition to numerous contacts at the City of Vancouver. Secondly, this study was envisioned on the basis of an international comparison between cities with meaningful cultural, political, and economic differences; to my knowledge, no comparisons between Hong Kong and Vancouver's climate policy yet exist, least of all those that take a specific focus on the perspectives of planning practitioners. In a

[137] Acuto, Michele. "The new climate leaders?." *Review of International Studies,* 39, no. 04 (2013): Pg., 855
[138] Ibid Pg.,855
[139] Ibid Pg., 857

general sense, trans-Pacific comparisons of urban climate policy are also especially few – I hope that this work may spark further interest in these comparisons in the future. Furthermore, within the literature of the C40, no comparison has undertaken a comparison of "Innovator" and "Megacity" members of the organization. Both cities joined near the same time, and after the period of organizational expansion under Bloomberg, and so have similar chronological frames of reference within the C40's growth and evolution.

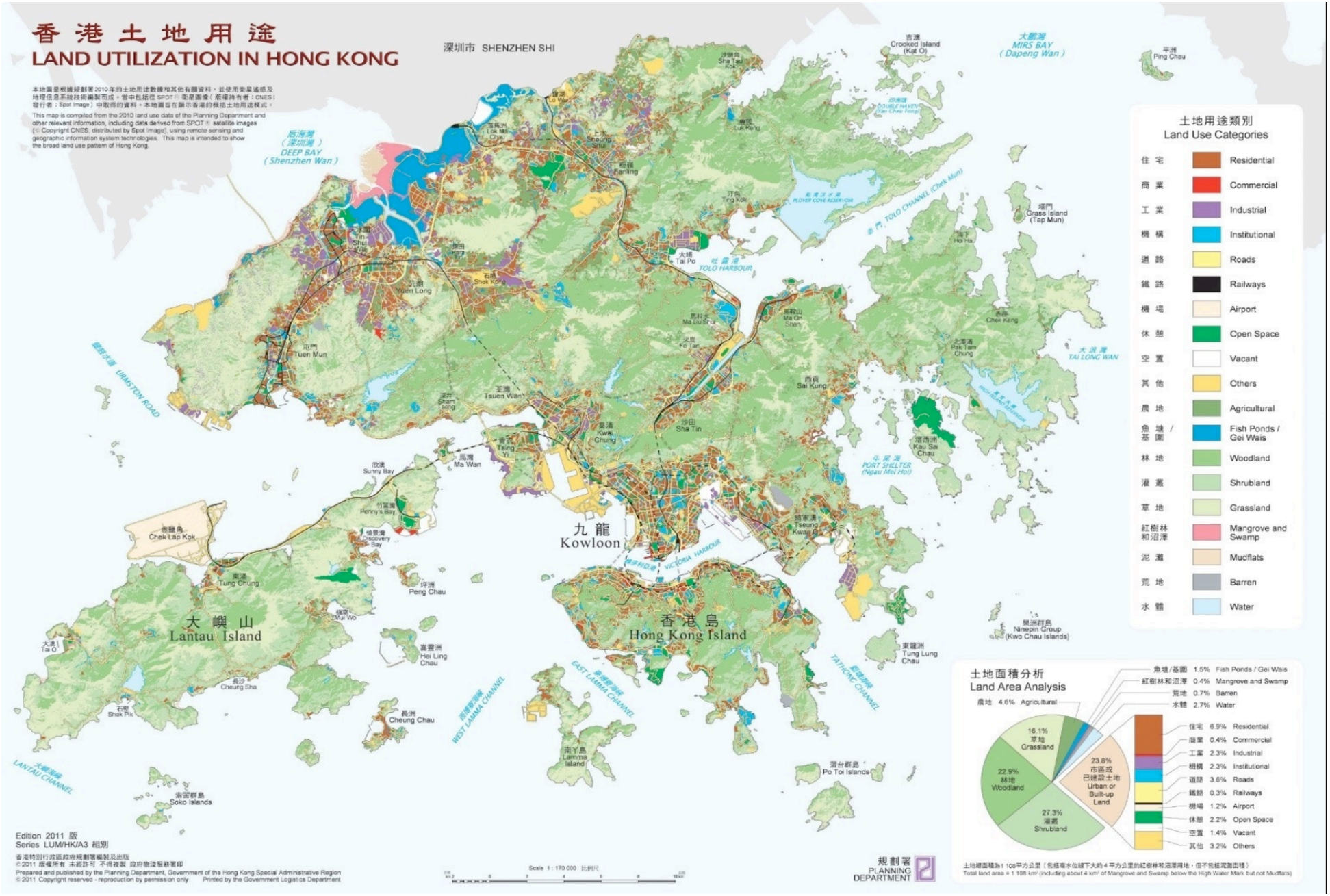

Figure 3. Land utilization in Hong Kong. (Source: Hong Kong Planning Department, 2011)

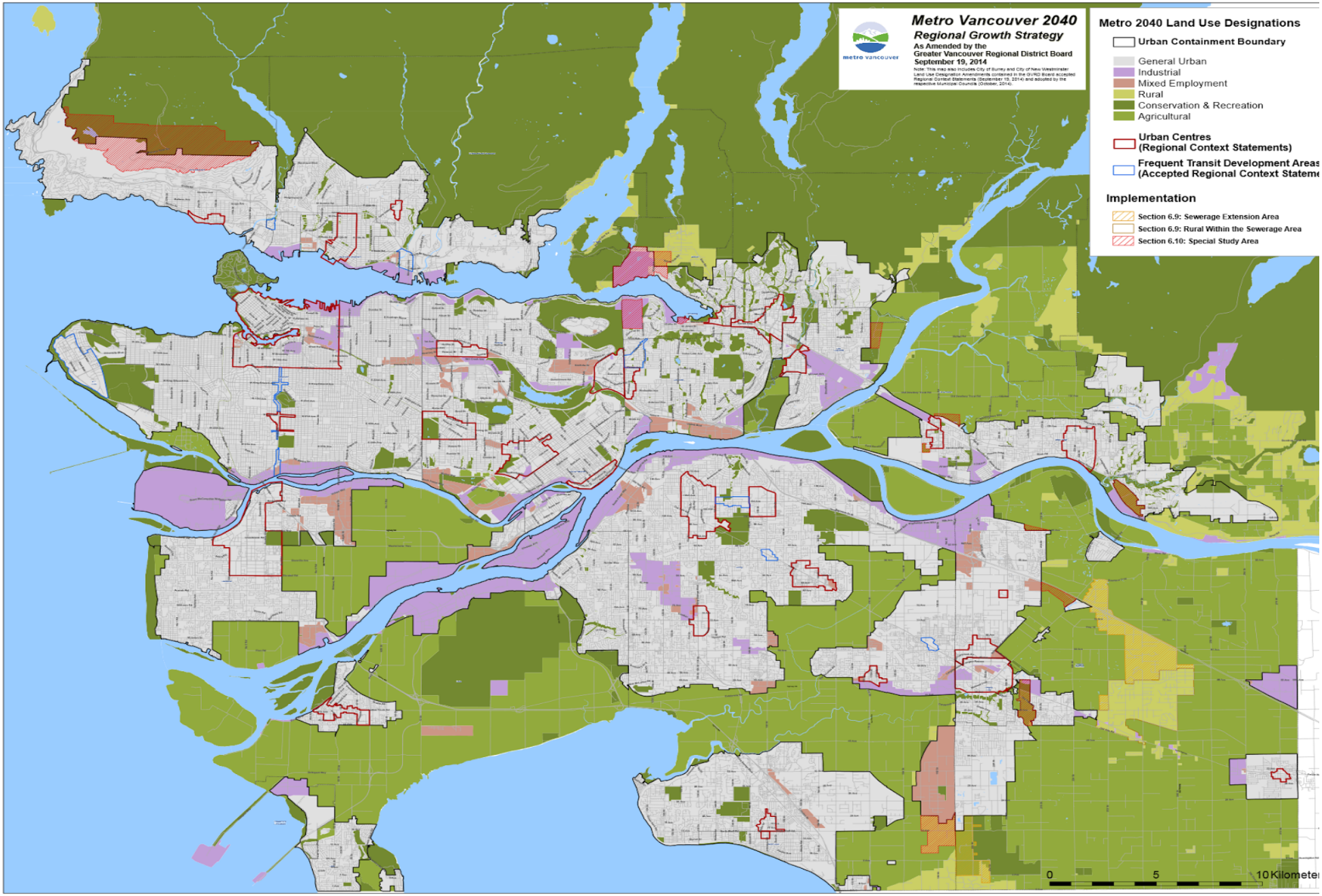

Figure 4. Land utilization in Vancouver and Metro Region. (Source: Metro Vancouver, 2014)

Naturally, these cities belong not only to two different membership classes, but also represent two different scales and classes of cities, as well. Hong Kong is a global metropolis. Its population of seven and a half million people represent not only one of the greatest agglomerations of capital in the world, but an epicentre of global cultural, political, and economic power. Beginning with its meteoric rise to economic success after World War II, and continuing since 1997 handover from the United Kingdom to the People's Republic of China (PRC), Hong Kong has not only continued to grow in global importance, but come to occupy an increasing complex socio-political space. While the Special Administrative Region faces increasing tension with the central government of China over its political freedom, as well changing demographics driven by Mainland Chinese immigration, even in the face of climate change, its future importance remains highly likely. Vancouver, while far smaller than Hong Kong demographically and economically, still manages to command a sizable global presence. Its planning and design influence, particularly after the relative success of the North False Creek developments in the 1990s, is especially sought after and imitated. Economically, the city is currently amidst a significant economic boom, continuing on after the 2010 Olympics and tied heavily to real estate, but also to the quickly growing tech and 'green' sectors. It's competitive reputation is sealed in rankings such as first in North American liveability, fifth in global 'cost of doing business' rankings, among many others.[140]

[140] Vancouver Economic Commission. "Vancouver Ranked as One of the Best Cities in the World to do Business," *Vancouver Economic Commission Blog,* March 30, 2015. Accessed from: <http://www.vancouvereconomic.com/blog/media/vancouver-ranked-as-one-of-the-best-cities-in-the-world-to-do-business/>
AT Kearney. *Global Cities 2016.* (2016) Accessed from: https://www.atkearney.com/documents/10192/8178456/Global+Cities+2016.pdf/8139cd44-c760-4a93-ad7d-11c5d347451a

Naturally, both cities have highly distinct climate policies that align not only with current political priorities, but also which reflect their historical approaches to the environment and policy. Vancouver's early flirtations with climate change in the 1990s were some of the first ever made by a city, led by citizens and political leaders alike. At the same time, however, it has continued to remain a centre of the resource economy in British Columbia, no longer as a centre of processing, but an import- and export-zone, and financier for those same industries. While clearly set along a path of sustainability compared to almost all of its peers, Vancouver continues to consume far more than its fair share of global resources and is, in the global sense, still deeply unsustainable.[141] Hong Kong, in contrast, constrained by a legacy of British colonial planning practices, has long kept much of its land protected and invested in highly efficient transportation infrastructure, even at the same time as other per capita environmental stressors related to prosperity have grown.[142] While the data is difficult to compare, as Vancouver has not had a regular, fine-grained reporting out on its ecological footprint, in 2013, Jennie Moore estimated Vancouver's ecological footprint at 4.21 global hectares (Gha), and the World Wildlife Fund estimated Hong Kong's at 5.4 Gha in 2014.[143] On a climate policy level now, the ambitious of Vancouver are significant: a zero-carbon energy system by 2050, a rise in modal share from 50% walking, biking, and transit to 80%, and significant adaptation planning and investments. Hong Kong has been somewhat more muted with the ways in which it broadcasts its plans, but its 2015 *Climate Change*

[141] Moore, Jennie Lynn. Moore, Jennie Lynn. "Getting serious about sustainability: Exploring the potential for One-Planet Living in Vancouver." (PhD dissertation., University of British Columbia, 2013) Pg., 53
[142] Terri, Mottershead. *Sustainable Development in Hong Kong.* (Hong Kong: HKU Press, 2004). Pg., 90
[143] Moore. "Getting serious about sustainability." (2013) Pg., 121
World Wildlife Foundation. *Hong Kong Ecological Footprint: 2014 Update.* (Hong Kong, 2014). Pg., 3

Report and *Energy Saving Plan* both lay out the goal of a 40% reduction of energy intensity per unit of GDP by 2025.

Comparative urban analysis, particularly in the relatively nascent space of climate policy, is a challenging affair. Researchers must take care not to entrench or recode differences between cities that may exist through systemic disadvantages or legacies of oppression, such as colonization.[144] On a more immediate basis, particularly where recommendations are concerned, comparisons between entities too dissimilar, or action taken without care for local contexts, can wreak havoc on local communities. This is especially true in an age when comparisons between cities are growing precipitously, often in supremely simplified forms such as ordinal rankings.[145] This study operates on the assumption that a faithful comparison is possible, particularly insofar as there is a common variable – the C40 – present in both cases. The aim of this comparison, sensitive to the danger of recoding past unfair comparisons, is to understand the impact of the C40 on each case. Any recommendations that result will of course have to be tailored specifically to the context in each city, or for the C40, as relevant.

The differences between Hong Kong and Vancouver create clear limitations for this study. The economic and demographic size differential, as well as their significantly different political contexts, are important and I have taken care not to overstate the parallels in findings between each case. Despite these limitations, I hope I have articulated the benefits of comparison between them. Firstly, because the geography such a comparison is relatively novel within urban climate policy research. And secondly, because Megacity to Innovator comparisons within the field of C40 research

[144] Robinson, Jennifer. "Cities in a world of cities: the comparative gesture." *International Journal of Urban and Regional Research* 35, no. 1 (2011): Pg., 23

[145] Giffinger, Rudolf, and Haindlmaier Gudrun. "Smart cities ranking: an effective instrument for the positioning of the cities?." *ACE: Architecture, City and Environment* 4, no. 12 (2010): 7-26.

are also relatively rare. For both of these reasons, I hope my work here will be seen as contributing something useful within the cases themselves, the C40 at large, and providing a jumping off point for further academic research.

Chapter 3: City of Vancouver Case Study

"Cities in a sea of green."
— *Chance and Challenge: Official Regional Plan for the Lower Mainland of British Columbia* (1966)

3.1 Introduction

Vancouver is regarded globally, by the C40 and by numerous networks, academics, and policy makers, as a city leading the way in responding to climate change. It has a record of noteworthy achievements, coming in the form of numerous awards, endorsements, and emulations. Recent programmes, such as the 2016 *Renewable City Strategy* and its accompanying goal of 100% renewable energy in the city by 2050, put it amongst some of the most ambitious climate-actors in the world.[146] This international attention rests on not only genuine achievements, but a spectacularly successful branding effort by the City and many actors within it.[147] Comparatively speaking, the city has made significant achievements, but its initial conditions have not placed a great many barriers in its way, either: its limited population, geographical constraints, clean hydro-electric energy supply, and its environmentally-minded citizens have all helped it push for uniquely aggressive policies. Yet the city is still a site of immense consumption and its ecological footprint is accordingly high.[148] The city is clearly at a tremendous inflection point, as the material reality of further action on climate change will likely

[146] Economist Intelligence Unit. *US and Canada green city index: assessing the environmental performance of 27 major US and Canadian Cities,* Study sponsored by Siemens. (Munich, Germany: 2011)
[147] City of Vancouver. "Written Evidence of Egdar Baum, Brand Finance (Canada), Ltd.," *Appendix 82*, report to City Council. (2015). Pg., 5 Accessed from: <http://vancouver.ca/files/cov/Evidence-Edgar-Baum-Vancouver-brand-valuation.pdf>
[148] Moore, Jennie. "Getting Serious about One-Planet Living," (PhD Dissertation, University of British Columbia, 2013). Pg., 52

mean sacrifices, rather than gains.[149] My interview subjects clearly understood the depth of this challenge and it is clear that their grappling with it is a part of a much larger conceptual and political battle within the city to decide what being the 'greenest city on earth' really means.

In this chapter, I will explore the history of sustainability and climate policy in Vancouver in broad terms and relate these to the eventual decision to join the C40. As already noted, Vancouver's place in the world has in some respects made it conducive to tackling climate policy, even at the same time as it retains a large ecological impact in absolute terms. Exploring this background will make it clearer as to how the linking together of Vancouver and the C40 occurred, as well as how and why the relationship functions as it does now. I will relay findings from my interviews that I have conducted with city staff and position them with reference to the activities of the city both at home and abroad. I will conclude, briefly, with some discussion about what these findings suggest both for the city and for how the C40 engages with its members, particularly Innovator cities like Vancouver.

To provide a high level overview of my findings: The City's invitation to the C40 network in 2012 was a significant achievement in the history of Vancouver's environmental and climate policy, highlighting the its longstanding leadership within Canada, and the now growing resonance of their efforts globally. Councillor Andrea Reimer notes that the City was not especially interested in international leadership prior to the invitation in 2012, focused as they were on battles with the national government. It was the inundation of international interest in Vancouver after the announcement of

[149] Scerri, Andy, and Meg Holden. "Ecological modernization or sustainable development? Vancouver's greenest city action plan: The city as 'manager'of ecological restructuring." *Journal of Environmental Policy & Planning* 16, no. 2 (2014): 261-279.

the *Greenest City Action Plan* that first sparked the idea that the City might purposefully leverage its international leadership to *systematically* and *directly* influence how other cities do climate policy.[150] Since that time, both the literature and the responses in my interviews suggest that Vancouver's influence in the network has primarily been outgoing, rather than incoming. Indeed, Councillor Reimer argued that one of the primary motivations for fully participating in the network was "the realization that [Vancouver] could be writing the climate policies of the world's largest cities right in Council chambers."[151] This supports the idea that, particularly as an "Innovator City," Vancouver is trying to leverage its position in the network to achieve its own aspirations, rather than being a 'policy taker,' and in some ways parallels the desire of other cities to gain access to the C40's supply of global political capital.[152] Some interviewees felt that this was a useful achievement for the city insofar as it enabled them to advance positive policies to even larger jurisdictions where they may have an even greater global impact. From this it becomes clear that the meaning of 'impact' for the C40 takes multiple forms, from which various distinct future actions are possible and that I will explore further later on.

3.2 Sustainability and Climate Change Policy in Vancouver

The key features that have helped shape Vancouver's sustainability policy historically, and that have laid the operating framework for it contemporaneously

[150] It is worth noting that Vancouver is no stranger to international attention, with the Vancouver meeting of UN HABITAT in 1972, the World Fair 'Expo 1986,' the World Urban Forum in 2006. At each of these events, there were sporadic and ad-hoc efforts to influence international audiences, particularly in 2006 with the announcement of 'eco density' by Sam Sullivan. But as Reimer attested to, this was the first effort with systematic effort at a direct climate-policy focus.
Reimer, Andrea. Interview by Author. Phone Interview. Vancouver, July 5th, 2016.
[151] Reimer, Andrea. Interview by Author. Phone Interview. Vancouver, July 5th, 2016.
[152] Gordon, David. *Cities as Global Climate Governors.* Pg., 138

include: (1) its aesthetic and cultural signifiers that have helped create a local identity that supports these measures, (2) its history of strong local and regional land use planning; (3) the relatively strong and fortuitous transportation planning and investments that followed, and (4) several major international events that have helped the City focus in attention on particular challenges as well as receive greater federal and provincial funding. The layering of each of these factors on top of another has helped drive the city to the position where it is today.

Vancouver was born and raised as a resource town; some have called what it has become since then an "overgrown company town."[153] Whether gold, timbre, pulp, or fish, its foundation was extraction, and its founders the companies that performed this.[154] The railway, built to transport these goods, enabled incredible land speculation in the area, directly encouraged on by the Canadian Pacific Railway (CPR) and local landowners.[155] The creation of Stanley Park, still the 'crown jewel' of the regional parks system, served as a way to protect their investment, converting the federal military reserve lands into parkland, whilst also creating a crucial symbolic representation of conservation and a nascent imaginary of Vancouver as an environmental beacon. Certainly, this was not what these founders had intended, but such has its regard and signification grown that Stanley Park has achieved almost a state of metonymy with the city itself. The park, along with the city's other numerous environmental and aesthetic assets, have come to frame part of the city's identity, wherein their presence anchors the positionality of the city as a site of sustainability — whilst heavily embedded in the city's

[153] Gutstein, Donald. *Vancouver Ltd*. (James Lorimer & Company, 1975.) Pg., 11
[154] Marchak, Patricia. *Green gold: The forest industry in British Columbia*. UBC Press, 2011. Pg., 2
[155] Kheraj, Sean. *Inventing Stanley Park: An Environmental History*. (Vancouver: UBC Press, 2013.) Pg., 58-59

physical and socio-economic infrastructure, they are still perceived as 'wild.'[156] This lends to the citizens, businesses, and institutions associated with it a brand that they may choose to mobilize, or that may be applied to them by outside actors. It has meant politically, that many leaders of the City, from all political backgrounds, have been able to justify policies — like Sam Sullivan's "EcoDensity" – on this basis regardless of any empirical connection to environmentally positive outcomes. This environmental imaginary supports so much of the city's and citizen's actions in the sustainability space today.

Stanley Park, once surveyed and the Squamish people cleared from their village at *X̱wáýx̱way* (in English, often as 'Whoiwhoi,' or "Masked Dance Performance"), was but a prelude to the demarcation of land that occurred in Vancouver soon after the CPR came into town. Lands were surveyed further and development took off at a breakneck pace in the lead-up and after the arrival of the Pacific end-point of Canada's transcontinental railway. The development of the city continued apace, inspired by the "City Beautiful" movement and the continuing land speculation. Local urbanists, architects, engineers, and planners would continue to advocate for further public works and changes in the city. In 1929, the culmination of these efforts came in the form of Harland Bartholomew's plan for the city..[157] The 'Bartholomew plan' was a comprehensive plan, long-ranging, with an entire city more or less laid out on the greenery and land now left largely vacant after the now near-complete cordoning off of the Musqueam and Tsleil-Waututh on reserves. As Elizabeth MacDonald put it, "the most cherished public realm ideas enshrined in the plan [such as street trees, publically

[156] Kheraj, Sean. *Inventing Stanley Park: An Environmental History*. Pg., 138
[157] Heathcott, Joseph. ""The Whole City Is Our Laboratory": Harland Bartholomew and the Production of Urban Knowledge." *Journal of Planning History* 4, no. 4 (2005): Pg., 327

accessible waterfront, and so on] have become a part of the city's culture." The essential shape and feel of many of the city's neighbourhoods, she argues, originates in the plan.[158] The exacting nature of Bartholomew's vision would inspire future generations of local planners and urbanists to follow its lead and directions for decades to come, even as struggles abounded over what parts of it were most important and who the plan was for.

Battles over what the plan meant and for whom the city it envisioned were for raged in the 1960s; after decades of dominance as the city's major political party, the Non-Partisan Association (NPA), fell from power in 1972 having lost one of these battles. The reasons for this were numerous, but central was the battle over the Strathcona neighbourhood and whether or not a highway would be run through it. The struggle over the neighbourhood, and the entire future of the downtown, was high-stakes: the business establishment saw the highway as a way to rejuvenate the city's economic core and raise city revenues, whilst also 'renovating' (or eradicating, depending on your viewpoint) the local 'slums.'[159] What little remained of Vancouver's only existing black neighbourhood, Hogan's Alley, had already been expropriated and largely destroyed in 1967, and as the attempts of the City to advance the project further came to a header, the process and goals came under increasing public scrutiny and opposition. Local figures like Mary Chan, an activist in the local Chinese community, would lead the charge of Strathcona residents against the project and its racist

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[158] Macdonald, Elizabeth. "The Efficacy of Long-Range Physical Planning The Case of Vancouver." *Journal of Planning History* 7, no. 3 (2008): Pg., 207

[159] Cameron, Ken, and Mike Harcourt. *City making in paradise: Nine decisions that saved Vancouver*. (D & M Publishers, 2009.) Pg., 34-36
Anderson, Kay J. *Vancouver's Chinatown: racial discourse in Canada, 1875-1980*. (McGill-Queen's Press, 1991) Pg., 189

undertones.[160] The outrage over the project and the handling of it by the Mayor and Council, led to the election of a leftist slate, The Electoral Action Movement (TEAM). They cancelled the project and harkened in a new era of community-engaged planning, spearheaded by their new hire as director of planning, Ray Spaxman. The planning team, heavily informed by the work of UBC Geographer and now City Councillor, Walter Hardwick, created an Official Development Plan (ODP), for North False Creek as one of their first acts. The plan was heavily influenced by Jane Jacobs, Ian McHarg's *Design with Nature,* and Kevin A Lynch's *Image of the City*, and featured precursors or current practices in sustainability seen today.[161]

Parallel to many of these local struggles, before and after the battles in Strathcona, there was significant regional activity, as well. The region-wide flood in 1949 created an opportunity for some of the more enterprising planners and thinkers, including UBC Professor Peter Oberlander, to advance a regional vision of planning. The culmination of these ideas, the Lower Mainland Regional Planning Board, never rested on firm ground for the entirety of its existence, but generations of planners, urbanists, and other urban leaders, continue to refer to it as a seminal point of inspiration and direction for the region. Ken Cameron, the most senior surviving team member of the group today, argues that it was this spirit of collaboration that made the Board so successful, and its legacy lasting.[162] Their surveys and research, largely ignored by the public, came to form the basis of an impressive, fine-grained understanding of the region. Parks planning and the creation of central hubs amidst what was still largely

[160] Compton, Wayde. *After Canaan: Essays on Race, Writing, and Region*. (Arsenal Pulp Press, 2010.) Pg., 83-85
[161] Punter, John. *The Vancouver achievement: Urban planning and design*. (UBC Press, 2003.) Pg., 37-39
[162] Cameron, Ken, and Mike Harcourt. *City making in paradise: Nine decisions that saved Vancouver*. (D & M Publishers, 2009.) Pg., 114

farmland were some of their early achievements. The 1966 plan, *Chance and Challenge,* put together after twelve years of research, was a cut above. It envisioned the structure of the region that largely exists today: "cities in a sea of green."[163] The follow up 1972 *Liveable Region Plan* remains more or less the current paradigm of the regional growth management strategy, updated regularly, and strengthened by the 1973 provincial decision to create an agricultural land reserve (ALR). Combined, these two provisions went on to limit some of the sprawl that many other regions would face.

The 1980 decision that Vancouver would host a transportation exposition for the city's centennial would have wide-ranging consequences, layering on top of the existing land-use decisions. The fair would grow into it a World Exhibition, with wide-ranging spending, infrastructure changes, and a political legacy that would extend far into the future. The City notes that there were "significant contributions" to the development of Vancouver made by the event, in False Creek North and Coal Harbour especially. The projects, on top of exhibiting the growing design and planning prowess of the City, also made enabled the city to draw on new development cost level (DCL) legislation and leverage "substantial contributions to public infrastructure and overall liveability of these two areas of the city, including: extensions of the seawall around False Creek; parks; new community centres; childcares; a mix of housing – including social housing sites; school sites; public art; as well as essential public works (engineering) infrastructure related to the developments."[164] In addition to these fine-grained urban improvements, the city and region were also brought into the Province's intention to run the SkyTrain line from downtown out to New Westminster, as well as the downtown

[163] Cameron, Ken, and Mike Harcourt. *City making in paradise: Nine decisions that saved Vancouver*. (D & M Publishers, 2009.) Pg., 321
[164] City of Vancouver. *Community Benefits from Development: Improving Neighbourhoods & Enabling Affordable Housing.* (n.d.) Pg., 5

Canada Place Conference centre.[165] The SkyTrain investment, seen by later-Premier Mike Harcourt to have largely been a scheme for the province to sell the system to other cities, became a strong success, despite its shortcomings in capacity, sound, and station-design. It would be buttressed by the somewhat maligned "Millennium" line in 2001, and by a new regional organization for transportation investments and management, the Greater Vancouver Transportation Authority, which would become TransLink. It was not a perfect vehicle for regional ambitions, but the structure of regional and provincial partnerships proved mostly effective until subsequent Liberal governments after Gordon Campbell's disavowed collaboration and progressive transportation investments.

Campbell, who had also been Mayor of Vancouver from 1986-1993, not only introduced the province's carbon tax and a number of other climate change mitigation policies, but also was present during the City's first forays into the climate space. In 1990, the City of Vancouver had adopted a report, *Clouds of Change,* from the Task Force on Atmospheric Change. The report contained an explanation of the causes of global and local climate changes, and the role that the City could play in protecting the public, as well as a detailed framework for action, including thirty-five overarching recommendations. These recommendations and their numerous individual sub-actions involved land-use and transportation planning, energy conservation, as well as a call to action to lobby federal and provincial governments to make broader, systemic changes.[166] As Jennie Moore noted in 1994, these changes were not forthcoming from

[165] Cameron, Harcourt. *City Making in Paradise.* (2009). Pg., 107-108
[166] Moore, Jennie. "What's Stopping Sustainability? Examining the barriers to implementing Clouds of Change," (Master's Thesis, University of British Columbia, 1994). Pg., 4-6
Munro, Margaret. "Clouds of Change Plans Disappear into Thin Air," *Vancouver Sun,* November 30th, 1993

the Provincial government, which refused to implement the proposed regional carbon tax, and while *Clouds of Change* had been unanimously adopted by Council, she and others judged it largely a rhetorical project, rather than something that had been fulsomely implemented. One of the few actions that had been undertaken was the creation of a landfill gas collection system, completed in 1991.[167] Moore's 1994 exploration found that "Council and civic staff, perceived the three biggest barriers to [implementing *Clouds of Change*] to be: limitation of jurisdiction, competing issues, and inadequate funds." These factors further highlighted the lack of citizen understanding of these issues, and of climate change in general, and that these things were all collectively blocking movement on the climate change issue.[168]

Further action on climate change would be included, again largely rhetorically, in the city's ongoing planning efforts in the 1990s, including the new Central Area Plan overseen by Larry Beasley, and the *CityPlan* process, overseen by the city's Co-Directors of planning, Larry Beasley and Ann McAfee, respectively.[169] These efforts increased some commitments to sustainability, particularly in terms of transportation and land-use planning, but in terms of the overall highly consumptive lifestyles and patterns of economic development, as Moore focuses on, they did not upend or threaten these paradigms.[170] The City's rhetorical commitment on climate change in the later 1990s was significantly deepened with outside activism by actors such as the EcoCity Network,

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[167] Van Vliet, K. *The Kyoto Protocol - Implications to the City of Vancouver and Participation in "Partners for Climate Protection".* Report from General Manager of Engineering Services, in Consultation with the Manager of Corporate Services, to Vancouver City Council, March 7, 2003. Accessed from: <http://council.vancouver.ca/20030325/rr1.htm>

[168] Moore, Jennie. "What's Stopping Sustainability? Examining the barriers to implementing Clouds of Change," (Master's Thesis, University of British Columbia, 1994). Pg., 4-6

[169] Moore, Jennie. "Getting Serious about One-Planet Living," (PhD Dissertation, University of British Columbia, 2013). Pg., 47-48

[170] Ibid

founded by Moore, which attempted to continue to move them on both big picture priorities, but also build capacity in terms of measurement.[171] Buttressed by this civil society support, the city made several moves which signalled further movement on the climate file: striking of a further committee on climate change, the 'Cool City Task Force' in 2003, and the transformation of the City's Special Office of the Environment (SOE) into Sustainability Office (which still exists in today) and providing it with a specific climate change mandate.[172]

While the city's technical capacity for climate work was growing, the 2000's were a politically tumultuous time in the history, particularly at a point when so much was changing; the 2010 Olympics loomed ever closer, at the same time as affordability and growth became key inflection points for local politics. The left-leaning Coalition of Progressive Electors (COPE) Party, which had been in power since a total sweep of city institutions in 2002, by 2005 were being pushed back heavily by the business factions of the City. COPE had always been diverse, but by 2005 it was beginning to fray, with the centrist Mayor Larry Campbell and other members, including now-Deputy Mayor Raymond Louie, caucusing independently from the rest of their party after 2004.[173] The disagreements were wide-ranging, but included Campbell's decision to eventually endorse the Vancouver Olympic bid, and perception of inactivity on affordability and other social issues.[174] Just before the loss of COPE in the subsequent elections and the

[171] Punter, John. *The Vancouver achievement: Urban planning and design*. (UBC Press, 2003) Pg., 230
[172] Jones, Stephen. "A tale of two cities: climate change policies in Vancouver and Melbourne—barometers of cooperative federalism?." *International Journal of Urban and Regional Research* 36, no. 6 (2012): 1242-1267.
[173] Wallstam, Maria and Tristan Markle, and Nathan Crompton "David Chudnovsky and the origins of Vancouver's "new" political party," *The Mainlander,* May 6, 2014. Accessed from: <http://themainlander.com/2014/05/06/david-chudnovsky-and-the-origins-of-vancouvers-new-political-party/>
[174] Ibid

return of the NPA in 2005; the City did manage to see the creation of both corporate (concerning city owned assets only) and community (for the entire city) Climate Change Action Plans. These policies, and a previous goal to reduce city-wide emissions by 20%, marked a high-point of climate commitments that the City would make until the election of a coalition slate of COPE, municipal Greens, and Larry Campbell's successors, Vision, in 2008.

The contemporary age of climate change policy in Vancouver begins in 2008. By this point there was a wide arrayal of forces and actors that collectively were driving for more the aggressive climate actions; in turn, these would help drive the creation of the *Greenest City Action Plan* and its many offshoots. They were variously: the 2008 election of the coalition government, led by Vision (and later its subsequent re-election in 2011 and 2014 with an independent slate), increased climate action in the city significantly. Climate change had become a priority at the highest levels of the city. This was also paralleled by both a growing staff proficiencies in sustainability policy, focused through the new Sustainability Office, as well as impending challenges, largely centred on coordination with other levels of government. Finally, political changes at the provincial and federal levels, where two extremely conservative governments, unfriendly to climate policy were elected, also played a key role in motivating the city to take more strident, and eventually global, action.

Beginning first with staff capacity: since the 1970s False Creek South planning efforts, the City had been growing its internal capacity in terms of environmentally friendly design. While Ray Spaxman, the leader behind the planning department's consultative turn, had left in 1990, his successors Ann McAfee and Larry Beasley, both

carried many of these goals forward.[175] The *Clouds of Change* goals and pieces into the *CityPlan* process was a positive indication, as were the efforts in Southeast False Creek, and what would become Yaletown, where significant achievements in sustainability would be found. Beasley's urban design focus on New Urbanism, where high-density, and walkable urbanism was key. This turn in the city's design focus has a strong causal relationship with the city's favourable mode-share and overall emissions rankings.[176] By the mid-2000's, city staff were at a point where their design and technical knowledge as planners and engineers was enabling many facets of sustainable development, carbon accounting and technical knowledge specific to climate change was a challenge. Regional coordination through the Greater Vancouver Regional District (later Metro Vancouver) Air Quality Programme's Working Group on Climate Change (WGCC) had helped build some technical capacity, but there were still many acknowledge gaps. A major challenge, which is still present in many respects, was the lack of coordination with provincial and federal governments. While they were sometimes quietly supportive of Vancouver's efforts, they often lacked either the interest or capacity to support technical efforts (such as clear carbon accounting) or larger political efforts, that might require greater funds or statutory changes.[177]

On the local political level, the commitments from the City flowed frequently throughout the 2000s, particularly after the agreement that Vancouver would host the 2010 Winter Olympic games. Vancouver had already joined Federation of Canadian Municipalities (FCM) Partners for Climate Protection (PCP) in 1995 and had promised

[175] Chau, Mai-Mai. "The Planning and Negotiation Process : Its Contribution to Concord Pacific Place." (Master's thesis, University of British Columbia, 2008). Pg., 34
[176] Ibid. Pg., 6, 35-36
[177] Jones, Stephen. "A tale of two cities: climate change policies in Vancouver and Melbourne—barometers of cooperative federalism?." *International Journal of Urban and Regional Research* 36, no. 6 (2012): Pg., 1254

to reduce city-wide emissions by 20% below 1990 levels by 2010.[178] From Council reports at the time of Canada's ratification of the Kyoto Protocol in 2003, it is clear that the City, while desirous of reducing its emissions, still had significant technical knowledge-gaps therein. The decision to create an emissions inventory, and to work towards corporate emissions reductions of 20%, put these goals in starker relief.[179] From the 1990 goal-setting, Vancouver made significant corporate emissions reductions, primarily through landfill gas capture (as seen in Table 2.), while at the same time overall community emissions peaked in 2001 (at ~5% greater than 1990 levels) and have been on a slow decline ever since (see Figure 8), but with expected population growth, energy-mix changes, and other pressures, it was understood that emissions could continue to rise to the 2010 goal date.

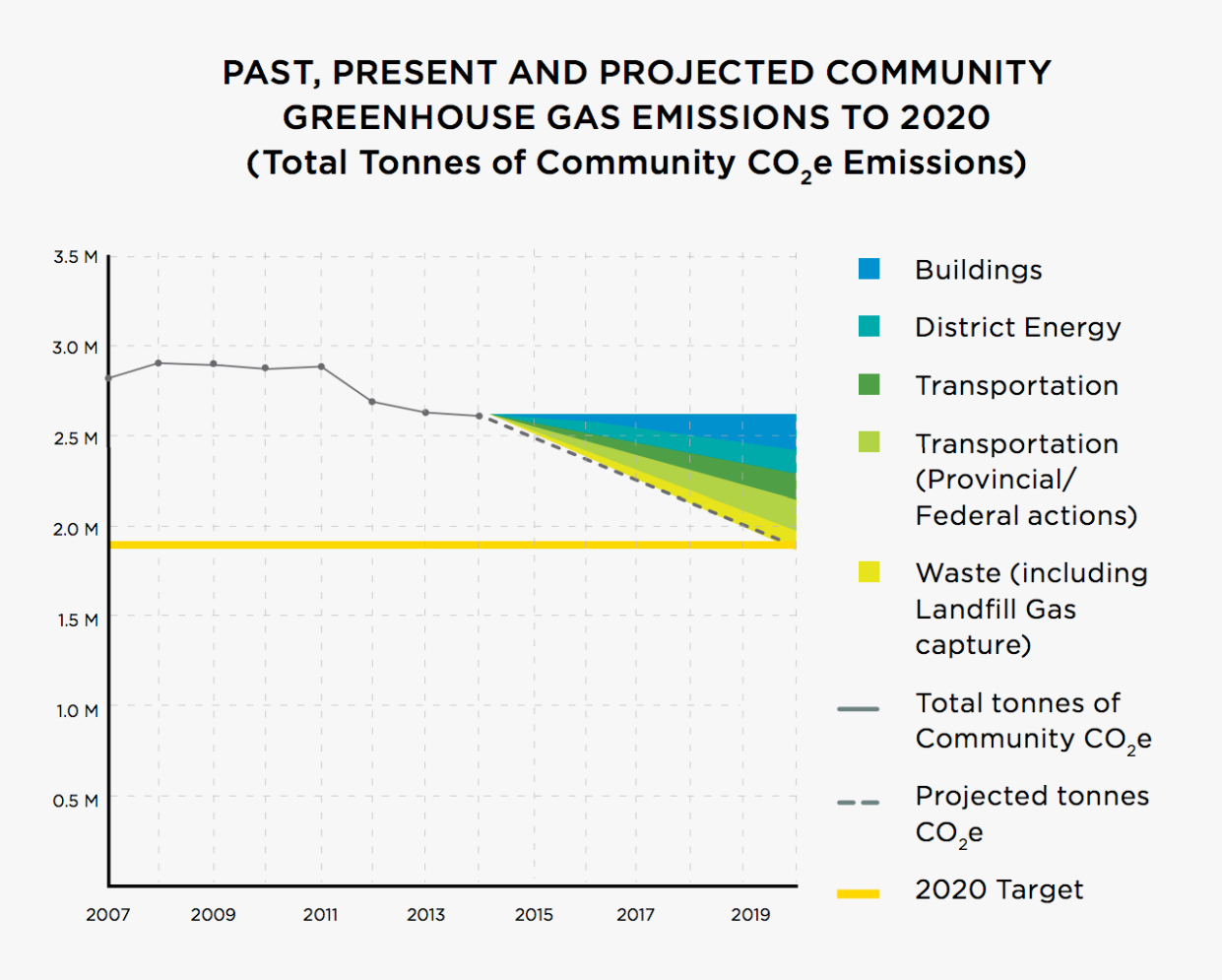
Table 2: Vancouver's "Corporate" Greenhouse Gas Emissions Inventory (City of Vancouver, 2003)

Equivalent Carbon Dioxide (eCO_2) in Thousands of Tonnes (Approximate)					
Category	**1990***	**1995**	**1999**	**2005[B]**	**2010[B]**
a) Buildings	16.3	16.3	12.4	14.3	16.0
b) Fleet	15.9	15.8	13.9	15.0	15.7
c) Street/Traffic Lighting	1.1	2.3	1.0	1.5	2.1
d) Waste**	2.7	2.7	2.8	3.0	3.1
Total Equivalent Output	36.0	37.1	30.1	33.8	36.9
Change from 1990	-	+3%	-16%	-6%	+3%

[178] Van Vliet, K. *The Kyoto Protocol - Implications to the City of Vancouver and Participation in "Partners for Climate Protection".* Report from General Manager of Engineering Services, in Consultation with the Manager of Corporate Services, to Vancouver City Council, March 7, 2003. Accessed from: <http://council.vancouver.ca/20030325/rr1.htm>
[179] Ibid

The City made a local commitment continue its programme of building its internal technical capacity, at the same time as it furthered its global commitments, joining the ICLEI-sponsored World Mayors Council on Climate Change in 2005, and signing onto the United Cities and Local Governments 'Jeju Declaration,' in 2007, as well as the World Mayors and Local Governments Climate Protection Agreement in 2008. The latter committed each signatory to the "reduction of greenhouse gas emissions [...] by 80% from 1990 levels in industrialized countries by 2050."[180]

Figure 5. Community GHG Emissions in City of Vancouver, 2007-2019 (CoV, 2015)



[180] "World Mayors and Local Governments Climate Protection Agreement," Agreement Webpage, maintained by ICLEI. (2008) Accessed from: <http://archive.iclei.org/index.php?id=10395>

These kinds of global statements were ongoing amidst a period of intense political turmoil for the city. Mayor Sam Sullivan, having successfully spearheaded much of the campaign for Vancouver to host the Olympics, in 2006 had suddenly surprised much of the City's sustainability and urbanism community by unveiling his plan for "EcoDensity." The term was Sullivan's own, and it represented a personal initiative to see the city adopt more significant density; generally, this was received to mean density that would be over and above what citizens had largely understood *CityPlan* to have acknowledged. The 'charter,' which took two years of debates and public engagement to finally pass in 2008, caused significant political blowback. While it was touted by Sullivan as a significant achievement in sustainability, and was lauded by some in this regard, the proposal, and the way it had been created, angered anti-density advocates and potential allies alike. This would become the political albatross that sank Sullivan's career, leading to the election of the Gregor Robertson as Mayor of Vancouver, and a majority of Vision councillors.[181]

The victory of Gregor Robertson to head the Mayoral ticket for the party, and to run without supporting other left-of-centre parties, was a gamble in a city that had traditionally hosted a fairly traditional binary between left and right. As Salazar and Alper have argued environmentalism had come to occupy a unique place in British Columbian politics by the 2000s, cutting past some traditional cleavages, with many environmentalists themselves were unconcerned with some traditional left and labour issues.[182] Michael Soron's analysis of Vision's platform and interviews with its

[181] Rosol, Marit. "Vancouver's "EcoDensity" Planning Initiative: A Struggle over Hegemony?." *Urban Studies* (2013). Pg., 25

[182] Salazar, Debra J., and Donald K. Alper. "Beyond the Politics of Left and Right: Beliefs and Values of Environmental Activists in British Columbia." *BC Studies: The British Columbian Quarterly* 121 (1999). Pg., 30

candidates led him to suggest that the party's platform was a novel combination of growth-centric policies and some environmental concerns.[183] This is a claim further supported by Scerri and Holden's analysis of the *Greenest City Action Plan* as an act which does not fully approach sustainable development, yet still undertakes many useful mid-term measures ("ecological restructuring").[184] Vision was able to operate uniquely amidst these forces, since they were well-connected to local businesses operating in the sustainability space and raised considerable funds and support from these actors — many of these businesses, leaders, and other figures would come to form a key source of inspiration and implementation of their subsequent policy programmes.[185] The party, in Soron's view, exemplified the discourse of 'green growth.' The term has aroused immense disagreement in left and environmentalist political circles as a 'Trojan horse' for privatization, the unnecessary capitalization and monetization of natural resources, and further technical management of the environment.[186] Whatever Vision's reasons for this combination of concerns of growth, environmental policy, and strict climate commitments, the 2008 loss of the Stéphane Dion Liberals in the federal election created new space for their efforts.

Vision advanced its policy goals quickly, first with a ten-point action plan in 2009, *Vancouver 2020: A Bright Green Future,* which lay the groundwork for future planning efforts around environmental policy, and then with the 2011 *Greenest City*

[183] Soron, Mike Barrett. "The Urban Politics of Vancouver's 'Greenest City' Agenda" (Master's Thesis, Simon Fraser University, 2012). Pg., 39-40

[184] Scerri, Andy, and Meg Holden. "Ecological modernization or sustainable development? Vancouver's greenest city action plan: The city as 'manager'of ecological restructuring." *Journal of Environmental Policy & Planning* 16, no. 2 (2014): 261-279.

[185] Soron, Mike Barrett. "The Urban Politics of Vancouver's 'Greenest City' Agenda" Pg., 42

[186] Næss, Petter, and Karl Georg Høyer. "The emperor's green clothes: growth, decoupling, and capitalism." *Capitalism Nature Socialism* 20, no. 3 (2009): 74-95.
Redclift, Michael. *Development and the environmental crisis: Red or green alternatives*. Routledge, 2010.
Wanner, Thomas. "The new 'passive revolution' of the green economy and growth discourse: Maintaining the 'sustainable development' of neoliberal capitalism." *New Political Economy* 20, no. 1 (2015): 21-41.

Action Plan (GCAP). The initial piece was largely directional, and assembled the various stakeholders of interest in Vancouver's business, political, and environmental circles that Vision wanted to involve. The *Action Plan* that they produced has come to be a central point of the city's direction since 2011. It contained ten areas of action including: the green economy, climate leadership, green buildings, green transportation, zero waste, access to nature, a lighter (ecological) footprint, clean water, clean air, and local transportation. The plan was notable in terms of its holistic focus on various aspects of climate change's impacts and drivers, even at the same time as some more overarching aspects, such as human health impacts, would have to wait to be covered in subsequent policy work, like the *Healthy City Strategy*.[187]

Figure 6. Visual representation of the Greenest City Action Plan *goals and how they are conceptualized in terms of inter-relationships and implementation* (City of Vancouver, 2015).

[187] Holden, Meg, and Majken Toftager Larsen. "Institutionalizing a policy by any other name: in the City of Vancouver's Greenest City Action Plan, does climate change policy or sustainability policy smell as sweet?." *Urban Research & Practice* 8, no. 3 (2015): Pg., 366-367

The *GCAP* has dominated much of Vancouver's environmental planning since it was initiated, but from it have spawned a litany of new policy efforts, including a new urban forestry framework, a circular economy policy, climate change adaptation guidelines specific to sea level rise, general green and specifically zero-emissions building guidelines, and now the *Renewable City Strategy*.

3.3 Vancouver and the C40

Vancouver's membership in the C40 was announced on December 4th, 2012. Media scans from that time suggest that there was little excitement in the city's public at the time of the announcement. The City had been invited to participate in the network in the wake of several major achievements, including the launching of the *Greenest City Action Plan* in 2011, as well as being named the 'second most sustainable city in North America' in an Economist Intelligence Unit (EIU) survey, in particular being noted for its global leadership in reducing GHGs.[188] Mayor Gregor Robertson also continued to spread Vancouver's voice globally, attending the COP15 meeting and the Climate Summit for Mayors in Copenhagen in 2009, as well as the New Cities Summit in Paris in 2010 where Robertson was a keynote.[189] Both events involved significant presence by C40, and stirred further global action in the form of subsequent COP involvement for cities, after the longstanding tradition of city exclusion. These appearances by Robertson showcase a further possible, and deeply political, logic to C40's invitation: through all of these events Vancouver was increasingly becoming positioned as one of, if not the,

[188] Economist Intelligence Unit. *US and Canada green city index: assessing the environmental performance of 27 major US and Canadian Cities,* Study sponsored by Siemens. (Munich, Germany: 2012)
[189] Lee-Andersen, Selina "Mission Impossible? Making Sense Of The Copenhagen Accord, " *Mondaq Business Briefing,* Januay 19th, 2010

definitive Canadian voices on climate change.[190] Toronto's election of Rob Ford in 2010 had arrested one of the nation's climate leaders in a political quagmire, and while Calgary's Naheed Nenshi suggested changing political rationalities in Canada's petro-capital, this was primarily an ideational shift, rather than a material one. Some Vancouver Councillors and staff directly noted that the vacuum of federal leadership at that time, not to mention concern around the new Premier Christy Clark, gave further impetus to their actions to speak loudly as a Canadian climate leader.[191]

The C40 announcement that celebrated the entrance of Oslo, Venice, Washington, D.C., and Vancouver highlighted the City's goal of becoming the "Greenest City on Earth" by 2020, as well as its GHG-reduction and climate adaptation planning.[192] Mayor Robertson in his own press release sounded his excitement and was quick to highlight Vancouver's political leadership role in pushing for a strong national climate agenda, in contrast to the "delays" of higher orders of government.[193] Within days of joining, Vancouver partnered with the Carbon Disclosure Project (CDP) to host a workshop on visual presentations of data for sustainability planning, suggestive of a high level of internal coordination between the City of Vancouver and the C40 staff. [194] All interview subjects agreed that the intensity of collaboration with C40 staff was smooth and straightforward and that the expertise of their partners, and their

[190] Hume, Christopher. "Cities must step up as nations falter," *Toronto Star*, January 30th, 2009.
[191] Soron. "The Urban Politics of Vancouver's 'Greenest City' Agenda" (2012). Pg., 36
[192] 'C40. *C40 Welcomes Oslo, Vancouver, Venice and Washington, DC as New Members.* (2012) [Accessed from: <c40.org/blog_posts/c40-welcomes-oslo-vancouver-venice-and-washington-dc-as-new-members>
[193] Office of the Mayor of Vancouver. *Vancouver Joins International C40 Climate Leadership Group*. (2012) Accessed from: <http://www.mayorofvancouver.ca/news/vancouver-joins-international-c40-climate-leadership-group>
[194] C40. "New C40 City Vancouver Shares Expertise on 3-D Data for Sustainability Planning." *C40 Blog.* (2012) Accessed from: <http://www.c40.org/blog_posts/new-c40-city-vancouver-shares-expertise-on-3-d-data-for-sustainability-planning>

willingness and ability to directly support their projects, made early collaboration with the network easy.

In the course of my exploration of the City of Vancouver, I interviewed five staff members from different departments, including two planners, a manager, and an economic development officer. The economic development officer works for the Vancouver Economic Commission (VEC), an arms-length body from the City that is a responsible agency for the 'Green Economy' portions of the *Greenest City Action Plan*. While not legally city staff, they represent a meaningful and significant aspect of the City's policy-making machinery. In addition, I also interviewed a City Councillor, Andrea Reimer, who was one of the early architects of Vancouver's green ambitions. The demographics of the city staff varied, but everyone that I spoke to had been educated to a master's degree level in one field or another. The specific fields all included some aspect of sustainability, whether in planning, engineering, an MBA, or otherwise, but it is worth-noting that all had a distinct interdisciplinary focus that included systems-thinking and very often a combined socio-ecological knowledge-base. Professional affinities and connections varied between the subjects, with most having strong linkages to organizations such as the Urban Sustainability Directors Network (USDN). The USDN is particularly noteworthy since City Manager Sadhu Johnston was heavily involved in its founding during his time in Chicago, and maintains many connections with it.[195]

Interestingly, none of the subjects spoke of any meaningful connection to traditional professional organizations such as the Canadian Institute of Planners, or the American Planning Association. All interview subjects expressed feeling that it was

[195] Shield, Malcolm. Interview by author. In Person. Vancouver, July 29th, 2016.

difficult to work with most other Canadian cities because of the policy contexts that they were acting in; the resources and the political capacity to take on projects like Vancouver wants to have been missing in most other Canadian jurisdictions. While the Federation of Canadian Municipalities has a long tradition of activity in the climate change policy space, particularly with the Cities for Climate Protection, because of the diversity of its membership it is difficult for it to cater to large cities with existing climate commitments and smaller municipalities that may not yet even have a GHG inventory. These large cities, particularly when under aggressive mayors Vancouver under Mayor Robertson and Toronto under Mayor Miller, have often found this a challenging structure to work within.[196] Staff in the City of Vancouver seemed to exemplify this tension and expressed their desire to work with organizations that were "pushing boundaries" and "cutting edge."

Besides Councillor Reimer, who routinely attends C40 summits and other activities, the 'formal' meetings between Vancouver staff and C40 programme staff were sparse. Even Micah Lang, who is the C40-sponsored Green Building Policy Manager at the City, primarily connected with the C40 staff via email, the occasional phone-call, but seldom in-person.[197] Many of the other staff I spoke with expressed a similar pattern of engagement. What became clear, across interviews, was that staff viewed the accessibility of C40 staff as an "amazing resource," and that they, as Juvarya Veltkamp put it, "not only help bring [Vancouver] together with these other cities," but "move the ball forward" on policies or projects the city was looking to develop with research, staff-

[196] Gordon, David J. "Lament for a network? Cities and networked climate governance in Canada." *Environment and Planning C: Government and Policy* 34, no. 3 (2016): Pg., 532, 539
[197] Lang, Micah. Interview by author. Vancouver, January 22nd, 2016.

time, or other resources.[198] It was difficult to identify specifics in these conversations, but many staff seemed to suggest that the C40 operated at the level of generalized support for many different policy areas they were pursuing and could be called on if necessary. In many cases, this was because of existing work-plans and priorities developed within the topic networks. Both the rate and the intensity of these conversations tended to vary considerably, while the baseline of contact was always through the C40's internal topic-based networks that each staff member was a part of. In instances where a new piece of work emerged, such as an event, or a major policy decision, contact would ramp up. An example used by then-Climate Policy Manager for the City, Malcolm Shield, was the preparations for the Paris COp21 meeting in December of 2015. The coordination for this he said was intense, with Vancouver and other member cities working with C40 almost every day to release opinion-editorials prior to the conference, to plan the cities-oriented programming during COP, and other work. Both Andrea Reimer, and Malcom Shield, as political and senior city staff, were heavily involved in this work.[199]

Staff, as well as Councillor Reimer, all uniformly referred to the political leverage created by C40 as a primary driver of its value to the City. Reimer in particular said that, as it became increasingly clear on a national and international level in the 2000s and early 2010s that movement on climate change was becoming stalled, the value proposition of working internationally became more and more attractive. By her telling, it was Mayor Michael Bloomberg of New York City who was a primary driver of Vancouver's entrance into the organization. His surrogates from the Office of the Mayor

[198] Veltkamp, Juvarya. Interview by Author. In-person. Vancouver, July 13th, 2016.
[199] Reimer, Andrea. Interview by author. Vancouver, August 4th, 2016
Shield, Malcolm. Interview by author. In Person. Vancouver, July 29th, 2016.

made repeated overtures to Vancouver and, as the battle before COP17 in Cancun heated up, made increasingly persuasive arguments. Reimer said the turning point in these conversations was the realization that Vancouver could now be " writing the climate policies of the world's largest cities right in Council chambers."[200] This 'political cover,' as some staff referred to it, was a direct incentive to the City: their work now carried global weight. The more than two-thousand cities and local governments that they had had call them after releasing the *Greenest City Action Plan*, now knew that Vancouver was a part of a larger global effort, and had an access point to that information that did not overwhelm city staff.[201] Tense politics at home, too, could be assuaged somewhat by the appeal to this global organization, inarguably made even more legitimate with the presence of a well-respected mayor and businessman like Michael Bloomberg.[202] Several interview subjects mentioned Vancouver's 2015 municipal election and how there had been some staff consideration of whether or not the NPA would continue within the framework of the *Greenest City Action Plan* if they were elected. All of the staff reported that they felt that, in part because of the C40 membership, there would not have been meaningful shift in the City's environmental goals — the political and technical culture of the city had become such that, any deviation from this was felt to constitute a risk for any governing party.[203]

Beyond the entrenchment of climate policy in the city's political and technocratic classes, the City's C40 membership goes beyond mere local political calculus, acting as a global source of inspiration. For technical staff, particularly those working on very

[200] Reimer, Andrea. Interview by author. Vancouver, August 4th, 2016
[201] Ibid
[202] Ibid
Shield, Malcolm. Interview by author. In Person. Vancouver, July 29th, 2016. .
Veltkamp, Juvarya. Interview by Author. In-person. Vancouver, July 13th, 2016.
[203] Interviews with City staff. Interviews by author. Vancouver, 2016

broadly defined policy areas with minimal to no precedent to draw on, working with colleagues in a similar headspace was felt to be highly valuable. Most staff referenced their work with the USDN and noted that they participated in their events with reasonable frequency (e.g., for an annual conference and perhaps another event), but staff who mentioned USDN generally responded that its breadth — with over a hundred members — was an impediment to useful sharing for a city like Vancouver. Members have huge variation in terms of the development of their climate policy, some without even an established community emissions inventory of GHGs (something Vancouver has had since the 1990s). This variation is a major challenge, and while it does exist even within C40, where there are some larger members that are still building out their climate policy capacity, let alone the ambitiousness of their agenda. For the C40, this is both less noticeable in the case of the Innovator cities, and, in the case of megacities with a nascent climate policy, seen as an opportunity. Vancouver's staff said that the connections with fellow Innovator Cities like Copenhagen and Oslo have encouraged a powerful reinforcement of ambitions and clarification of direction in both cases. One staff member went as far as saying that, while Vancouver had much catching up to do, it felt a natural affinity towards the Nordic cities both on the level of values and technical knowledge.[204]

Most of my interviews indicated that there had been no policy ideas taken or inspired by membership in the C40 — indeed, they often felt their influence often went the other direction, as they inadvertently or directly changed policy in other jurisdictions. It was clear, however, that many staff felt that there were often 'raw' data needs that were answered by the C40. Veltkamp offered that the VEC has constantly

[204] Shield, Malcolm. Interview by author. In Person. Vancouver, July 29th, 2016.

been in the process of refining their methodology for counting green jobs, since their initial report in 2010, and are now drawing on data provided by the C40 to do so. As the VEC prepares for their second update of the Green Jobs report, the C40 has happened to running a parallel programme counting green jobs throughout eight comparator cities. The C40 hired a consulting team from the United Kingdom, who have collected at all the data from each of the participating cities, have collaboratively developed a methodology for comparing this data, and will present their findings to each of the cities in the near future. Veltkamp offered that studies like this, which aim to support and intensify the existing efforts of cities in areas like green job growth, are of huge importance to the cities.[205] While no new policies have emerged from these efforts, they clearly play a significant role in the VEC's climate work.

The support of these parallel activities runs both ways, as the City finds its work supported by the C40, and in turn attempts to add something to ongoing C40 work. Instances of direct collaboration exist with the Green Jobs study, and also with the collaboration between Vancouver, Copenhagen, and C40 on the City Solutions Platform (CSP). The platform, which was created prior to COP21 with an announcement in Paris, serves as a unique public-private partnership model, where cities are able to come into a forum with major international consulting and engineering companies, to talk about pressing challenges in sustainability or infrastructure provision. Because the forum is hosted by this third-party, the Platform, discussions do not raise any legal considerations vis-a-vis procurement policy. Vancouver, though one of the masterminds behind the project, has not been able to take advantage of the programme because it does not have a local cleantech accelerator that is able to act as the convening force for

[205] Veltkamp, Juvarya. Interview by Author. In-person. Vancouver, July 13th, 2016

the city. Surrey-based cleantech accelerator, Foresight, which could act as Vancouver's representative, has not yet agreed to participate in the programme; no doubt in part due to the $10,000 (USD) annual membership fee. While the City has not been able to participate in the programme, staff-time was devoted to the construction of the creation of the network, the understanding being that there was value to be had in creating this space for others. Another similar instance of Vancouver support has been with a recent World Bank project on carbon accounting. The World Bank and a consortium of other partners, including C40, have been working to create a certification system for professionals who work to create an emissions inventory for their community's GHGs.[206] This certification, it is hoped, will encourage proper, mutually intelligible accounting practices, as well as generally deepen global capacity to count — and reduce —emissions.

On a more systemic level, Vancouver staff and Councillor Reimer all believed that Vancouver had had a meaningful impact on the direction of the C40. In Reimer's mind, C40 had largely initially been focused on "creating MOUs and signing legal agreements." Vancouver, she believes, brought a more action-oriented mind-set to making real emissions reductions goals at the start.[207] This claim is especially kind to Vancouver and is ultimately unverifiable on its own, but the City's action-oriented mind-set certainly appears to run parallel to the C40's own growth as an organization from 2011 to present. Former Climate Policy Manager Malcolm Shield offered a limited corroboration in saying that also felt that Vancouver's activities in C40 had moved some of its ambitions

[206] World Bank. "City Climate Planner Certificate Program," *Collaboration for Development*. Online Platform. (February, 2016). Accessed from: <https://collaboration.worldbank.org/groups/scaling-up-climate-change-action-in-cities/people>
[207] Reimer, Andrea. Interview by author. Phone. Vancouver, August 4th, 2016

in a more aggressive direction, particularly at the staff level.[208] The creation of the CNCA, which occupies a significant portion of Vancouver's attention now, and which saw significant contributions and energy come from Vancouver in its creation, is a suggestive of the kinds of discursive and strategic ambitions they want to see more cities take upon (particularly a 100% renewable commitment). There has been a great deal of crossover of membership, often from the Innovator Cities side of the organization, towards the CNCA, further driving conversations in the C40 around what the 'destination' is for their efforts. Both Shield and Reimer, as the two highest ranking interview subjects I saw, felt that their actions, and those of Sustainability Director Doug Smith, City Manager Sadhu Johnston, and Mayor Robertson, had all had outsize impact within the C40 and had helped shape its strategic direction.

3.4 Findings

The City of Vancouver, in the relatively short time that it has been a member of C40, has, in the eyes of both staff and political leadership, made significant achievements. The plaudits won internationally have helped make the case for continued action at home, while at the same time the access gained to international cities who are major emitters has made it possible for those same stringent local actions to push towards cascading global impacts. It is clear that Vancouver needed no goading to participate in the C40; its history of climate action is one of the most established and long-standing in the world. Particularly from the 1980s and into the early 2000's, there were a retinue of local actors, including eminent planners, business leaders, environmentalists like David Suzuki, and co-chair of the Greenest City Action Task

[208] Shield, Malcolm. Interview by author. In Person. Vancouver, July 29th, 2016.

Force, David Boyd, and current and former elected leaders, like Mayor Gregor Robertson, and David Cadman (now head of ICLEI), who helped create a pathway for Vancouver to join C40. Once the release *Greenest City Action Plan* in 2011 had created an outpouring of international interest and support, both Council and City staff saw the value of leveraging their local work to impact other cities, many of which would ideally be significant global emitters of GHGs. Since that time, all levels of the City have participated fulsomely in C40, generally aiming to influence the work of other cities, whilst comparing and honing policy with other cities in a comparable position, particularly in the Nordic countries.

While it would be impossible to assert a causal relationship between Vancouver's C40 participation and subsequent global action in Paris on climate change mitigation, it is clear that the actions of mayors and other non-state actors in the lead-up to Cop21 played a significant role in the private and public campaigns to reach an agreement.[209] Mayors were some of the early leaders in this space, but as C40's actions have grown in scope and depth, parallel efforts have come alongside from investors, civil societies, and others.[210] In the Canadian context, Vancouver and other cities' climate work has also becoming intertwined with national struggles over the direction and intensity over climate change mitigation work.[211] With its local work on the *Renewable City Strategy*, membership in the CNCA, and frequent testimonials and campaigning against carbon

[209] Hale, Thomas. ""All Hands on Deck": The Paris Agreement and Nonstate Climate Action." *Global Environmental Politics* (2016).
[210] Chan, Sander, Clara Brandi, and Steffen Bauer. "Aligning Transnational Climate Action with International Climate Governance: The Road from Paris."*Review of European, Comparative & International Environmental Law* 25, no. 2 (2016): 238-247.
[211] Federation of Canadian Municipalities (FCM). "Canada's Big City Mayors make United Call for Climate Action," Press release from FCM. (Vancouver, BC, 2015). Accessed from: <http://www.fcm.ca/home/media/news-and-commentary/2015/canadas-big-city-mayors-make-united-call-for-climate-action.htm>

projects like the Kinder Morgan TransMountain pipeline, Vancouver represents one of the national pillars for aggressive climate action.[212]

Both City staff and political leadership seem intent on continuing to their attempts to influence the C40 in even more ambitious directions into the future, recognising, as all of them did, the challenges associated with translating their actions and ideas to other locales. One Climate Planner at the City noted that there had been significant difficulties in sharing electric vehicle (EV) policy with Toronto, and that C40's primary assistance with their efforts at national policy movement had been in terms of documentation.[213] This is a potential area for future C40 work: integrating individual city efforts with national lobbying strategies. In the Vancouver case, this is somewhat already extant with the National Zero Waste Committee, which emerged out of business-government engagement on the topic, but further boosting by C40 could carry these efforts forward. In addition, from all of the interviews, no City of Vancouver staff indicated a high level of engagement with any professional organizations. Linkages with these organizations may be yet another way to proliferate some of the policies that they are producing, on both the part of Vancouver and the C40.

[212] "Vancouver Mayor, First Nations fight Trans Mountain Pipeline in Ottawa," *Globe and Mail,* June 7, 2016. Accessed from: <http://www.theglobeandmail.com/news/politics/vancouver-mayor-first-nations-urge-ottawa-to-reject-trans-mountain-pipeline/article30329417/>

[213] Interview with City Staff. Interview by Author. 2016

Chapter 4: Hong Kong Case Study

"Green development is the right way forward with resource efficiency at its core. Indeed, this needs to be a global revolution for all economies."

— Christine Loh, Under-Secretary for the Environment, in "Capacity Building Remains Asia's Main Challenge: Christine Loh," *Eco-Business*, February, 2015.

4.1 Hong Kong Special Administrative Region

Hong Kong is a global city, enmeshed and influenced by its century and a half experience colonialism, rapid industrialization, decolonization and repatriation, almost unparalleled urbanization, and substantial cultural and financial reach. The Special Administrative Region has the unique position of behaving and functioning very much like a state on its own, yet existing as part of another state. And all at once, Hong Kong is clearly also a city. For each of these reasons, the development of environmental policy — and more recently, climate change policy — has been highly contingent on different outside forces. Hong Kong has made a number of significant environmental achievements, particularly in regards to land-use planning, transportation mode-share, and reductions of hydrofluorocarbons (HFGs), but it is not yet clear that Hong Kong has digested the idea of being global environmental leader. The emergence of environmental policy, first in the colonial government and now in the SAR, has been influenced variously by concerns of land conservation, afforestation, and, perhaps the most pressing concern of late, air quality. Each of these has been imbued and influenced by distinct, generally 'non-environmental' concerns, from the embedding of colonial control, to the development of land, to specific implications for human health. The public climate change discourse within the city is still relatively, marginal, but both rhetorically and politically, there is a conversation emerging around what is next: Hong

Kong outperforms some many competitors in Asia and globally, yet by absolute measures, whether in energy consumption or air quality, it still has a long way to go.[214]

In this chapter, I will explore the history of sustainability and climate policy in Hong Kong that has influenced before and during its C40 membership. Hong Kong has a unique historical and political context as it relates to its sustainability, some of which, such as British concerns over land conservation and afforestation, have given it an impressive starting point in climate policy, even as it maintains an outsize ecological impact otherwise. Drawing on interviews conducted with SAR staff and documentary analysis of Hong Kong climate and environmental policies, I will lay out the activities various activities at home and abroad that Hong Kong has participated with regards to C40. I will conclude, briefly, with some discussion about what these findings suggest both for the Hong Kong government and for the overall C40 network.

As far as an 'official' climate policy goes, Hong Kong was something of a late arrival, having been told by the People's Republic of China in 2003 that the SAR would report out as a part of Mainland China's contributions to the Kyoto Protocol. Hong Kong had previously mentioned climate change as a concern in environmental policies and strategies it had developed, but other than action on Sulphur dioxide (SO2), little progress had been made. Fast-forwarding to Hong Kong's invitation to join the C40 in 2007, action was building, but not fully formed. Hong Kong's decision to join the network was conceivably influenced by the movements in Beijing, where the national government submitted a report to the UNFCCC regarding its emissions inventory (within which Hong Kong was included), and national mitigation and adaptation plans.

[214] Lo, Alex Y. "Public discourses of climate change in Hong Kong." *Journal of Environmental Policy & Planning* 18, no. 1 (2016): Pg, 42-43

The initial invitation also no-doubt reflected the increasingly strategic orientation of the C40 itself; fresh off the heels of its New York City summit and interested in moving city's partnerships forward amidst increasingly dire negotiations in the COP. Hong Kong, while not an environmental magnate, was a global financial capital, a massive infrastructure spender, and spectacular performer on a number of urban metrics. It gave both parties significant credibility to enter into partnership with one another. By 2011, this partnership had progressed to the point where Hong Kong had entered into the Steering Committee of the C40, helping to set strategic direction. As a 'Megacity' member of the network, Hong Kong has a powerful role to play in both as both an example to its comparators, as well as a global and regional advocate for these kinds of policies. The experience of being in the network has, at this juncture, seemingly had major role on 'highlighting' environmental policy areas that had previously not been priorities for the government. Successes in the Connecting Delta Cities programme, as well its increasing engagement with other Asian and developing-country cities, have meant that Hong Kong has been both a 'learner' and a leader in the network; the latter of which it hopes to expand in the future.

4.2 The Backdrop to Sustainability in Hong Kong

Hong Kong is a global metropolis, one of the pillars of the Asian financial and economic world, and a unique instance of postcolonial experience. Forces of capital and cultural power both emanate from and significantly constrain the bustling megacity. From a backwater fishing village on the edge of the Qing Dynasty, to indispensable node in British maritime and imperial power after its annexation in 1840; to financial hub of Asia in the 1990s, and now to active battleground for the definition of 21st Century

China, Hong Kong retains a deeply complex identity, with ties to other major actors. The shape of contemporary Hong Kong environmental policy is rooted in several facets of the city's experience over the past century and a half: (1) the colonial imaginary that melded paternalistic concern for the local population with a desire to alter it to meet Orientalist expectations; (2) a land-control apparatus, first colonial, then contemporary, that conserved land for development purposes, (3) deindustrialization that led to the outsourcing of pollution to the greater Pearl River Delta, and (4) a still unfolding relationship with the People's Republic of China. From these factors, environmental, and specifically climate policy have been shaped, and Hong Kong's participation in the C40 made possible.

Recent work by Robert Peckham has helped reposition our understanding of Hong Kong as an early site of colonial environmental experimentation. Significant considerations, he argues, were given to the 'greening' of Hong Kong in the late nineteenth and early twentieth century. These drew on a complex, overlapping series of goals and forces related to the expansion of state power over 'nature,' the growth of scientific rationalism and emergent management schemes therein, and concerns over the economic, social, and ecological health and productivity of the colony.[215] In Hong Kong, these impulses were collapsed in with British colonists' aesthetic view of Hong Kong island as a 'barren rock.' Thus, the growth of the port and other, profitable, imperial activities was made contingent upon and parallel with the colonial programme of afforestation.[216] By 1872, these planting activities were formally overseen by the

[215] Peckham, Robert. "Hygienic Nature: Afforestation and the greening of colonial Hong Kong." *Modern Asian Studies* 49, no. 04 (2015): 1178-79
Barton, Gregory. "Empire forestry and the origins of environmentalism." *Journal of Historical Geography* 27, no. 4 (2001): Pg., 530
[216] Peckham. "Hygenic Nature." Pg., 8

Government Gardens and Tree Planting Department, which would remain active in several different forms past the Second World War. Subsequent superintendents would see the growth of these forests to cover over half of Hong Kong.[217] For the entirety of the British rule, there remained a constant tension between colonial efforts at afforestation and intensive management and harvesting of local ecological resources.[218]

The signing of the 1898 *Convention for the Extension of Hong Kong Territory* between the United Kingdom and Qing China further expanded British control into what became known as the 'New Territories' and set the contemporary land base for the city. The British thereafter engaged in negotiations with all of the local clans to that area, including the Punti, Hakka, and the seafaring Tanka and Hoklo. These earliest negotiations centred around resettlement and access for the purposes of creating water reservoirs on the Kowloon peninsula.[219] Hong Kong became increasingly commercially as the port and industry grew into and during the First World War, even as conflict in the Qing Dynasty and its warlord successors swirled next door. The driving forces in the colony's growth and direction from the First World War until the end of the Chinese Civil War would be large in-migrations of Chinese refugees, and significant external threats from neighbours.[220]

In particular, the rapidly expanding population of refugees and immigrants, arrayed in informal settlements and then in New Towns, laid much of the physical groundwork for the sustainability and climate policy concerns of the city in the later

[217] Peckham. "Hygenic Nature."
Griffiths, D. A., and S. P. Lau. "The Hong Kong Botanical Gardens, a Historical Overview." *Journal of the Hong Kong Branch of the Royal Asiatic Society* (1986). Pg., 65
[218] Griffiths. Pg., 27-29, 32
[219] Harris, Paul G. *Environmental policy and sustainable development in China: Hong Kong in global context*. (Hong Kong: Policy Press, 2012.) Pg., 97
[220] Tsang. *A Modern History of Hong Kong: 1841-1997*. (2007) Pg., 85-88

century. Prior to the outbreak of the Second World War, colonial concerns were not only fixated on the potential for Japanese aggression, but also grew increasingly wary of local Chinese agitation.[221] The Japanese invasion and occupation of Hong Kong was a major inflection point, where stresses of the imperial relationship became further apparent and after which new developments in Hong Kong's economic, social, and (nascent) environmental policy were quick to follow.

Shaken and eager to regain control of their colony, the British agreed to open the Hong Kong 'question' with the Nationalist Chinese (KMT) government at some point after the conclusion of the war.[222] The victory of the Communist Party (CCP) in 1949 further destabilised the British positon. Worried that 'subversive' elements, tied either to the Communists or simply home-grown pro-independence factions, would wrest the colony from them, the colonial authorities took a two-pronged approach: further engagement with the CCP, whilst pursuing significant economic and social reforms in the colony.[223]

As many refugees continued to move into the colony from the Mainland after the civil war, the growth of the Hong Kong economy continued apace. While the refugees faced significant challenges in resettling in the colony, often buttressed by an uncaring colonial administration, they have also been argued to have been one of the driving forces of Hong Kong's dynamism in the post-War years.[224] In this time, particularly after the 1953 Shek Kip Mei fire in an informal settlement for refugees, government-

[221] Tsang. Pg., 93
[222] Ibid, Pg., 125
[223] Tsang. *A Modern History of Hong Kong: 1841-1997*. (2007) Pg., 146
[224] Butenhoff, Linda. *Social movements and political reform in Hong Kong*. (1999.) Pg., 24
Yeh, Anthony Gar-On. "Economic restructuring and land use planning in Hong Kong." *Land Use Policy* 14, no. 1 (1997): Pg., 26

sponsored construction of public housing was enacted and grew to an extensive scale by the early 1960s.

Figure 7. Public housing in Hong Kong, with the original Shek Kip Mei housing development in the centre foreground. (Source: Wikimedia Foundation, 2012)

The population continued to grow as more and more people from Mainland entered the colony. Political representation for Chinese citizens remained off the table at the same time as the British government moved to stem dissent to create more public housing and provide more generous social services to residents. In 1956, fighting broke out between CCP and KMT partisans — some of the only places of political action available to Chinese residents — a manifestation, to some, of large-scale social malaise.[225] The government doubled-down on its ambitious plans for physical infrastructure and other services, including health, as a possible route to avoiding the need for serious social

[225] Butenhoff. *Social movements and political reform in Hong Kong*. (1999.) Pg., 23

reform.[226] Part of this strategy was the continued and expanding provision of public housing, now taking the form of extensive satellite and later 'New Towns,' as had become common in Britain for some time.

These subsequent developments took the form of mid-rise housing estates. were intended to be nearly complete communities, with recreational and commercial facilities all on-site. However, many persons continued to commute into the commercial centres on Hong Kong Island and the Kowloon peninsula, making significant use of the commuter rail system. Despite their somewhat plain social character, these communities were well supplied with civic facilities, including hospitals, schools, parks, and so on. Their densities, even in their early days, with 300-400 persons across the entire urban area, and 1000-2000/ha on some estates, were already some the highest in the world and the footprint would only grow as time went on.[227] The density these created would set the tone and morphology of Hong Kong urbanism into the twenty-first century. The first plan for Sha Tin, created in 1961, outlined a "community of 360,000 people with densities of up to 750 persons per hectare."[228] Sha Tin was one of the first towns to expand beyond the Kowloon foothills, and while it never got to the population densities initially imagined, it still quickly grew in size. The government provided significant investments in transportation infrastructure, combining cycling, buses, and rail in large stations that acted as a centrepiece for each of the developments. This combined infrastructure was fed by the residents living in state-owned housing, and

[226] Yip, Ka-che, ed. *Disease, colonialism, and the state: Malaria in modern East Asian history*. Vol. 1. (Hong Kong University Press, 2009.) Pg., 24
[227] Zacharias, John. "Generating urban lifestyle: The case of Hong Kong new-town design and local travel behaviour." *Journal of Urban Design* 10, no. 3 (2005). Pg., 374
[228] Hong Kong Planning Department. "Historical Background," *HKSAR Planning Department Publicity Leaflets & Publications.* (2002). Accessed from: <http://www.pland.gov.hk/pland_en/press/publication/nt_pamphlet02/stn_html/hist.html>

protected by massive public works aimed at managing storm-water to prevent disasters and remove public health risks like malaria, both of which they were extremely successful at.[229] In many respects, this was a spiritual continuation of the previous afforestation efforts of the early colonial government, now undertaken with even greater scientific rigour; health, economic productivity, aesthetics, and cultural control all joined effectively in pursuit of bringing order and productivity to that 'barren rock.'

Throughout all of these efforts, it is clear that there was never any explicit environmental focus of these policies. Afforestation, anti-larval campaigns against mosquitos, land reclamation, and extensive public-housing and transit developments all had clear (and often transformative) environmental impacts, but never were these policies created with an intention towards protecting what was then, or would be today, understood to be the existing ecological systems. Transportation and land use policy are easily the most indicative of this. The efficiency of Hong Kong's transportation system, particularly its semi-privatized railways and subways with their high fare-box recovery and consistently high-quality service, represent some of the most routinely referenced best practices globally. As Rikkie Yeung put it succinctly, the transportation system, particularly the railways, "are a part of the Hong Kong miracle."[230]

Intensive, colony-wide transportation planning took shape in the late 1960s, alongside its deepening physical and economic development. Chinese entrepreneurs, both established Cantonese and recently immigrated Shanghainese, had led the movement from speculation in the immediate post-war years, to a focused industrial export strategy (buoyed in part by the American embargo of the People's Republic of

[229] Yip. *Disease, colonialism, and the state: Malaria in modern East Asian history*. (2009). Pg., 26
[230] Yeung, Rikkie. *Moving Millions: The Commercial Success and Political Controversies of Hong Kong's Railway*. Vol. 1. (Hong Kong University Press, 2008.) Pg., 4

China).[231] Early large-scale transportation planning, heavily influenced by economic considerations of goods and labour movement, began with a parallel public transportation survey and a commissioned 'Mass Transport Study' both in 1967. The Study recommended the building of the overall metropolitan railway system with four lines to urban areas and new towns.[232] These policies, were largely demand-centric: new developments were always envisioned where there would be quick and sustained consumer uptake.[233] This has meant that, despite high population densities and strong indicators in the use of public transportation, the New Towns that were connected to the network were not provisioned as fulsomely as they could have been with local jobs and industry, and with rail and public transportation. Even as early as the 1970s, this problem was recognised, but the ability of the government to encourage local industries in these areas has remained wanting.[234] The development continued apace, however, with new lines proposed and coming online after a brief hiatus in the early 1980s, where investors buying government bonds needed the more clear outlook in Sino-British relations, seemingly achieved by 1984.[235]

After the 1978 'reopening' of China under Premier Deng Xiaoping, economic forces drove further changes in Hong Kong, as much manufacturing left for the 'new development areas,' like the Shenzhen Special Economic Zone. Hong Kong businesses operate branch-plants there, then whole industries moved, and the city experienced a

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[231] Tsang. *A Modern History of Hong Kong: 1841-1997*. (2007) Pg., 163-164
[232] Yeung. *Moving Millions* (2008.) Pg., 52
[233] Ibid., Pg., 52
[234] Dwyer, Denis John. *Asian urbanization: a Hong Kong casebook*. Vol. 1. (Hong Kong University Press, 1971) Pg., 69
[235] Kwong Lau, P. C. [鄺劉寶玉]. *A study of the development of transport policy in Hong Kong.* (Unpublished Master's Thesis University of Hong Kong, Pokfulam, Hong Kong SAR, 2001) Pg., 42
Cervero, Robert, and Jin Murakami. "Rail and property development in Hong Kong: Experiences and extensions." *Urban Studies* 46, no. 10 (2009) Pg., 2021-2022

significant deindustrialization throughout the 1980s, at the same time as land and infrastructure development continued apace.[236] This deindustrialization created several notable changes in Hong Kong's urban (and natural) environment. Agricultural land came under pressure as needs for container storage increased steadily, and, particularly in the 1990s, cross-border transportation expanded dramatically, from 0.7 million in 1983 to 8 million in 1994. [237] Although all districts experienced negative growth rates in manufacturing as industries moved to the Mainland, older, urban districts such as Sham Shui Po and Wong Tai Sin. were deeply impacted. Some areas in the New Territories, such as Yuen Long, Tai Po and Sha Tin, experienced a lower rate of loss, but still remained challenged into the late 1990s. To respond to this new economic and land paradigm, a Town Planning Ordinance was created in 1990, bringing all land under one policy framework, and initiating qualitative shifts towards service-oriented land use. The colony's regained status as an entrepôt to China had brought, and would continue to bring, familiar and all new urban and environmental challenges.

In the strictest sense, Hong Kong's environmental policy apparatus by this point had become increasingly complex — and indeed, with rising water and air pollution, it had to be.[238] While there had been sporadic and occasional instances of local environmental policy prior to 1970, the first territory-wide policies emerged then, with the Air Pollution Control Unit in the Labour Department (1970).[239] From this point on, various iterations of environmental agencies and branches emerged, eventually

[236] Yeh, Anthony Gar-On. "Economic restructuring and land use planning in Hong Kong." *Land Use Policy* 14, no. 1 (1997): Pg., 28
[237] Ibid Pg., 29
[238] Peter Hills "The environmental agenda in post-colonial Hong Kong," *Local Environment,* 2:2, (1997). Pg., 205
[239] Jim, C. Y. "Status and prospects of environmental protection in Hong Kong."*Environmentalist* 12, no. 1 (1992): Pg., 30

becoming consolidated in 1988 as the Planning, Environment and Lands Branch, which not only handled development and planning, but environmental protection as well.[240] Despite this consolidation, it was not until 1997 that the government required a mandatory environmental impact assessment of all developments — environmental policy advocates and analysts continue to critique the government the lack of coordination of development and environmental review still to this day.[241] To this day, a clear tension permeates the Hong Kong government's role as a land developer, which through agencies like Mass Transit Railway (MTR), the Hong Kong Housing Authority, and others, as a business and economic development facilitator, and as a regulator.

In the lead-up to the handover to the People's Republic of China, Hong Kong faced significant environmental challenges particularly in its air and water. Water quality, especially in Victoria Harbour, had declined precipitously since the beginning of the century, with some 1.5 million m^3 of residential and untreated industrial wastewater entering the ocean every day in 1995.[242] Air quality had long been a concern of the colonial, and later the SAR, government, and into the 1980s several key laws were passed, including the overarching Air Pollution Control Ordinance in 1983. What became clear as the handover to China loomed closer was that the massive

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[240] Government of Hong Kong. "Milestones in Environmental Protection," *Hong Kong Environmental Protection Department Resources & Publications.* (April, 2016) Accessed from: http://www.epd.gov.hk/epd/english/resources_pub/history/history_hkep.html

[241] Yeun, Chantel. "Environmental group slams gov't for allowing construction waste dump in Tai Po green belt," *Hong Kong Free Press,* 29 March 2016

Tsang, Stephen, Margarett Burnett, Peter Hills, and Richard Welford. "Trust, public participation and environmental governance in Hong Kong."*Environmental Policy and Governance* 19, no. 2 (2009): 99-114.

Hills P. Environmental reform, ecological modernization and the policy process in Hong Kong: an exploratory study of stakeholder perspectives. *Journal of Environmental Planning and Management* 48(2) (2005) 209–240.

Hills, P "The environmental agenda in post-colonial Hong Kong," *Local Environment,* 2:2, (1997). Pg., 206

[242] Hills, P "The environmental agenda in post-colonial Hong Kong," *Local Environment,* 2:2, (1997). Pg., 204

industrialization of the rest of the Pearl River Delta now meant that Hong Kong was connected to a much larger system of pollution and resource consumption. While internally subsequent expansions in the granularity of these ordinances, with moves to cover commuter vehicles and other sources of air pollution, a regional solution was still clearly needed.[243] The work that Hong Kong initiated, both by itself, and later throughout the whole Pearl River Delta, was largely incrementalist in nature. Measures were focused on reduction of particularly egregious atmospheric pollutants, namely sulphur dioxide (SO2), nitrogen dioxide (NO2), respirable suspended particulates, carbon monoxide (CO), ozone (O3), and lead (Pb). This meant significant focus on refining the qualities of fuel made, from fuels with a high particulate matter (PM) count, to 'cleaner' burning forms of natural gas and other mixed fuels.[244] Hong Kong made notable achievements in reductions of sulphur dioxide and other chemicals in the 1990s, even while the Air Pollution Index (API) faced continued critique throughout its existence for its poor relationship with expected human health outcomes.[245] Until the shift initiated by the Chinese government in 2003, when the PRC's Annex A status was extended to cover Hong Kong as well, these conversations seldom, if ever, feature mention of climate change.[246]

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[243] Wong, P. B. [黃丙熙]. *Evaluating Hong Kong's air pollution legislation and policies.* (Unpublished Master's Thesis, University of Hong Kong, Pokfulam, 2014) Pg., 16-17

[244] Hong Kong Legislative Council Panel on Environmental Affairs. *Progress of Measures to Improve Air Quality, Including Those Taken By The Two Power Companies to Meet The Government's Emission Reduction Targets by 2010.* (Hong Kong, 23 January, 2006) Pg., 2-4

[245] Hong Kong Environment Bureau. *Environment Hong Kong, 1986-2011: 23 Years of Sustained Effort for a Greener Future.* (Hong Kong, 2011) Pg., 14-15
Wong, Albert. "Our Air is Killing Us," *The Standard*, October 29, 2005. Accessed from: http://web.archive.org/web/20110604132438/http://www.thestandard.com.hk/news_detail.asp?pp_cat=12&art_id=24573&sid=5239053&con_type=1&d_str=20051029&sear_year=2005

[246] Hong Kong Environment Bureau. *Hong Kong Climate Change Report* (Hong Kong, 2015) Pg., 14

4.3 Hong Kong's and Climate Policy

The first significant instance of climate change mentioned by the Hong Kong government was in the 1989 white paper, *Pollution in Hong Kong- A Time to Act*. The report mentions, with reference to *Vienna Convention for the Protection of the Ozone Layer,* that "changes to the ozone layer may serious consequences also for the weather and climate."[247] The paper focused on seven key areas, from the management of solid waste, water quality and sewerage, air quality, and noise — the largest initial effort would go towards water quality and sewage.[248] Overall, the paper casts a clear sense of urgency for the need to arrest Hong Kong's environment's decline.[249] In its 1991 follow-up to the report, reviewing current levels of implementation, anthropogenic global warming gets its first mention. Again, it is with reference to ozone depletion, where it is noted that energy efficiency must now become a key priority of the government in order to "reduce the problems caused by the burning of [fossil] fuels to produce energy, both locally in the form of pollutants discharge, and globally in reducing the threats of acid rain and global warming."[250] Progress on the climate file was challenging right from the start; energy consumption grew 7.7% per annum between 1983 and 1992, and further data was scarce on the ground.[251] Subsequent reviews of the 1989 white paper found that while particular environmental protections could make strong achievements, the climate change challenge remained seemingly intractable, in no small part due to Hong

[247] Government of Hong Kong. *A Time To Act.* Government White Paper. (Hong Kong, 1989). Pg., 26
[248] Jim, C. Y. "Status and prospects of environmental protection in Hong Kong."*Environmentalist* 12, no. 1 (1992): Pg., 42
[249] Ibid
[250] Hong Kong Planning, Environment, and Lands Branch. *Saving Our Environment: First Review of Progress on the 1989 White Paper 'Pollution in Hong Kong — a Time to Act.'* (Hong Kong, 1991) Pg., 28
[251] Hong Kong Planning, Environment, and Lands Branch. *The Hong Kong Environment: A Green Challenge for the Community.* Second Review on the 1989 White Paper 'Pollution in Hong Kong — a Time to Act.' (Hong Kong, 1993). Pg., 95, 98

Kong's high energy demands and the fact that they largely were supplied by coal-fired power plants.

These impulses towards energy efficiency and the recognition of global climate change did not function in a vacuum. The 1992 Earth Summit had significant implications for Hong Kong, despite the fact that no official colonial delegation attended. Both the United Kingdom and China undertook steps to implement Agenda 21 on sustainable development, and both were signatories to the conventions on biodiversity (CBD), desertification (UNCCD), and climate change (UNFCCC) that emerged. These two streams of global policy would influence the Hong Kong government's directions significantly. The UNFCCC's Conference of Parties' annual discussions on climate change helped set the intellectual parameters of sustainability discussions and how they related to the atmosphere, while at the same time, Agenda 21 framed an overall policy approach to development that stressed a future-oriented, and precautionary approach. In 1997, the year the Kyoto Protocol was signed, Hong Kong commissioned the *Study on Sustainable Development for the 21st Century in Hong Kong*, or SUSDEV 21. The study was aimed at understanding what sustainable development meant for Hong Kong, as well as creating an actionable, measurable pathway for the newly-created Special Administrative Region government to pursue it. At the report's conclusion in 2000, it laid out a definition for sustainability for Hong, guiding principles for action, a strategic decision-making tool, and recommended institutional changes, including the creation of an internal sustainability secretariat, renamed in 2007 to Sustainable Development Division.[252] One of these changes to be

[252] Government of Hong Kong. *SUSDEV 21 — Study on Sustainable Development for the 21st Century in Hong Kong.* (2000). Pg., 44

acted on quickly thereafter, was regional coordination in the form of the Hong Kong-Guangdong Joint Working Group on Sustainable Development and Environmental Protection. Since 2000 it has performed extensive monitoring and certain technical standards changing, and while further strengthened in 2010 with the *Framework Agreement on Hong Kong/Guangdong Co-operation on Environmental Protection and Ecological Conservation* it is still awaiting pricing of pollution or other measures with the 2017 Chinese Emissions Trading Scheme (ETS).[253]

In 2003, arguably the most important aspect of Hong Kong's climate governance system emerged: after some uncertainty in the six years after its return to the PRC, Hong Kong was officially acknowledged as covered under China's accession as a non-Annex party to the Kyoto Protocol.[254] The PRC's eleventh and twelfth five-year plans had both covered climate change extensively, and now Hong Kong was to officially and prominently acknowledge this into their planning mechanisms as well. The HKSAR government had new responsibilities under this agreement, including providing the PRC with emissions inventories of GHGs, creating their own SAR-wide mitigation and adaptation policies, as well as coordination with different elements of the PRC government (e.g., the provinces and scientific agencies).[255] The National Development and Reform Commission (NDRC), which is the leading political body in Mainland China after the State Council, chaired the National Climate Change Coordinating Leading Small Group (NCCCLSG) and drove the early coordination efforts with the SAR's government and overall national policy. The NRDC's responsibility for creating the five-

[253] Jo, Caroline Y., and Lynn White. "Polluted Air or Policy Advance in Hong Kong-Guangdong?." *Asian Politics & Policy* 5, no. 1 (2013). Pg., 78
[254] Hong Kong Environment Bureau. *Hong Kong Climate Change Report* (Hong Kong, 2015) Pg., 14
[255] Hong Kong Environment Bureau. *Environment Hong Kong, 1986-2011: 23 Years of Sustained Effort for a Greener Future.* (Hong Kong, 2011) Pg., 26

year plans allowed it to integrate climate change as both a political and developmental priority for the entire country, and, as the salience of climate change's impacts became ever greater in COP13 and onwards, it enacted ever-more stringent frameworks for managing the issue. By 2012, the now-renamed National Leading Committee on Climate Change (NLCCC), headed by then-Premier Wen Jiabao and made up of twenty-seven agencies and ministries, was able to guide policy at an ever-more expansive level. At the same time, between 2008 and 2009, provincial-level climate change action spread significantly, reaching Xinjiang, Hubei, Fujian, Beijing, Liaoning, Shandong and Jianxi, with mitigation and adaptation plans proliferating in particular.[256]

For Hong Kong's part, the imperative of action became legally clear in 2003 with the official acknowledgement of their 'coverage' by the PRC in the Kyoto Protocol, action appears to have increased in concurrence with these national trends in the Mainland. Also relevant here was the parallel effort of Chinese sub-nationals, as well as the Hong Kong SAR government, to participate in different domestic and transnational climate change efforts, including the C40.[257]

[256] Held, David Eva-Maria Nag, and Charles Roger. *The Governance of Climate Change in China* (London: LSE Global Governance Working Paper, 2011) Pg., 23-25
[257] Ibid, Pg., 41-43

Table 3. Aggregate Hong Kong emissions (Hong Kong EPD, 2014)

Year	Total GHG Emissions (Kilotons Co2-e)	Per Capita Emissions (tonnes Co2e)	Carbon Intensity (kg Co2e per HKD of GDP)
1990	35,200	6.2	0.039
1991	38,700	6.7	0.040
1992	42,000	7.4	0.042
1993	43,100	7.3	0.040
1994	35,600	5.9	0.031
1995	36,600	5.9	0.031
1996	35,200	5.5	0.029
1997	33,700	5.2	0.026
1998	35,100	5.4	0.029
1999	32,900	5.0	0.026
2000	33,300	5.0	0.025
2001	33,400	5.0	0.025
2002	35,000	5.2	0.026
2003	38,600	5.7	0.027
2004	38,700	5.7	0.025
2005	41,200	6.0	0.025
2006	42,100	6.1	0.024
2007	42,900	6.2	0.023
2008	41,600	6.0	0.022
2009	42,300	6.1	0.023
2010	40,800	5.8	0.020
2011	42,600	6.0	0.020
2012	43,000	6.0	0.020

4.4 Hong Kong and the C40

Hong Kong joined the C40 in 2007. While Beijing had been the only original Chinese city invited to attend the London "Cities Climate Summit" in 2005, the expansion of the organization after the New York summit in 2007 was swift.[258] The symbolic declaration of (existing and emergent) city importance was made in London, but New York cemented more clearly what the commitment was going to be.[259] This came at a time of significant consternation globally around climate change, as well as within the SAR. Just after May C40 summit, further adding to the resonance of climate policy was the IPCC's release of their WGIII 'Mitigation' papers, and then the August Asia-Pacific Economic Cooperation (APEC) summit in September, where Hong Kong signed its Sydney Declaration on Climate Change.[260] During all of this, Hong Kong was ramping up its own climate change preparations at home, particularly with an eye towards the PRC's commitment to report out on climate action by 2010.[261] In the meetings throughout that year, the Legislative Council Panel on Environmental Affairs and the Environmental Protection Department detailed and debated its efforts thus far to combat climate change within the SAR.[262] Their approach centred focus on the

[258] The Climate Group. *Low Carbon Leader Cities.* Preparatory Document for the Cities Climate Summit (London, 2005). Pg., 3

[259] Gordon, David Jeremy. "From Global Cities to Global Governors: Power, Politics, and the Convergence of Urban Climate Governance." (PhD dissertation., University of Toronto, 2016). Pg., 130 *Communiqué from C20: World Cities Climate Change Summit.* (London, 2005) Accessed from: <http://openpolitics.ca/tiki-index.php?page=C20+Climate+Change+Summit+Communique%2C+2005-10-05>

[260] Asia Pacific Economic Coordination (APEC). *Sydney APEC Leaders' Declaration on Climate Change, Energy Security and Clean Development.* Meeting Papers of APEC. (Sydney: September, 2007). Accessed from: <http://www.apec.org/Meeting-Papers/Leaders-Declarations/2007/2007_aelm/aelm_climatechange.aspx>

[261] Hong Kong Legislative Council Panel on Environmental Affairs. *Progress of Measures to Improve Air Quality, Including Those Taken By The Two Power Companies to Meet The Government's Emission Reduction Targets by 2010.* (Hong Kong, 23 January, 2006) Pg., 2-4

[262] http://www.legco.gov.hk/yr06-07/english/counmtg/hansard/cm0328-translate-e.pdf http://www.legco.gov.hk/yr06-07/english/counmtg/hansard/cm0329-translate-e.pdf

reduction of pollution-heavy energy systems, either owned directly by the government or concessioned by them, as well as on transportation systems.[263] Exactly at what point C40 was approaching Hong Kong during these deliberations is unclear, but despite not officially attending the New York City meeting, the SAR government and the C40's management team announced the new partnership on the 1st of November in 2007.[264]

In the course of my research in Hong Kong, I was able to interview two members of the Special Administrative Region's government who work with C40. These two members wished to remain anonymous, but, broadly speaking, they came from an environmental sciences and engineering background, and held positions that entailed significant engagement with the C40. One of the interviewees had a membership with the Hong Kong Green Building Council and was a member of the Hong Kong Institution of Engineers, but no other professional memberships were identified. Both interview subjects had attended sessions with the C40 in different countries, as well as hosted meetings in Hong Kong, and said that they enjoyed fruitful connections with both other cities on a departmental and individual basis. They identified Hong Kong's C40 involvement as generally involving 4-5 people, including the Secretary for the Environment, an administrative person, and senior Environmental Protection Department (EPD) staff usually attending meetings and workshops overseas. Senior staff members from the EPD would generally be responsible for providing presentations and follow-up materials for other staff upon their return.[265]

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[263] Hong Kong Legislative Council Panel on Environmental Affairs. *Progress of Measures to Improve Air Quality, Including Those Taken By The Two Power Companies to Meet The Government's Emission Reduction Targets by 2010.* (Hong Kong, 23 January, 2006) Pg., 5-6

[264] Hong Kong Environmental Protection Department. "Hong Kong to join C40 Large Cities Climate Network," *Press Release.* (2007). Accessed from: <http://www.epd.gov.hk/epd/english/news_events/press/press_071101a.html>

[265] Interviews with Hong Kong staff by Author. Skype. Jan 17, 2017.

Since joining the network, both subjects felt that Hong Kong's connectivity with other cities had increased meaningfully. There was a real feeling of being a part of something larger than themselves, and neither interviewer gave the impression of these being mere perfunctory meetings; significant idea- and experience-sharing with Melbourne on building flood resilience and sustainable drainage system development and Portland on ecological restoration were mentioned in particular.[266] These connections that Hong Kong had created with other cities were interesting both in form and content. As one example, the representative to the Connecting Delta Cities noted that questions and conversations were sometimes initiated through a popular mobile phone group-chat application, WhatsApp.[267] While both subjects could not immediately name a direct technical or policy ideas had been transmitted from C40, they said that the "inspirational" role that this "alliance of cities" had served had been important in pushing action within Hong Kong.[268] On both a broad policy level, such as the goal of preventing warming greater than 1.5C, and on specific technical grounds, the subjects noted that across departments that dealt with C40, there was a powerful 'push' effect, on the level of general ambition, that emanated from international comparators into Hong Kong. Some of this was related the C40 awards, which both interviewees indicated that Hong Kong had put effort into participating in.[269] In terms of green and blue storm-water infrastructure, for example, colleagues who might not otherwise have seen value in this kind of thinking were able to be shown meaningful data and high-reputation case

[266] Interviews with Hong Kong staff by Author. Skype. Jan 17, 2017.
[267] Ibid
Previously noted for its novelty in Gordon, David Jeremy. "From Global Cities to Global Governors: Power, Politics, and the Convergence of Urban Climate Governance." (PhD dissertation., University of Toronto, 2016). Pg., 130
[268] Interviews with Hong Kong staff by Author. Skype. Jan 17, 2017.
[269] Ibid

studies to convince them of its worthiness.[270] The general sense provided both interviewees, was that the C40 was a source of inspiration for the active members of their departments, and a general driver of more aggressive mitigation and adaptation at the policy level.

Upon joining the C40, one of the first initiatives that Hong Kong became involved with was C40's Connecting Delta Cities (CDC) programme and remains an enthusiastic collaborator within it. Considered at the New York City summit in 2007, it was led by Rotterdam, whose experience in climate adaptation and delta planning made it a significant convener on the topic.[271] While the CDC efforts were led by Engineering, other aspects of Hong Kong's participation in C40 were facilitated through the new Interdepartmental Working Group on Climate Change (IWGCC) which was tasked in early 2008 with coordinating the SAR Government's policies and measures to combat climate change, including giving direction on a two-year consultant's study on the best way forward in adaptation and mitigation.[272] Both policy level officials and engineering practitioners would attend these events, but there was a responsibility for everyone to do "presentations for the department" about what was learned in other cities. Within the sub-network, Rotterdam is one of the preeminent members, not only as the founder, but in its robust and continual content stream of content. The engineer in particular mentioned their "sustainable drainage development" planning that was especially inspiring.[273] In terms of the SAR's participation, Hong Kong's emphasis on data collection in its study of storm water collection and storage was highlighted in the 2016

[270] Interviews with Hong Kong staff by Author. Skype. Jan 17, 2017.
[271] Connecting Delta Cities. *Connecting Delta Cities Volume 3: Resilient Cities and Climate Adaptation Strategies.* (Rotterdam, 2013) Pg., 21
[272] Aerts, Jeroen, Wouter Botzen, Malcolm Bowman, Piet Dircke, and Philip Ward. *Climate adaptation and flood risk in coastal cities*. Routledge, 2013. Pg., 255
[273] Interviews with Hong Kong staff by Author. Skype. Jan 17, 2017.

Good Practice Guide: Climate Adaptation in Delta Cities, specifically with reference to its "Drainage Master Plan studies (between 1994-2010) and subsequent Review Studies (since 2008) and continuous drainage infrastructure upgrades."[274] Hong Kong is now moving forward in "enhancing the blue-green infrastructure and applying the concept of revitalizing water bodies to the drainage system."[275] In this regard, the CDC was felt to have "very good" informational resources, and the department had plenty of opportunities to "learn from other cities through the network [such as around] the experience of building flood resilience through blue-green infrastructure."[276]

In addition to the CDC, following closely on joining the network, Hong Kong initiated a high-level consultancy study on climate action which has shaped much of the city's climate action since. My subjects did not make reference to it, but shortly after the interview, the *Hong Kong Climate Action Strategy 2030+* was released; up until that point, it had been suggested that the consultant's report was still the guiding framework for much of Hong Kong's overarching climate planning.[277] Initiated in 2008, it represented one of the most significant environmental policy exercises in Hong Kong's history. Some of the work during the report included "a public workshop in July 2008, two technical workshops on mitigation assessment in September 2008 and September 2010, and two technical workshops on vulnerability and adaptation assessment in

[274] C40 Cities Climate Leadership Group. *Good Practice Guide: Climate Adaptation in Delta Cities.* (2015) Accessed from: http://www.deltacities.com/documents/C40-Cities-good-practice-guide_CDC_Dec2015.docx

[275] Interviews with Hong Kong staff by Author. January 17, 2017.

[276] Ibid

[277] Ng, Mee Kam. "A critical review of Hong Kong's proposed climate change strategy and action agenda." *Cities* 29, no. 2 (2012): Pg. 97

December 2008 and February 2010."[278] The breadth of the final report (2010) included a study of Hong Kong's expected climate change impacts, drawing on data from the Hong Kong observatory, as well as directed findings on mitigation and adaptation actions to be taken. The mitigation measures proposed in the final report, focused heavily on the energy sector (including transportation, electricity generation, and other end-uses of fuels), where some 90% of Hong Kong's emissions arose from.[279] Mitigation measures focused on switching electricity generation away from coal, whilst also engaging in energy efficiency measures in building form and energy usage, and consumer appliances. More broadly, they also recommended the capture of fugitive emissions from waste and movement towards less carbon intensive transportation fuels, including electric vehicles if electricity generation was sufficiently clean.[280] The broad strokes of these measures were, while not specifically mentioned by my interview subjects, still clearly on the policy agenda, as seen in the 2015 *Climate Change Report*.[281]

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[278] Legislative Council Panel on Environmental Affairs. *Consultancy Report: A Study on Climate Change in Hong Kong.* (Hong Kong, 2011). Pg., 2 Accessed from: <http://www.legco.gov.hk/yr10-11/english/panels/ea/papers/ea0228cb1-1370-5-e.pdf>

[279] Environmental Resource Management. *A Study of Climate Change in Hong Kong - Feasibility Study.* Prepared for the Hong Kong Environmental Protection Bureau. (Hong Kong, 2010) Pg., 17 Accessed from: <http://www.epd.gov.hk/epd/sites/default/files/epd/english/climate_change/files/1_CC_Final_Report_Eng.pdf>

[280] Ibid. Pg., 17-19

[281] The consultant's report in 2010 recommended five areas for climate mitigation policy to be focused on: (a) maximising energy efficiency; (b) greening road transport; (c) promoting use of clean fuels for motor vehicles; (d) turning waste to energy; and (e) revamping fuel mix for electricity generation. These are almost exactly carried over into the four action areas in the 2015 report: electricity supply, buildings, transportation, and waste.
See: Hong Kong Environmental Protection Bureau. *Hong Kong Climate Change Strategy and Action Agenda: Consultation Document*. (Hong Kong, 2010). Pg., 25 Accessed from: <http://www.epd.gov.hk/epd/english/climate_change/files/Climate_Change_Booklet_E.pdf>
Hong Kong Environmental Protection Bureau. *Hong Kong Climate Change Report, 2015.* Pg., 38 (November, 2015) Pg., 38. Accessed from: < http://www.enb.gov.hk/sites/default/files/pdf/ClimateChangeEng.pdf>

After the completion of the consultant's report, the Environmental Protection Bureau engaged the wider public on what the future direction of Hong Kong's climate action strategy should look like. The consultations utilized the recommendations from the consultant's report as the framework for action, with the intention to draw out further details from stakeholders. These broad scope of the strategy focused on integrating "the low-carbon notion with economic development, unleashing the economic potential that is enfolded in low-carbon lifestyle, promoting energy conservation and enhancing Hong Kong's competitive advantage."[282] This nexus of development and climate change action would continue to form the basis of much of Hong Kong's policy moving forward, as exhibited by their commitment to a 50-60% reduction of 'carbon intensity' by 2050 from a 2005 base-year.[283] By using a carbon intensity measure as their primary target, Hong Kong focused itself clearly on — in their minds — an even balancing of economic and environmental prerogatives.

The Environmental Protection Bureau did note the absolute emissions reductions possible with the intensity target, but their primary focus was clearly centred on emissions intensity — allowing for further economic growth, so long as it ascribed to a low carbon framework.[284] This focus on relative emissions reductions would come to form something of a challenge for the climate team. The policy representative from the EPB said that C40 was "driving [Hong Kong and all members] harder than before" with

[282] *Hong Kong Climate Change Strategy and Action Agenda: Consultation Document*. 2010). Pg., 7, 24
[283] Hong Kong Environmental Protection Bureau. *Hong Kong Climate Change Report, 2015.* (2015) Pg.,
[284] "If the Proposed Target is achieved, we expect an absolute reduction in our total GHG emissions, from 42 million tonnes in 2005 to 28 - 34 million tonnes in 2020, representing a 19 - 33% reduction. Per capita emission is also expected to reduce from 6.2 tonnes to 3.6 - 4.5 tonnes." *Hong Kong Climate Change Strategy and Action Agenda: Consultation Document*. (2010). Pg., 44

the pursuit of its 1.5C goal, and as of 2017 they were now working more directly on absolute emissions reductions along that trajectory.[285]

One of the places where this driving might occur most strenuously is the recently completed *Energy Saving Plan for the Hong Kong Built Environment, 2015-2025+* and the *Future Development of the Electricity Market* (2015). Neither of my interviewees had been intimately involved in them, but with 60% of Hong Kong emissions coming from building electricity, this was a huge area of concern. Both plans were a significant achievement for the Environmental Protection Bureau, which built the plan out of the 2010 consultant's report, as well as lay out their work's separate but parallel efforts to those of the People's Republic of China, which has a commitment to reduce carbon intensity by 60-65% (from a 2005 base) by 2030.[286] They collectively respond to the two largest drivers GHG emissions in Hong Kong: coal-fired electricity generation, and the primarily building-related usage of that energy. The report acknowledges that "that our near-term efforts would only reduce about 3.36 million tonnes of CO_2 per annum," meaning that even to meet its existing carbon intensity targets, further action will be needed. If Hong Kong intends to meet the collective C40 goal, in addition to other commitments under the Covenant of Mayors, a paradigm shift will almost certainly be necessary, likely a movement away from fossil fuel generation altogether (currently the shift is from coal to natural gas). These are highly political questions, however, not policy or technical ones, and the Hong Kong Legislative Council's Panel on Environmental Affairs, are only one actor operating within a larger system, as one of the

[285] Interview with Hong Kong staff by Author. January 17, 2017.
[286] Hong Kong Environment Bureau. *Hong Kong Climate Change Report 2015.* (November, 2015). Pg., 6

subjects alluded to when citing the difficulty of ascribing any political changes to C40.[287] The Hong Kong Chief Executive has already faced criticism for a lack of implementation regarding environmental and climate change plans, including a lack of "new environmental initiatives" in his 2016 Policy Address.[288] Whether the C40 efforts, directed at the Secretary and various departmental staff, can influence the legislators and the executive towards even stronger targets remains to be seen.

Hong Kong has also had to content with broader politics within the C40 network, which, as one of the Steering Committee members, it has increasing become involved.[289] In 2010 Hong Kong hosted its first C40 workshop, entitled 'Climate Dialogue: Low Carbon Cities for High Quality Living.' The conference was organized in significant partnership with the Civic Exchange, a local civil society and advocacy organization for environmental and human rights issues, while C40 dignitaries and leaders arrived for their one-day portion of the event.[290] The substantive portion of the workshop was organized around buildings and transportation as the key themes, with a special focus on existing building retrofits, new build best practices, and electric vehicles.[291] While also discussing the substance of future climate action, assembled C40 actors also discussed the future of the organization itself. As David Gordon and Michele Acuto have noted, the so-called "Hong Kong strategy" that was presented by newly-minted Chair

[287] Interviews with Hong Kong staff by Author. Skype. Jan 17, 2017.
[288] Hong Kong Legislative Council Panel on Environmental Affairs. *Background Brief on Combating Climate Change Prepared by the Legislative Council Secretariat.*
[289] Interview with Hong Kong staff by Author. January 17, 2017.
[290] Hong Kong Environmental Protection Bureau. "Speech by SEN at Opening Ceremony of Climate Dialogue - Low Carbon Cities for High Quality Living (English only)," *HKEPB Press Releases,* Hong Kong: November 3, 2010. Accessed from: <http://www.info.gov.hk/gia/general/201011/03/P201011030243.htm>
[291] C40. "C40 Events — C40 Hong Kong Workshop 'Low Carbon Cities for High Quality Living,' Accessed on August 20, 2016 http://www.c40.org/events/c40-hong-kong-workshop-low-carbon-cities-for-high-quality-living

Michael Bloomberg would also be a key point of discussion at the workshop.[292] The strategy stressed, as Acuto argues, a three-directional consolidation of the C40: firstly in terms of strengthening member-to-member and member-to-secretariat connections (a feature which one of the subjects stressed was important to the EPB and Secretary's work therein); secondly for greater engagement of the C40 with international environmental governance mechanisms, and thirdly for the increasing of organizational capacity and guidance vis-a-vis the overall strengthening of the secretariat.[293] Hong Kong's exact role in the promulgation of this strategy is unclear from the outside, but what has followed, according to one subject, has been a steady deepening of engagement with the C40, particularly indicated by the presence of the Under Secretary at the Johannesburg C40 Summit, and the Secretary at the Mexico City C40 Summit and in Paris for COP21.[294]

At the same time as Hong Kong was growing its intra-network collaboration, it has also been increased coordination within the Pearl River Delta. 2010 saw the signing of a Framework Agreement with the Government of Guangdong, taking forward the Outline of the *Plan for the Reform and Development of the Pearl River Delta*; itself a further technical-level deepening of collaboration after the 2003 Closer Economic Partnership Arrangement (CEPA).[295] The Framework agreement served as a recognition

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[292] Gordon, David Jeremy. "From Global Cities to Global Governors: Power, Politics, and the Convergence of Urban Climate Governance." (PhD dissertation., University of Toronto, 2016). Pg., 167

[293] Acuto, Michele. *Global cities, governance and diplomacy: The urban link*. (London: Routledge, 2013.) Pg., 126

Gordon, David Jeremy. "From Global Cities to Global Governors: Power, Politics, and the Convergence of Urban Climate Governance." (PhD dissertation., University of Toronto, 2016). Pg., 164

[294] Interview with Hong Kong staff by Author. January 17, 2017.

[295] Hong Kong Environmental Protection Bureau. "SEN starts visit to Europe," *HKEPB Press Releases,* Hong Kong: September 16, 2011. Accessed from: <http://www.info.gov.hk/gia/general/201109/16/P201109160199.htm>

Cheung, Peter TY. "Toward collaborative governance between Hong Kong and Mainland China." *Urban Studies* 52, no. 10 (2015): Pg., 1920

that, despite some early collaboration post-1997, the spatial and economic development of the Pearl River Delta required significantly greater collaboration. The outline contained five overarching integration plans on Infrastructure Development, Industrial Distribution, Basic Public Service Integration, urban-rural spatial planning, and environmental protection. Each plan was arrayed on a 2009-2020 timescale. At the highest level, the agreement was framed in terms of its ability to promote low-carbon development — raising the living standards of the region at the same time as ecological impacts were reduced — through measures such as the interconnectivity of their respective electricity grids and the joint phasing out of coal-fired power generation.[296] The specific environmental protection agreement included six specific priority action areas on air pollution, cleaner production, electric vehicles, protection of marine water quality, the circular economy, and ecologic and marine resource conservation. While in some ways a natural progression, this deepening of Hong Kong and Guangdong environmental collaboration also came in the wake of increasing civil society pressure in Hong Kong to manage cross-border policy challenges, particularly related to air quality.[297]

This framework agreement reflects an overarching policy pursuit of Hong Kong (both in broad terms and in specifically environmental ones), from the 1990s onwards, but particularly after the Consultant's report, has been Pearl River Delta cooperation. With off-shoring of polluting industries further up the watershed, to ongoing flooding challenges as development encroaches into sensitive ecological areas, there are

[296] *Framework Agreement on Hong Kong/Guangdong Co-operation: Environmental Protection and Ecology Conservation* (2010). Pg., 2 Accessed from: <http://www.epd.gov.hk/epd/sites/default/files/epd/english/boards/advisory_council/files/ACE_Paper_10_2010.pdf

[297] Jo, Caroline Y., and Lynn White. "Polluted Air or Policy Advance in Hong Kong-Guangdong?." *Asian Politics & Policy* 5, no. 1 (2013): Pg., 81

significant reasons for the SAR government to embark upon such a programme. While neither representative could speak to the progress of this relationship over time, or any influence that the C40 had had on its direction or scope, one did note that they had a clear impression of the C40's intention to step up collaboration with Mainland cities and that Hong Kong's connection and experience may be useful to them in relation to that goal.[298] With Shenzhen and Guangzhou joining C40 in 2014 and 2015 respectively, the possibilities to integrate the work of the Pearl River Delta into the C40 mandate at the regional level have become more alive. Indeed, existing collaboration to pilot an Emissions Trading Scheme on thermal power, as well as air quality management planning (2012-2020) show that there is fertile ground here. But regional governments still remain a challenging actor to integrate through processes affiliated with transnational climate change governance; whether or not C40 will finally solve this challenge remains to be seen.

4.5 Findings

Hong Kong's material success as a metropolis is inherently tied up in imperial flows of people, capital, and resources, the same flows which have shaped it into a city which, despite clear gaps, fulfils many of the tenets of contemporary sustainability thinking. Hong Kong continues to deepen its connections with other cities and regions pursuing sustainability, at the same time as local pressure on environmental issues grows. The overall participation of Hong Kong within the network as explored speaks to the observation of Taedong Lee's about the organizational politics of the C40: while early-on dominated by Anglophone cities (London, Toronto, and New York), the

[298] Interview with Hong Kong staff. January 17, 2017.

network has increasingly played host to southern and East Asian voices.[299] Hong Kong has not been notable for significant, externally-visible leadership contributions – indeed, it is not yet clear the city truly sees itself as a 'global climate governor' yet its own climate change efforts have grown significantly since joining the network in 2007; this mirrors the overall growth and deepening of the network's — and its members' — capabilities and ambitions.[300]

It is clear that there is a relationship between Hong Kong's growing climate ambitions and its C40 membership. It would be impossible and unfair to equate the membership as the *sole* influence, but the indication given in my interviews is that the C40 has not only provided technical assistance, but that the organization's growing ambitions have also helped increase Hong Kong's own. This is true particularly in light of C40's *Deadline 2020* plan to prevent greater than 1.5C warming. Another significant factor in driving Hong Kong's climate action has been its relationship with the People's Republic of China's and their parallel participation in global climate action.[301] While considering climate change as early as the late 1990s, the colony, and then the Special Administrative Region, generally approached environmental and climate action as a means to an end, rather than a positive pursuit in and of itself. The leadership in Beijing, both in its initial participation in the UNFCCC and through the adoption of the Kyoto Protocol, appears to also have played a role in shaping perspectives in Hong Kong.[302] After the 2007 speech by then-Chief Executive Donald Tsang regarding the

[299] Acuto, Michele. *Global cities, governance and diplomacy: The urban link*. (London: Routledge, 2013.) Pg., 116
[300] Gordon, David Jeremy. "From Global Cities to Global Governors: Power, Politics, and the Convergence of Urban Climate Governance." (PhD dissertation., University of Toronto, 2016). Pg., 167
[301] Ng, Mee Kam. "A critical review of Hong Kong's proposed climate change strategy and action agenda." *Cities* 29, no. 2 (2012): Pg. 88
[302] Ibid. Pg. 92

environment, there was a marked uptick in Hong Kong's climate action efforts — one which has continued and increased after joining the C40. Part of this is no doubt a natural growth of the SAR's international engagement as institutional understandings develop between it and the PRC regarding where and how it could do so. And as this understanding grew, frameworks were established, within the C40, within the Pearl River Delta, and on other bi- and multi-lateral bases.

From a practitioner's viewpoint, membership has borne fruit in the form of both an awareness of and an access to some of the most aggressive climate action programmes in the world. On particular projects, such as Hong Kong's ongoing drainage work, it has meant direct contact between Hong Kong and a member city like Melbourne. In other cases, where this a more general policy interest, such as in Tokyo's building emissions cap and trade system, they have been able to gather information before taking action. It is clear that on both an individual level and a departmental level, respect for the C40 is high; it is seen as a place of "inspiration," where staff seek to "learn they key[s] to success" from other cities.[303] This is clear in the serious efforts at informational dissemination from C40 workshops and summits, with both C40 materials presented and Hong Kong-staff prepared summaries given to the relevant departments and actors.[304] This dedication to bringing home the right data and maximising the usefulness of C40 was also evinced in the personal connections that staff made with other cities. Hong Kong, as a Megacity member, had strong connections with both cities of its own class and Innovators, like Portland. Connections ranged from formal meetings or tours, to a quick text or phone-call. The information received was

[303] Interviews with Hong Kong staff by Author. Skype. Jan 17, 2017.
[304] Ibid

used in various ways, but in many cases was useful to the influencing of different levels of staff or consultants who needed convincing that the more aggressive measures of other C40 members could be worthwhile.[305]

Hong Kong's commitment to a 1.5C warming scenario appears to have grown stronger as time goes on. But in order to keep that commitment, a steep reductions pathway will be necessary, as envisioned in *Deadline 2020*.[306] This will be difficult: while many cities will face immense difficulty with their announced many ambitious reductions strategies, such as mid-century zero emissions scenarios, Hong Kong's strategies and announced goals still fall significantly short of 1.5C.[307] There are opportunities, however, as Hong Kong's existing urban morphology and various governmental authorities lend themselves well to further sustainability measures. Its engagement with the other Pearl River Delta cities can ideally influence them in a similar direction, as well. Finally, Hong Kong's ever changing relationship with the People's Republic of China is a place for key concern. The growth of Mainland China's climate ambitions has no doubt influenced the Special Administrative Region, and yet the exact nature of this relationship will no doubt change as time goes on. With the very real possibility of antagonism to global climate policy from the (national) American government under President Donald Trump, both the fulsome participation of China and Hong Kong in global climate policy will be ever more essential.

[305] Interviews with Hong Kong staff by Author. Skype. Jan 17, 2017.
[306] C40. *Deadline 2020.* (November, 2016) Pg., 30-31
[307] Interviews with Hong Kong staff by Author. Skype. Jan 17, 2017.

Chapter 5: Findings and Conclusion

"My point is not that everything is bad, but that everything is dangerous, which is not exactly the same as bad. If everything is dangerous, then we always have something to do."
— Michel Foucault, ""On the Genealogy of Ethics: An Overview of Work in Progress,"
in *Michel Foucault: Beyond Structuralism and Hermeneutics*, (1983)

5.1 Introduction

The purpose of my project was straightforward: use two C40 member cities as case studies for what impact, if any, the C40 has on its members. I wanted to understand this relationship, report out on unique aspects of each city's participation, and suggest, if possible, ways in which any actor in the relationship might adapt its actions to increase coordination and capacity. In the simplest terms, my overall findings are that the C40 does have some impact on climate policy in each city. For Vancouver, the impact is twofold: firstly, in the generation of "political cover" at home – enabling the city to justify aggressive climate change actions to local audiences — and secondly, the opportunity to influence other, larger cities and leverage further climate change action internationally. For Hong Kong, the relationship to the C40 and to other member cities brings direct policy and technical information, and, especially after 2015, is creating pressure to take more aggressive climate action. The distinctiveness of this influence is reflective of the larger context that informs the current functioning of their membership, and the reasons they joined the group in the first place. Vancouver was highly influenced by a desire to motivate or circumvent intransigent federal leadership in Canada, while the growth of Hong Kong's climate policy seems to have been influenced by the increased engagement of the People's Republic of China in the COP process and other climate fora. On a more granular level, the participation of practitioners as representatives of the two cities also suggested C40 membership was

meaningful. In both cases, practitioners were able to gather inspiration, a sense of shared purpose, and sometimes direct technical information from other network members. The intimacy of some of these conversations was notable, and the agency with which some of these professionals took action adds a new layer of complexity to how we understand the network of climate policy and planning practitioners around the world.

In this chapter I want to relay the more intimate features of my findings with reference to the literature that they build off of, respond to, or push back against. I will offer thoughts on the limitations of my findings and how future work may overcome some of these limitations, and how perennial challenges in this kind of research (such as GHG attributions) may be navigated. I will conclude with some broad commentary on the significance of this work and of transnational urban climate action, and what we may look forward to next in this field.

5.2 Findings and Discussion

This study has engaged with a number of aspects of the existing research on transnational climate change governance, and on the C40 directly. Particularly with reference to the latter area of study, my work builds on the frameworks of others, confirming and elaborating on some of their findings. With its focus on practitioners, and in comparing a megacity to an Innovator within the network, it focuses on other fine-grained analyses of the C40, particularly those of David Gordon, and Taedong Lee and Chris Koski, Trencher *et al*, and Li *et al.* [308] The intersection of global agreements

[308]Gordon, David J. "Between local innovation and global impact: cities, networks, and the governance of climate change." *Canadian Foreign Policy Journal* 19, no. 3 (2013): 288-307.
Trencher, Gregory, Vanesa Castán Broto, Tomoko Takagi, Zoe Sprigings, Yuko Nishida, and Masaru Yarime. "Innovative policy practices to advance building energy efficiency and retrofitting: Approaches, impacts and challenges in ten C40 cities." *Environmental Science & Policy* 66 (2016): 353-365.

and norm-creating bodies, such as C40, with the day-to-day work of planners and other sustainability practitioners is an as-of-yet underrepresented area of exploration, even as the impact of transnational and 'translocal' bodies are increasingly recognised.[309] My work here affirms the previous judgements around the value of these networks and some of the understandings of their procedural operation.[310] It also shows the increasing coherency of C40 as an institution at the same time as its members continue to navigate differing visions of what the organization should be doing. These insights are captured in five overarching insights of my work:

Firstly, my findings were that the C40 does indeed have an impact on the two members I studied, particularly on their higher-order strategic ambitions and the navigation of both local and extra-local politics. All of the staff and the one elected official interviewed agreed that membership in the C40 was meaningful to their work on climate change. This operated in significantly varied ways between the two cities, with Vancouver seeing itself as a net provider of ideas to the network, while Hong Kong staff primarily thought of themselves as primarily receiving ideas. Vancouver felt it was able to fulfil internal goals about influencing global conversations around climate change, and that it was able to justify ongoing work at home by appealing to a global standard. Hong Kong, in turn, felt it was learning from a diverse cast of international cases and that it was being pushed, progressively, towards more aggressive climate change policy

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Li, Zhijie, María José Galeano Galván, Wim Ravesteijn, and Zhongying Qi. "Towards low carbon based economic development: Shanghai as a C40 city." *Science of The Total Environment* 576 (2017): 538-548.

[309] Lee, Taedong, and Chris Koski. "Mitigating global warming in global cities: Comparing participation and climate change policies of C40 cities." Journal of Comparative Policy Analysis: Research and Practice 16, no. 5 (2014): Pg., 477

[310] Fünfgeld, Hartmut. "Facilitating local climate change adaptation through transnational municipal networks." Current Opinion in Environmental Sustainability 12 (2015): 67-73.
Acuto, Michele. "City leadership in global governance." *Global Governance: A Review of Multilateralism and International Organizations* 19, no. 3 (2013): 481-498.
Bulkeley, Harriet, and Michele M. Betsill. "Revisiting the urban politics of climate change." *Environmental Politics* 22, no. 1 (2013): 136-154.

goals. As per David Gordon's work, the C40 was repeatedly mentioned with a sense of 'coherence' by all actors, and, as per post-2011 efforts, the interconnectivity described by the cities was varied and did not sit along strictly geographical or linguistic lines.[311] Their roles within the network, as Innovator and Megacity, appeared to have a large impact on where their greatest impact was felt. Vancouver wanted to leverage connections through the C40 to either drive its own innovation further, or influence particular issues that it was concerned with. Hong Kong took a more targeted approach of taking ideas from wherever they arose and could help shape local policy. The impact of membership was described notably by one Vancouver staff member as having helped shift of the "zeitgeist" within the City towards a more global perspective, particularly amongst elected officials and that "knowledge across the board, of environment and [of] the need to act and how to act is increasing," rather than having led to any direct technical knowledge transfers. [312] While, this shift operated different in both contexts, this description felt broadly applicable.

Secondly, and in contrast to the strategic orientation of the political leaders, technical staff and non-managers affirmed that C40 also provides useful technical information to their work and can serve as an outside motivator within intra-departmental politics and decision making. In both cases, interviewees said that they variously drew information, "inspiration," "support," from the network, and that the C40 did all of these things "really well."[313] This finding is relatively novel in the existing research on the network, since so few studies have focused on practitioners. Many of the

[311] Gordon, David. *From Global Cities to Global Governors: Power, Politics and the Convergence of Urban Climate Governance* (PhD dissertation, University of Toronto, 2015) Pg., 174
[312] Shield, Malcolm. Interview by Author. In-person. Vancouver, July 29, 2016
Ibid
[313] Hong Kong Officials. Interview by Author. Skype. January 17, 2017.
Planner at the City of Vancouver. Interview by Author. In Person. January 16, 2016.

interviewees mentioned the professional staff of the network and the resources that it was able to bring to bear. They expressed knowledge of the resources that were available and considered, with a few exceptions (such as with electric vehicles), the different topical networks as useful places to refer to. Other networks, particularly smaller ones like the USDN, could sometimes be frustrating because they had so little money to provide and often it went to consciousness-raising exercises amongst a wide number of members, rather than more complex projects. The C40 was able to, as Vancouver Economic Development officer Veltkamp put it, not just facilitate meetings but "help do work," whether research, brainstorming, or, in limited cases, providing resources (such as dedicated or seconded staff).[314] Additionally, the C40 staff were, by all accounts, highly responsive to the desires and intentions of the network members. All interviewees said how much they appreciated the frequency and depth with which they were consulted by C40 staff about the direction and scope of work that each network was undertaken.[315]

What was interesting to note in the course of the interviews in Vancouver – and this was true at all levels, from front-line civil servants, to managers, to City Councillor Andrea Reimer – was that the C40 was seen as a leverage point for specific practice-related projects, or particular political initiatives, to be taken forward. The individual projects of staff, such as a adding a health dimension to green growth planning, or research particular aspects of blue infrastructure, could be explored or realized through the network in research, facilitated conversations, or other provisions of resources.[316] The sense of give-and-take from the network to the members was very clear from both

[314] Veltkamp, Juvarya. Interview by Author. In-person. Vancouver, July 13th, 2016.
[315] Hong Kong Officials. Interview by Author. Skype. January 17, 2017.
[316] Ibid

cities, advancing practice and policy in other jurisdictions, while also motivating changes at home. Both Hong Kong officials noted that the external motivation provided by other C40 cities enabled them to make a case to senior officials that they worked with to take on more aggressive mitigation or adaptation actions.[317] Most Vancouver officials said that they seldom had to use C40 case studies to make an argument intra-departmentally, but they were often referenced in public-facing conversations, reports, or meetings.[318] A further interesting piece to note is that in some cases, city staff were responding to C40 priorities, as was the case when the Vancouver Economic Commission was recommended to join as Vancouver's representative to the Green Growth Network.[319]

My third finding was that there appears to be a strong link between Innovator Cities, both in terms of how their staff interact, but also in how they integrate higher order political ambitions like the Carbon Neutral Cities Alliance (which C40 helped incubate) into planning and work they do within C40. The C40 is unique for its exclusivity, unlike many other networks, cities must be invited to join the group. The two membership classes are intended to work in concert with one another; megacities are leveraged for their impact, while innovators are leveraged for their ideas. Comments from the City of Vancouver suggest that there may be an unrecognised or unspoken substrata to the overall C40 group, wherein there are strong relationships between the Innovator cities (and potentially other formal or informal groups of cities). Vancouver interview subjects noted a high degree of affinity between themselves and the other

[317] Hong Kong Officials. Interview by Author. Skype. January 17, 2017.
[318] Shield, Malcolm. Interview by Author. In-person. Vancouver, July 29, 2016
Veltkamp, Juvarya. Interview by Author. In-person. Vancouver, July 13th, 2016.
Planner at the City of Vancouver. Interview by Author. In Person. January 16, 2016.
[319] Veltkamp, Juvarya. Interview by Author. In-person. Vancouver, July 13th, 2016.

Nordic cities, such as Copenhagen, which some staff identified as a fellow "aggressive" actor in *within* the Innovator class. Both were fairly explicit in aiming to help push the network towards more transformative actions. This is evinced in the City Solutions platform, created in partnership between Vancouver, Copenhagen, and the C40; new ideas were brought to the fore because of the intra-network collaboration between the innovators, made with a strong intention to move overall network policy.

The fourth finding was that the C40 awards continue to remain a motivating output of C40's activities. Both cases discussed awards and the motivation that they brought to their activities, maintaining Gordon's finding that awards "constitute a source of 'peer pressure'" since they serve to enhance (through positive recognition) or undermine (through non-adherence) city efforts to compete effectively for capital investments and global stature."[320] Vancouver staff and officials mentioned the awards largely as a means to an end: justifying further programme and policy changes at home with an appeal to internationally created standards.[321] For Hong Kong, the awards appeared to generate a sense of excitement (and disappointment, when a win did not emerge) and were seen simultaneously as a marker of the city's climate leadership, but also a worthwhile source of technical knowledge and best practices.[322]

Finally, I also found that there was a strong influence of national politics on one of the cases, and an unclear, but potentially strong influence on the other. Background research suggested that national contexts would play a role in both case studies participation in network, and interviews in Vancouver confirmed this for that specific

[320] Gordon, David. *From Global Cities to Global Governors: Power, Politics and the Convergence of Urban Climate Governance* (PhD dissertation, University of Toronto, 2015) Pg., 167
[321] Veltkamp, Juvarya. Interview by Author. In-person. Vancouver, July 13th, 2016.
Shield, Malcolm. Interview by Author. In-person. Vancouver, July 29, 2016
[322] Hong Kong Officials. Interview by Author. Skype. January 17, 2017.

case.[323] Councillor Reimer mentioned that at the political level there had been a specific realization that Vancouver could help carry the banner of Canadian climate ambitions at a time when there were relatively few loud voices speaking on the issue. They specifically wanted to push back against the "unfriendly" national government under Prime Minister Stephen Harper, at the same time as they could champion transformative climate action more broadly.[324] Hong Kong interviews were different in that there was no specific indication given either way, even while primary documents and secondary literature both suggested that Hong Kong had been moved by the decision of the People's Republic of China to move more aggressively on the climate action after 2004.[325]

5.3 Findings Relevant to Future Action by the C40

In the second aspect of my research, I also attempted to look for opportunities where the cities or C40 could modify policy, practice, frameworks, or day-to-day operations to better respond to new or recognised challenges. In the course of my exploration, a number of possibilities did arise. Interview subjects made numerous suggestions based on my question around potential changes or additions to the organization. It is important to note that these suggestions were generally framed in an open, exploratory way, as so many of those who responded were happy with the day-to-day workings of the organization and, importantly, felt that it was closely responding to their priorities, especially when there was a jointly-developed work plan. This finding

[323] Roger, Charles, Thomas Hale, and Liliana Andonova. *How do domestic politics shape participation in transnational climate governance?*. BSG Working paper, BSG-WP-2015-001, University of Oxford, 2015.
[324] Reimer, Andrea. Interview by Author. Phone. (July 2016)
[325] Ng, Edward, Liang Chen, Yingna Wang, and Chao Yuan. "A study on the cooling effects of greening in a high-density city: an experience from Hong Kong." *Building and Environment* 47 (2012): 256-271.
Hong Kong Environmental Protection Bureau. *Hong Kong Climate Change Report, 2015.* (November, 2017) Accessed from: http://www.enb.gov.hk/sites/default/files/pdf/ClimateChangeEng.pdf

significant in light of the fact of Hong Kong subjects' feelings that C40 was driving their work in newer, more aggressive directions; they still were satisfied with membership. The subjects were given the prompt "are there any specific ideas, broad concepts, or discussion areas that you would like to see C40 pursue that it has not yet already?" In terms of direct responses to this, Vancouver interviewees were provided several suggestions over the course of my separate interviews there. My interviews with Hong Kong officials proceeded differently, firstly because there were only two I was able to interview, but also because they requested to be interviewed at the same time. Their answers were more iterative and institutional in nature and over the course of a short discussion, a single idea was selected by both officials.

The Hong Kong suggestion spoke to not only their considerations as a Steering Committee member, but also in relation to what they were hearing from other cities in their region: financing. One official noted that there were conversations about how "C40 was not doing enough to offer financing for projects," particularly for "those poorer cities and third world countries."[326] There was clear understanding that there was no money directly within the C40 to pay for large-scale infrastructure projects, but Hong Kong relayed concerns regarding the "small amount" of money that was used for (largely Western) consultants to "do the design or provide the concepts," but not to leave a lasting, physical legacy.[327] C40 has been attempting to address this over the past year, specifically with its Financing Sustainable Cities Initiative programme and the C40 Cities Finance Facility (CFF). The CFF in particular is geared towards the preparation of projects that need financing, along with capacity development for city officials in order

[326] Hong Kong Officials. Interview by Author. Skype. January 17, 2017.
[327] Ibid

to create projects that can actually receive direct financing.[328] The Financing Sustainable Cities Initiative, beginning after Paris, has now worked to broaden the types of knowledge included in the CFF, and prepare more stakeholders to attract financing.[329] In the United States, for example, coalitions to produce municipal 'green' or 'climate bonds' have had some success, but internationally, the financial mechanisms appear to have had less take-up thus far.[330] C40 Chair Anne Hidalgo mentioned this crucial challenge in her 2016 closing address, but Hong Kong's reiteration means that there is still more work to be done.[331]

As an Innovator city, Vancouver's comments about possible C40 policy changes took a different tack, reflective of the more aggressive climate action it is known for, as well as its position as a wealthy, northern city. Councillor Reimer started with this ambition at the highest levels in her comments, arguing that the sometimes highly technical focus of both the C40 and of Vancouver's staff missed broader issues, like "environmental justice."[332] She said some cities and their mayors, such as Bogotá, Johannesburg, and New York, were already tackling very well, but that the organisation as a whole could be more explicit about this.[333] Reimer's comments suggested that there

[328] C40. "Cities Finance Facility," *C40 Cities Climate Leadership Group website.* (n.d.) <http://www.c40.org/programmes/c40-cities-finance-facility>
[329] Alexander, James and Val Smith. "Opinion: 4 Ways Cities Are Financing Climate Action," *devex*, Feb 1, 2017. Accessed from: <https://www.devex.com/news/opinion-4-ways-cities-are-financing-climate-action-89533>
[330] It is worth noting that development banks are a major contributor of green bonds globally, many of them through the European Investment Bank, but that there remain many technical challenges, often related to city capacity and transparency, that have prevented further entrenchment of the green bond market globally.
See: *2015 Joint Report on Multilateral Development Banks' Climate Finance*. (August, 2016). Accessed from: <http://www.eib.org/attachments/documents/joint_mdb_report_on_climate_finance_2015.pdf>
Climate Bonds Initiative. *Bonds and Climate Change: the State of the Market in 2016.* (July, 2016). Accessed from: <https://www.climatebonds.net/files/files/reports/cbi-hsbc-state-of-the-market-2016.pdf>
[331] C40. "Anne Hidalgo, Opening Summit Speech," *C40 Blog,* December 1, 2016. <http://www.c40.org/blog_posts/anne-hidalgo-summit-opening-speech>
[332] Reimer, Andrea. Interview by Author. Phone. (July 2016)
[333] Ibid

was a moral framing, which she used Pope Francis' encyclical on climate change as an example of, that sometimes went unspoken in C40's work and that might further motivate people to take action. This was mirrored in another subject's concern regarding social sustainability, where they mentioned that many American cities were taking action in this realm, but that both the overall C40 and the specifically Canadian response to this had been somewhat lacking.[334] Their concluding remarks on the topic were the most stark: "I think there's a recognition from practitioners that environmental quality affects the poorest people most deeply," yet they not seen systematic policy response "put together in a complete way."[335] The subject felt that this was a broader challenge within the environmental policy world, but did suggest that C40 had the resources to consider it more seriously than most.[336]

More specific to the position of Vancouver, there was some discussion with different staff members about the possibility of greater connections between the Innovator Cities. With one senior staff member, I asked about the presence of any formal or informal 'Innovator City Caucus.' While they replied that no such mechanism or grouping really existed, they did suggest that there may be value in more connections between these cities within the network. In particular, they stressed the individual nature of city representation within the C40 Steering Committee. Referencing the membership of Copenhagen's Lord Mayor, Frank Jensen, they said that the leadership of C40 was not institutionalised strictly along population and GDP lines, but rather that the personal leadership of different Mayors mattered.[337] If this is true, and this subject speculated as such, there may be utility in seeking greater Innovator-to-Innovator

[334] Planner at the City of Vancouver. Interview by Author. In Person. January 16, 2016.
[335] Ibid
[336] Ibid
[337] City of Vancouver official. Interview by author. In person. January 22nd, 2016.

connections. Speculating on this further, this could take several forms, each with their own obvious advantages and challenges: formal caucusing of Innovators during C40 summits, both to clarify political priorities for the Steering Committee representative, and to share ideas for actions to be taken throughout the network.[338] Another option would be to pursue informal caucusing, with some anticipatory planning before-hand, to focus political intentions and identify shared priorities as a membership class. This could have impacts on Steering Committee priorities, but would have to be executed sensitively so as to create no obvious bloc that might disturb the overall C40 membership structure. More minimal still, connections could be made between select Innovator cities, as appears to be the case between Vancouver and Copenhagen already, on selected projects and specific ambitions for the network. While the former two examples could have at least some sort of C40 organizational role, the latter would have to be entirely initiated by individual Innovator leaders.

This kind of partnership thinking also resonated on a staff level, as well. In conversations regarding the cross-cutting impacts of the C40 membership on Vancouver, VEC representative to the Green Growth Network, Juvarya Veltkamp, suggested that there were not enough connections between networks. Using the example of the Green Growth and District Energy Networks, she noted that there was sporadic communication between these teams within the City of Vancouver, who each were apart of those networks, and that it was hard for initiatives between networks to tie into one another as a result.[339] She mentioned in particular that because green growth is such a cross-cutting area of action, both as a general policy area and specifically within the

[338] From the discussion of how the City Solutions Platform was created, it appears that this may take place on an ad-hoc basis already, but from what I could tell, there was no formal or regularized mechanism which could be leveraged right now.
[339] Veltkamp, Juvarya. Interview by Author. In-person. Vancouver, July 13th, 2016.

Greenest City Action Plan, there could be more effort to reach out to networks to educate them on what their work meant, and how green growth practitioners could be better integrated.[340] For certain networks, this might be less tenable, and certainly not all networks will have something relevant to say to all others, but the drive to connect work (which could be carried out by or under the supervision of the C40's Head of Programming, or Strategic Initiatives) could generate real value on an project-to-project basis.

Another missing connection that was notable throughout the interviews was between the various staff people and professional associations. Three Vancouver staff mentioned the Urban Sustainability Directors' Network (USDN), and one Hong Kong staff member was a member of the local green building council and engineering association, but notably, there was a relative absence of strong connections with professional organizations, like the Canadian Institute of Planners (CIP), the Hong Kong Institute of Planners (HKIP), the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC), or otherwise. Part of the reason for this is that City of Vancouver does not provide financial assistance for professional memberships, but one interviewee in particular said that many at the city did not find much use in broad organizations, since they tended to work at the level of the lowest common denominator.[341] The C40's *Deadline 2020* report spells out an opportunity here with relation to these professional networks and connections: if all cities around the world were to take the recommendations in the report to action, 40% of the

[340] Veltkamp, Juvarya. Interview by Author. In-person. Vancouver, July 13th, 2016.
[341] City of Vancouver planning staff, e-mail message to Author, February 6, 2016.

emissions gap in the 1.5C scenario could be filled.[342] Expanding connections to these smaller cities through some sort of collaboration with professional associations, particularly for civil engineers and planners, or other, larger sustainability organizations like ICLEI, could help further leverage the planning and strategies developed by C40. While ICLEI, USDN, and even the Canadian Institute of Planners and American Planning Association, have numerous climate commitments (and a number of specific emissions reductions pathways), none, with the exception of the Carbon Neutral Cities Alliance, have the simultaneous ambitiousness and clarity that *Deadline 2020* has. The more actors that are able to leverage this work, the closer we may get to preventing more than 1.5C warming.

Related to this is an ongoing challenge that C40 has continued to face: how to effectively engage with and leverage support from regions. Both Vancouver and Hong Kong are situated within broader regions that their climate action has increasingly had to account for — Greater Vancouver and the Pearl River Delta, respectively. In both cases, early climate action on a local scale increasingly has had to become leveraged within regional considerations: for Vancouver, this has particularly meant engagement to help control regional land-use decisions and transportation planning and funding, particularly to ensure compact growth and sufficient transit-funding. Hong Kong's internal deindustrialization has been matched with the inverse development throughout much of the rest of the Pearl River Delta, where pollution, destruction of habits and natural systems, and rising GHG emissions are all increasingly dire. The regional imperative has a clear academic and policy resonance, yet the practical challenges of pursuing action are immense. One Vancouver interviewee noted that C40 has to

[342] C40. *Deadline 2020: How Cities Will Get the Job Done*. (2016) Pg., 9

contend with the variations of just what a 'region' means in different contexts: "In North America each state or province has their own system of regional governments, each operates differently and has different authorities. It makes things quite challenging."[343] They suggested, however, that general standards, perhaps for emissions reporting (perhaps as an iteration or addendum to the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories, which C40 helps to host) and target-setting, could create greater alignment. "If regional governments start getting positive attention for what they're doing," then they could gain "more support" and take on more aggressive actions.[344]

5.4 Limitations

What I have laid out in my findings and discussion, and in the entire unfolding of my thesis, faces two key limitations. The first are the standard challenges associated with being an emerging researcher: time, budget, connections, and chance. These logistical challenges are worth referencing at the start because they have indeed impacted my research, but I do not believe form the most meaningful aspects of difficulty that I have had to navigate and that must be kept in mind as my work settles into the larger field of transnational climate change research. The second set of limitations for my research are related to the research design and which have been 'built into' the study from the start. These limitations — of scope, of causality, and of applicability — are most relevant to what can be done with my research and I hope clarity around them will lead to better mobilization of my work in the future.

[343] City of Vancouver official. Interview by author. In person. January 22nd, 2016.
[344] Ibid

In terms of logistical challenges that have created limitations for my study, the obvious ones apply: this was a master's thesis, completed over roughly 24-months by a single student with limited budget, other commitments (including school and full-time work), and fledgling connections to the climate policy and planning world. In both of my case studies, I had to navigate the complex government-to-academia relationship, which has both formal and legal barriers, such as permission and access, that must be overcome or deconstructed. With my Hong Kong case study, while I had been to the city before and had at least some grasp of its climate policy and political operations, I also occupied a complex position as an outsider in a cross-cultural context. Navigating my positionality as a young, white researcher working in a former colony meant particular care had to be taken not to recode past oppressions in my interactions there, which meant I had to ensure that the narrative I have produced faithfully represents their ideas that, because of language barriers and cultural differences, may have had uneven or unclear transmission. Because of this, I have tried to be as reflexive and careful in my wording as possible, further sympathetic to the complex political climate in which these actors operate vis-a-vis Hong Kong and the People's Republic of China.

The second aspect of my work are these larger challenges of research design. For both Hong Kong and Vancouver, I made the decision to position my work as aiming to assist the practitioners and policymakers that I interviewed. Their positionality as governmental staff and elected leaders, as well as collaborators with the C40 and its staff, meant that conversations we had were generally aspirational in nature, and had to be enacted in both a format and on a timescale that worked best for them. As with any interview, the information provided by the subjects was personal and sometimes in need of outside verification. Logistically, navigating their schedules provided a significant

challenge: for certain interviews, I had to wait as long as eight months to finally schedule an appointment.

I kept my central focus on what these actors would like to see more of in the future, while also asking them to reflect on what impact they felt the C40 had already had in their city. Because I framed these discussions broadly and in aspirational terms, they had the opportunity to provide 'safe' answers on technical issues, rather than creating an obligation to refer to broad political changes (though some did choose to). Interestingly, in Vancouver, all of the staff chose to make reference to the political nature of their work and, as already noted, saw the primary value of the C40 in its ability to justify their work to the public and elected officials. They felt that C40 had not changed the strategic orientation of Vancouver, but had allowed certain aspects of it (including themselves as staff) to take on a more globally engaged role. Hong Kong interview subjects, in contrast, stuck very much to the technical framing of the questions and answered in this vein. This has created a limitation for my study in terms of the applicability of these results to practitioners: because of the variedness of their work and the often subtle ways in which they interacted with the C40, it is difficult to get a sense of further areas for improvement. On the other hand, however, I believe I have seen a clear indication that practitioners see value in a global arrangement such as the C40 and that it does provide some larger-scale assistance to what they do. In this sense, I think further exploration is warranted to better understand their needs.

This relates to a broader limitation of my study vis-a-vis its research design. This was a comparative study, taking two highly distinct cities and comparing how they both interact with a large, international, and internally diverse organization that itself works on a large, diverse policy area. The key danger that I have tried to be wary of with

respect to this is generalization. My findings with regards to the perceived efficacy of C40 within two cities are obviously not generalizable to all other members at this time. The local forces and factors that shape the nature and direction of each case study's relationship with this global organization may be decidedly unique, and non-representative.

Each of these limitations relates to one of the singular challenges of studying this kind of transmissive process: causality is impossible to determine. While I had no expectation that my research would show any causal link between joining the C40 and the achievement of some vague notion of 'climate leadership,' or even the creation of one policy in either case study, *impact* is a crucial concern. Indeed, my interest has been to understand what influence the staff or the settings of C40 have played on the creation of policy or practice in the case studies. On this latter count, a clear link has been shown.

With reference to the idea of 'creation' there is a further, empirical reality of climate policy research that my work has had to grapple with: what are the policies that underpin 'climate policy'? What exactly is being created, and how should they be measured? The answer that I hope has been woven through my work here carefully is important as it is unsatisfactory: climate policies include actions that are geared towards altering the existing, negative human impacts on the climate (mitigation), or forestalling or removing dangers posed to humans by climate change (adaptation). Within those two categories, an entire universe of possible actions are contained, which is why my exploration of policy has been so wide-ranging.

When considering effectiveness, most measurements of the effectiveness of climate change mitigation policy focus explicitly on GHG reductions (adaptation in

contrast, is far more varied).[345] An 'effective' mitigation policy may be one where reductions are achieved in a just, or cost-effective manner. The policies and practices that I have looked at in both of my case studies have largely centred on emissions reductions actions, though Hong Kong's work in flood management and coastal adaptation was also mentioned by my interviewees. While attributions of actual emissions reductions would serve to understand the causal efficacy of these policies themselves, this has not been my purpose with this project: I have wanted to understand how the C40's policy sharing process unfolds and what changes might increase the efficacy of that sharing. Understanding the GHG impacts of these policies would be a desirable further aspect to touch on, but one that is been beyond my time and resources. Furthermore, there are some fundamental challenges to tracing causality through the kind of global policymaking process that the C40 is engaged in. My work has intended to focus on whether or not there is indeed a relationship between policy creation in the two case studies and the C40 and to see how it functions. On this count, I have been successful, and hope that future research may build from this established linkage.

5.5 Future Research

With these limitations in mind, I believe that my research has pointed to a number of opportunities that future researchers could choose to explore. Broadly speaking, these possibilities appear to fall into one of two camps: research related to

[345] Krause, Rachel M. "Symbolic or substantive policy? Measuring the extent of local commitment to climate protection." *Environment and Planning C: Government and Policy* 29, no. 1 (2011): 46-62.

A further aspect to navigate is the gap between observed and intended effects. Standardized regimes, including GHG protocols and emissions measures standards proliferate now, but the 'intention gap,' is a crucial challenge. For an older study touching on this, see: Helm, Carsten, and Detlef Sprinz. "Measuring the effectiveness of international environmental regimes." *Journal of Conflict Resolution* 44, no. 5 (2000): 630-652.

practitioners, and research related to transnational climate change governance institutions.

On the first count, I have tried to centre practitioners in my research an unexplored avenue within transnational climate governance research. One of the more interesting findings of my research has been the agency with which some practitioners act in the climate policy space. While individual planners could not change overarching strategic policy, actions like the Vancouver Economic Commission joining C40's Green Growth network show that individual actors could significantly realign strategic forces. In the case of Vancouver, the decision to allow the VEC to join the network was easy since it already aligned with existing city goals, but its initiation by an actor working at the front lines of implementation with C40 staff is notable. What other instances of this kind of realignment exist amongst C40 cities? Have there been instances where frontline staff were able to significantly shift departmental priorities by appealing to C40 membership? What conditions had to be present for this to occur? Are there things that outside forces, either fellow city staff, or other actors, can do to help these climate champions? These are all questions that I believe additional exploration could create interesting outputs and, ideally, provide further assistance to practitioners as they push for progressive climate policy all over the world.

On the second aspect, with relation to transnational climate change governance institutions, I feel that there are a number of questions that arose in the course of my research that bear consideration. The first is with respect to an institution in close alignment with C40, but distinct from it: The Carbon Neutral Cities Alliance (CNCA). From my interviews in Vancouver, it is clear that it exhibits a strong pull on both strategic policy and practitioner's day-to-day work in that city. It's "egalitarian" internal

structure, as one subject put it, is interesting to contrast with its highly exclusive orientation — only cities who have made a commitment to cut carbon emissions by 80% by or before 2050 are able to join.[346] As of 2017, this fledgling organization has just twenty members, with a small staff and secretariat, and over $2.75 million (USD) in operational funding.[347] Both from my interviews and from the documentation of the CNCA itself, it is clear that the structures of idea-sharing (e.g., webinars, summits, staff to assist with research) are not that dissimilar from C40 and other transnational urban networks. [348] In contrast to the C40 model of leveraging the largest cities to achieve the greatest *aggregate* emissions reductions, the CNCA is geared towards radically expanding the *idea* of what is possible — the end-point being the full removal of fossil fuels from all energy systems. As of this writing, no focused study on the CNCA has yet taken place. Ergo, exploration of the efficacy of this organization, its novel aspects in comparison to the C40 other networks, and normative research to increase its effectiveness, could all be tremendously useful. Additionally, understanding its efficacy critically within the ecosystem of other strong urban climate commitments, such as the *Deadline 2020* report (which does overlap significantly with CNCA goals), would be useful in converging efforts and could help prevent fatigue amongst city governments and officials.

Two additional research objectives with relation to transnational institutions also arise: firstly, are how they relate to metropolitan and mega-regions, and secondly to national engagements and agreements. The "regional" problem is well-identified within

[346] City of Vancouver official. Interview by author. In person. January 22nd, 2016.
[347] Carbon Neutral Cities Alliance (CNCA). *Year In Review — 2016.* (January, 2017) Accessed from: <http://usdn.org/uploads/cms/documents/cnca_year_in_review.pdf>
[348] Planner at the City of Vancouver. Interview by Author. In Person. January 16, 2016.
Carbon Neutral Cities Alliance (CNCA). *Year In Review — 2016.* (January, 2017)

the C40 and was mentioned several times in interviews, but there is a nascent aspect to this that I believe has been relatively unexplored: trans-boundary mega-regions and metropolises. Hong Kong and the Pearl River Delta are a perfect example, but other cities in the C40 network, such as greater Washington, D.C., the New York metropolitan area, or even the much-debated 'megacity' of Vancouver-Seattle-Tacoma are also relevant. Helping regional governments, such as Metro Vancouver, or greater Los Angeles, achieve their climate change goals is a worthwhile and necessary area of research, but regional agglomerations (many, though not all of which are 'megacities') that span borders, particularly national ones, remain a pressing concern. The Pearl River Delta is well established in the research here, and other work has been done elsewhere, but if city governments continue increase the impact and efficacy of their climate policies, there will be significant research needs.[349] Other notable transboundary agglomerations of note that could be considered include the Upper Silesian Metropolitan area, the SIJORI 'Growth Triangle' (Singapore, the Malaysian city of Johor, and the Indonesian city of Riau), the Detroit-Windsor corridor, and the Zambia-Malawi-Mozambique Growth Triangle, among many others. There is much to be aware of in any new arrangements that may arise, and indeed many authors have already sounded their concern regarding these newer, larger metropolitan arrangements.[350] But

[349] Rieu-Clarke, Alistair, and Ruby Moynihan. *Transboundary water governance and climate change adaptation: International law, policy guidelines and best practice application*. (UNESCO Publishing, 2015)
Leck, Hayley, and David Simon. "Fostering multiscalar collaboration and co-operation for effective governance of climate change adaptation." *Urban Studies* 50, no. 6 (2013): 1221-1238.
Blatter, Joachim. "Beyond hierarchies and networks: Institutional logics and change in transboundary spaces." *Governance* 16, no. 4 (2003): 503-526.

[350] Lord, Alex. "From a new regionalism to an unusual regionalism? The emergence of non-standard regional spaces and lessons for the territorial reorganisation of the state." Urban Studies 43, no. 10 (2006): 1847-1877.
Ward, Kevin, and Andrew EG Jonas. "Competitive city-regionalism as a politics of space: a critical reinterpretation of the new regionalism. "Environment and Planning A 36, no. 12 (2004): 2119-2139.

regardless of what their ideal form might be and what their limitations are, it is of crucial importance to continue asking if and how the largest urban agglomerations can have their governance arrangements (if any) turned towards positive and just climate action.

Continuing on the theme of the cross-cutting impacts of transnational climate change governance, the tripartite relationship between organizations like the C40, their members, and national governments, is also needing of exploration. Two examples from Vancouver bear mentioning here: The Canadian National Zero Waste Council, which was started as a partnership between different departments within the Metro Vancouver and members of the business community, and Vancouver's work in helping to establish a national committee on zero-emission vehicles. In both of these instances, leadership and effort by the city and the region has led to a national-level engagement (with varying enthusiasm levels) on a topic that is jurisdictionally messy and requires multi-scalar collaboration, not to mention significant resources. In the Canadian and American contexts, there is some existing research here, some of it related to programmes like the Federation of Canadian Municipalities 'Partners for Climate Protection' (PCP).[351] Similar to Kenneth Abbot's idea of "orchestration" between transnational networks and international organizations, normative research in this area could consider the ways in which transnational organizations such as the C40 can partner with national governments to achieve their ends, even perhaps by drawing frameworks out their

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Leitner, Helga, and Eric Sheppard. ""The city is dead, long live the net": Harnessing European interurban networks for a neoliberal agenda." Antipode34, no. 3 (2002): 495-518.

[351] Gordon, David J. "Lament for a network? Cities and networked climate governance in Canada." *Environment and Planning C: Government and Policy* 34, no. 3 (2016): 529-545.

organizations and applying them as a national standard.[352] The emissions trajectories in the *Deadline 2020* report, or in the CNCA's 5-year plan, for example, could be applied at a national or sub-national level, provided the right resources and monitoring framework were in place. Research could assist either individual cities or whole transnational networks in understanding possible advocacy strategies and value-propositions, as well as different implementation pathways. It is clear from my research that organizations like C40 are already starting to play this role — one interviewee said that C40 had provided data that had been used in advocacy around a national electric vehicles strategy — what remains to be seen is how to marshal this role effectively into the future.[353]

5.6 Conclusion

I began this research by arguing that nation states have failed to properly deliver on protecting the world from climate change. At the time of writing this conclusion, this is a contention that recent events have affirmed even more starkly. The signing of the Paris agreement in 2015, and the subsequent 2016 meetings in Marrakech on implementation, are tremendous achievements, but only in the context of almost ten years of false-starts and stalemate. In relation to the true, fundamentally catastrophic potential of climate change, this is all a resounding failure. 2016 was the hottest year recorded in human history, following what was previously the hottest year in recorded history. Temperatures reached today have not been seen in 125,000 years.[354] In spite of

[352] Chan, Sander, Harro Asselt, Thomas Hale, Kenneth W. Abbott, Marianne Beisheim, Matthew Hoffmann, Brendan Guy et al. "Reinvigorating international climate policy: A comprehensive framework for effective nonstate action." *Global Policy* 6, no. 4 (2015): 466-473.
[353] Planner at the City of Vancouver. Interview by Author. In Person. January 16, 2016.
[354] Thompson, Andrea. "2016 Was the Hottest Year on Record," *Scientific American,* January 18, 2017. <https://www.scientificamerican.com/article/2016-was-the-hottest-year-on-record/>

the Paris Agreement having the fastest ever ratification of an international treaty, both the agreement itself, and the intended nationally determined contributions (INDCs) for those countries that have not yet ratified the agreement, still leave a tremendous deficit of action. According to the UNEP's 2016 *Emissions Gap Report,* there is a 15 gigaton Co_2e gap in the emissions predicted for 2030 and what would be needed to get us within a 50% chance of limiting warming to 1.5C if all of the conditional INDCs and NDCs are kept. Put another way, if every country perfectly executed its climate commitments, including those which are conditional upon various bilateral and multilateral agreements, there would still be a gap that is equivalent to two and a half times the *total* global emissions in 2015.[355] Even in the face of their greatest achievement in climate change negotiations, possibly ever, nation states still have been unable or unwilling to deliver what is needed. Knowing this, it is hard not to feel hopeless.

Yet organizations like C40 are working at a fever-pitch to try and match this unprecedented challenge. The *Deadline 2020* report, which I have mentioned several times here, is one of the preeminent examples of a response to this failure. The emissions reductions strategy outlined under the report are dramatic:

> "To remain within a 1.5 degree temperature rise, average per capita emissions across C40 cities would need to drop from over **5 tCO2e per capita today to around 2.9 tCO2e per capita by 2030** [emphasis added]."[356]

But even this will not be enough. C40 and ARUP have determined that if all cities with a population of over one-hundred thousand were to act on the emissions strategies outlined, they would only bring the world 40% closer to filling the gaps identified after

[355] Global emissions, expressed in gigatons of C02e were estimated at 35.7 in 2015. PBL Netherlands Environmental Assessment Agency. *Trends in Global C02 Emissions: 2015 Report.* (Netherlands, 2015) Pg., 10. Accessed from: <http://edgar.jrc.ec.europa.eu/news_docs/jrc-2015-trends-in-global-co2-emissions-2015-report-98184.pdf

[356] C40. *Deadline 2020.* (2015). Pg., 8

the Paris agreement.[357] Some $375 billion will need to be invested by 2020 alone, to begin to make good on those emissions reductions needs. [358]

As the intensity of this challenge sets in, the necessity of multi-layered, polycentric governance also becomes increasingly apparent. In addition to municipal action, corporate initiatives, such as the 'We Mean Business Coalition,' or those of different financial institutions, such as pension funds or investment banks, further add to the possible 'filling' of the emissions gap.[359] The exact numbers are uncertain, as the empirical difficulties of accounting for GHGs become increasingly clear; whatever additional emissions reductions these entities and coalitions may make possible, they are, at the very least, absolutely necessary to realizing even the current scope of the Paris agreement and all its many mushrooming implications. Frankly speaking, the challenge is profoundly stark and frightening.

In this research I have worked to understand what the impacts have been for the C40 as a particular instance of transnational climate change governance. In my explorations and interviews, I have seen that this 'transnational municipal climate network' of curious beginnings and tenuous history plays a powerful role with the institutions and individuals that it engages with. On the one hand, it is nothing more than the ambitions of different political actors, such as mayors and councillors, the communities that they represent, and the organized professionals who manage their affairs. It represents the ambitions of these actors and of their particular order of government, ever more self-aware and hungry for authority; and yet without their

[357] C40. *Deadline 2020*. (2015). Pg., 8
[358] Ibid
[359] Benson, George; Aliya Dossa, and Chiyi Tam. *Leveraging Institutional Investors for Climate-friendly Investments*. (Vancouver, 2016).
We Mean Business Coalition. *Realizing the Potential of the Paris Agreement.* (2016). Accessed from: http://www.wemeanbusinesscoalition.org/sites/default/files/The-Paris-Agreement_Z-Card_1.pdf

collective consent, the entire enterprise would fade in an instant. At the same time, however, for many of the people I have interviewed, the C40 has the distinct feeling of something larger and more encompassing than a mere association or manifestation of individual or institutional ambition. On the level of the public imagination, for many that I interviewed it has created a sense of global purpose. Most of the people that I have spoken with in the course of my research are intimately familiar with the challenge climate change poses for humanity — in private conversations with them, and with many others who work in this field, it is easy to see that they carry this with them on a deeply personal level. In its own way, the C40 implicitly gives them hope: they are not alone.

It would be irresponsible to say that because of this, this organization and others like it, are some inherently and all-encompassing good thing. Indeed, they have many failings. First and foremost, some of the largest and most prominent do not question some of the fundamental structures that have brought us to the brink; extractive, infinitely expanding consumption cannot persist if our species intends to survive prosperously into the future. At their worst, these networks can promote and maintain ideological systems that merely recode old patterns; they can engender a sense of millenarian or techno-utopian belief that everything will "be okay" at some undetermined future point. But at their best, they are a pragmatic attempt to save as many and as much as possible; change-focused people picking up whatever tools are available and leveraging them to make a meaningful difference. We have empirical proof that what has been done already, even with the flurry of actions from cities and other non-state actors, is not enough. The question I believe we must be asking now is not what have they done already, but rather, what will we all do next?

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Appendix

Appendix A: Interview Questions

Interview structure in each instance changed as per the course of the conversation with that particular staff person, but this structure was shared with the subjects before-hand and formed the basis of what was discussed each time.

Opening Questions

1. What is your position and title within [city government]?
2. What is your training? (e.g., formal, accredited planning degree, sustainability technical training, something else)
3. Describe, in your own words, what kind of organization you think that the C40 is and what its purpose is.
4. Do you think policies can be easily transmitted between cities or places? Why or why not?

Questions regarding Meetings and Content-sharing

5. In what formal capacities have you interacted with the C40 programme staff? (e.g., a C40 summit or other formal meeting)
6. In what formal capacities have you interacted with staff from membership cities? (e.g., a C40 summit or other formal meeting)
7. In what informal ways, if any, have you engaged with C40 programme staff? (e.g., at another technical conference, networking sessions, alumni networks, etc.)
8. In what informal ways, if any, have you engaged with C40 member cities' staff or leaders regarding C40 business? (e.g., at another technical conference, networking sessions, alumni networks, etc.)

Questions on Implementation

9. Is there any distinction between those who attend C40 events and those who are responsible for implementing the policies on the ground?
10. If so, do practitioners have opportunities to attend meetings at any point, or is it primarily department heads that go?

Questions on Impact

11. Describe what impact, if any, the C40 has on your department's policies and discussions around climate change
12. Describe what impact, if any, the C40 has on the politics and political discourse of your municipal government and politicians in it?
13. What specific ideas or policies, if any, have you encountered with your experience with C40 staff or member cities in a C40-sanctioned environment that you feel have helped practice or policy within your own department?
14. What ideas or policies have you encountered, if any, within C40 settings that you would have liked to implement in your home department or city but could not?

15. (If yes to above) What reasons prevented you from implementing the policy or idea?
16. What specific ideas, broad concepts, or other discussions do you feel have been missing from C40 events you've attended, or work that you see they have done?