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ANA CAROLINA EVANGELISTA MAUAD

LATIN AMERICAN GLOBAL CITIES RESPONDING TO CLIMATE CHANGE? EXAMINIG CLIMATE RESPONSES FROM SÃO PAULO, RIO DE JANEIRO, MEXICO CITY AND BUENOS AIRES FROM 2005 TO 2017

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Área de Concentração: Política Internacional e Comparada

Orientador: Prof. Dr. Eduardo Viola

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To all MulheRIs, who are brave enough to push International Relations forward

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RESUMO

Esta tese explora as conexões entre as respostas climáticas e a política internacional das cidades latino-americanas, com a hipótese de que as respostas climáticas estão mais ligadas ao internacional do que anteriormente previsto pela literatura. À medida que as cidades começaram a se posicionar como atores climáticos na arena internacional, levantamos a pergunta sobre o papel que as principais cidades latino-americanas desempenharam nesse cenário. A interrogação empírica é acompanhada por uma investigação sobre as lacunas deixadas pela literatura das Relações Internacionais (RI) sobre as cidades como atores internacionais, articuladas em redes transnacionais. Duas questões persistiram: 1) qual é o impacto do internacional nas respostas climáticas locais e quais são as implicações de suas respostas climáticas ao global? 2) como essas interconexões ocorreram e o que elas indicam para as RI? Observando o período compreendido entre 2005 e 2017, mapeamos as respostas climáticas da Cidade do México, Rio de Janeiro, São Paulo e Buenos Aires, a fim de investigar seus significados. Ao passo em que as cidades aprovaram leis climáticas, propuseram políticas climáticas e se engajaram em arranjos de governança, elas também impulsionaram sua projeção como cidades globais conectadas com questões mundiais como a mudança climática. Dessa forma, esta tese discute quanto dos compromissos internacionais de redução de emissões de GEE e construção de resiliência foram implementados. A fim de avaliar os resultados das respostas climáticas de nossos quatro casos, propomos um desenho analítico focado em cruzar o processo de implementação de respostas climáticas e sua agenda internacional e, então, comparar os casos que levaram aos nossos resultados. Partindo da perspectiva de cidades globais, a tese sugere que a agenda internacional desempenhou um papel decisivo nas respostas às mudanças climáticas, impactando no estabelecimento da agenda, na formulação e na implementação de políticas climáticas. A literatura sobre Relações Internacionais tem se concentrado quase exclusivamente em reafirmar a importância das cidades como atores climáticos relevantes e menos na viabilidade das cidades para efetivamente reduzir as emissões de GEE e adaptar-se às mudanças climáticas. Ao partir de uma estrutura analítica que cruza o processo de implementação de respostas climáticas e seus resultados com a política internacional da cidade, pretendemos preencher as lacunas deixadas. Assim, a pesquisa antecipa os elementos que caracterizam um discurso de política climática e sua real implementação, oferecendo respostas sobre o nível de comprometimento climático de São Paulo, Cidade do México, Rio de Janeiro e Buenos Aires. Nesse sentido, realizamos estudos de caso trabalhando com uma perspectiva qualitativa e comparando os resultados de cada cidade para chegar às conclusões. Os resultados posicionaram a Cidade do México como a cidade mais comprometida da nossa amostra e São Paulo como a menos comprometida. Os resultados questionam a ideia disseminada entre políticos e alguns acadêmicos de que as cidades estão resolvendo os desafios postos pela mudança climática. Essa generalização, muitas vezes replicada, negligencia os fatores locais que podem afetar os resultados das políticas, resultando em uma desconexão entre as promessas internacionais e o que é entregue. Em última análise, a conclusão oferece possíveis interpretações sobre a dinâmica contemporânea da mudança climática global, uma vez que as cidades globais continuam sendo atores relevantes, embora o nível de seu comprometimento climático varie significativamente.

Palavras-chave: Cidades. Mudança do Clima. América Latina. Governança Global.

ABSTRACT

This dissertation explores the links between climate responses and international politics of Latin American cities, leading to the central argument that climate responses are more linked to the international than previously suggested by the literature. As cities have begun positioning themselves as climate actors in the international arena, we questioned the role that major Latin American cities play in this scenario. The empirical investigation is combined with an inquiry about the gaps left by the International Relations literature regarding cities as international actors articulated in transnational networks. Two questions remained: 1) what is the impact of the international in local climate responses and what are the implications of these climate responses on the global? 2) how did these interconnections happen and what do they imply for IR? We mapped out the climate responses of Mexico City, Rio de Janeiro, São Paulo, and Buenos Aires during the period going from 2005 to 2017, in order to investigate their meanings. As our cities approved climate laws, proposed climate policies and engaged in governance arrangements, they simultaneously advanced their projection as global cities connected with global concerns such as climate change. Thus, this dissertation evaluates how much of the international commitments to reduce GHG emissions and build resilience were implemented. In order to assess the results of the climate responses from our four cases, we designed an analytical framework that crosses the implementation process of climate responses with their international agenda and then compares the cases that provided the results. Drawing on the perspective of global cities, it suggests that the international agenda of our cases played a decisive role in their response to climate change, impacting agenda setting as well as formulation and implementation of climate policies. The literature on International Relations has focused almost exclusively on reaffirming the importance of cities as relevant climate actors and less on the ability of cities to effectively reduce GHG emissions and to adapt to climate change. We aim to address these gaps through the creation of an analytical framework that crosses the climate response implementation process and its outcomes with the city's international politics. In doing so, the research anticipates the features that characterize a climate policy discourse and its actual implementation, providing answers about the level of climate commitment of São Paulo, Mexico City, Rio de Janeiro, and Buenos Aires. With this in mind, we conducted case studies of a qualitative nature and compared the results from each city in order to draw the conclusions. The results positioned Mexico City as the most committed and São Paulo as the least committed in our sample. The findings address a controversial belief among practitioners and some scholars that cities are solving climate change. This generalization that has often been reiterated overlooks local features that can have an impact on the policy outcomes, resulting in a disconnection between international promises and what is delivered. Finally, the conclusion offers insights into the contemporary dynamics of global climate change, as global cities remain relevant actors even though their level of climate commitment varies significantly.

Key-words: Cities. Climate Change. Latin America. Global Governance.

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LIST OF ACRONYMS

100 RC – 100 Resilient Cities initiative from Rockefeller Foundation
AFOLU – Agriculture, Forestry and Other Land Use
BRT – Bus Rapid Transit
CBDR – Common But Differentiated Responsibilities
CCCR – Carbonn Cities Climate Registry
CCP – Cities for Climate Protection Program
CDM – Clean Development Mechanism
CO2 – Carbon Dioxide
COP – Conference of Parties
FEMA – Fundo Especial de Meio Ambiente e Desenvolvimento Sustentável de São Paulo
DEM – Partido Democratas
GDP PPP – Gross Domestic Product, Purchasing Power Parity
GHG – Greenhouse Gases
IADB – Inter-American Development Bank
IBGE – Instituto Brasileiro de Geografia e Estatística
IDB – Inter-American Development Bank
INPE – Instituto Nacional de Pesquisas Espaciais
IPP – Instituto Pereira Passos (Rio de Janeiro)
ITDP – Institute for Transportation and Development Policy
KAS – Konrad Adenauer Foundation
LRV – Light Rail Vehicle
LULUCF – Land Use, Land Use Change and Forestry
MERCOSUR – Mercado Común del Sur
MRV – Monitoring, Report and Verification
NGO – Non-Governmental Organization
OECD – Organization for Economic Cooperation and Development
PFL – Partido da Frente Liberal
PMDB – Partido do Movimento Democrático Brasileiro
PMMC – Política Municipal de Mudanças Climáticas de São Paulo

PRB – Partido Republicano Brasileiro

PSDB – Partido Social Democrata Brasileiro

PT – Partido dos Trabalhadores

RMSP – São Paulo Metropolitan Region

SECONSERMA – Secretaria Municipal de Conservação e Meio Ambiente do Rio de Janeiro

SEDEMA – Secretaría del Medio Ambiente del Gobierno de la Ciudad de México

SMAC – Secretaria Municipal de Meio Ambiente do Rio de Janeiro

SMVMA – Secretaria Municipal do Verde e Meio Ambiente de São Paulo

SMRI – Secretaria Municipal de Relações Internacionais de São Paulo

SMRIF – Secretaria Municipal de Relações Internacionais e Federativas de São Paulo

UCCI – Unión de Ciudades Capitales Iberoamericanas

UCLG – United Cities and Local Governments

UNDP – United Nations Development Programme

UNFCCC – United Nations Framework Convention on Climate Change

USAID – United States Agency for International Development

WB – World Bank

WHO – World Health Organization

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INTRODUCTION

> "Let there be no doubt: we live in an urbanized world. Our struggle for global sustainability will be won or lost in cities"
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> Bann Ki-Moon (2012)[1]

Cities have been declared climate leaders by politicians, international organizations and International Relations literature (ACUTO, 2013a, 2016; AUST, 2015; BARBER, 2013; KARLSSON et al., 2011; LEE; KOSKI, 2014). In this dissertation, we investigate if that is the case for four Latin American global cities: São Paulo, Rio de Janeiro, Buenos Aires and Mexico City, for the period going from 2005 to 2017.

When Rio de Janeiro mayor, Eduardo Paes, assumed the mandate of C40 Chair in 2013, he stated that "Cities are **leading the way** in the fight against global climate change, and Rio – like New York City and all of our members – are on the **front lines**."[2]. This is a very bold position, but also an intriguing one, coming from a mayor of a city that is known for not having very good indicators. This discourse, combined with many others that are presented throughout this dissertation, captured our attention and our curiosity. Was this true? Were cities – and cities from developing contexts like Rio de Janeiro – really leading the way in such a complex problem? And what leading the way meant? Based on these questions, this research unfolded. Therefore, one of the endeavors in this dissertation is to tackle this process in order to better understand the dynamics. This was done by looking critically into the cities' climate responses and their implementations and outcomes. What does "leading the way" and "forerunners" mean? We recognize that we need to problematize those "catchy phrases" in order to better understand the process and to analyze reality.

Cities that once were sustainability villains were now claimed to be the heroes. What had changed? We noticed this change in perspective especially in the Mexico City case, since the city

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[1] UN Secretary-General Ban Ki-moon's remarks to the High-level Delegation of Mayors and Regional Authorities, in New York, 23 April 2012. Available at: https://www.un.org/press/en/2012/sgsm14249.doc.htm Accessed: June 20th 2015.

[2] Available at: <https://www.c40.org/blog_posts/rio-mayor-paes-to-succeed-mayor-bloomberg-as-c40-chair> Accessed at: November 15th 2015.

was known worldwide for being the most polluted on earth and is now considered on the frontline of responding to climate change. The increase in the participation of cities in multilateral forums dates back to the early 1990s, with Rio92 and Habitat III (MAUAD, 2011), but in the climate agenda, it is in 2009 during COP 15 that local leaders presented themselves as the saviors of an agenda that countries were wrecking (BÄCKSTRAND et al., 2017; DIMITROV, 2010). After Copenhagen, cities started appearing systematically as key actors responding to climate change, including at COP 21, when they released "Paris City Hall Declaration: a decisive contribution to COP 21".

It is in that context that our research emerged, guided by the following inquiries.

Research question: what is the role of Latin American cities in global climate governance?
Secondary questions:

1) What is the level of climate commitment of São Paulo, Rio de Janeiro, Mexico City and Buenos Aires?
2) What is the impact of the international in the local climate responses?
3) What are the implications of these climate responses to the global scale?
4) How did these interconnections appear and what do they indicate for IR?

In combination with our questions, we established six premises to guide our work: 1) the period under analysis and in which the research unfolds is marked by the Anthropocene; 2) climate change is one of the greatest medium and long-term challenges faced by the international community today; 3) cities are actors in international relations; 4) reality is complex and uncertain, so absolute answers are not attainable; 5) International Relations is an interdisciplinary field of study; 6) the dynamics of the international system are marked by multilevel global governance.

Considering the Anthropocene as the era that marks this period means recognizing humanity's role in the changes in the atmosphere and the anthropogenic character of climate change, but also that it is possible to change behaviors in order to mitigate GHG emissions and create adaptation mechanisms. The instability of the atmospheric system demands a new perspective on reality which incorporates uncertainty as a constant factor. This implies the need to change the analysis of international relations (CRUTZEN; STOERMER, 2000; FRANCHINI et

al., 2017; PATTBERG; WIDERBERG, 2015; PEREIRA, 2017). That is, perceptions of security, defense, development, cooperation and conflict need to be revisited.

In this sense, with the premise that cities are actors in international relations, we are broadening the notion of international responsibility in relation to climate change. Cities have long been considered *de facto* actors since the end of the 20th century and have an active participation in a wide range of international agendas, but with the challenges posed by the Anthropocene, their performance becomes even more urgent as cities are impacted directly by the atmospheric transformations. In the case of the cities selected for this dissertation, the role they play in the international and domestic scenario is significant to different degrees and their responses to climate change have an impact on these areas. They are cities that at the same time need to solve local problems, such as floods, solid waste management and air pollution, and negotiate possibilities for mitigation and adaptation to climate change in national and international forums.

This reality of local and global performance is not exclusive to cities, it is effectively a given feature of the contemporary international system, characterized by multilevel governance. The increase in the number of actors implied a diversification in the levels of analysis, that is, the domestic, the national and the local levels start to matter in the dynamics of the international system. Agendas that are inherently global in nature such as climate change, are not only managed at the international level but also at the regional, national and local levels, and involve a myriad of actors that includes national states, regional arrangements, local governments, individuals, NGOs, the private sector and academia.

Based on these premises, it is possible to present the research design: the proposal is to analyze in comparative perspective the double movement of São Paulo, Mexico City, Buenos Aires and Rio de Janeiro in global climate governance jointly with its local implications, in order to understand the significance of these dynamics for International Relations. The participation of cities in international agendas is a given of contemporary international relations. However, little is known about their meaning for global dynamics, that is, to what extent this performance goes beyond symbolic limits and has a relevant role.

However, it should be pointed out that just as National States cannot be fully understood as unitary and homogeneous actors, the same is true for cities. Thus, it is imperative to perceive these actors as syntheses of conflicts and internal disputes among local bureaucracy and economic and social forces. Therefore, the research will make the effort not to ignore these dynamics in order

to better understand the performance of cities as the result of this reality. Likewise, since the period under analysis is relatively long, we address the changes in municipal governments throughout time. This will be reflected in the analysis, contributing towards the understanding of change in local politics by addressing more than one mayor and president mandate.

Furthermore, the study of megacities presents a challenge for the researcher, since the complexity of these actors is amplified by their metropolitan arrangements. All selected cases are the nucleus of a metropolitan region, but we have chosen to work within the limits of the city under the mayor's jurisdiction, since metropolitan governance is diffuse and does not usually present leadership with the capacity to respond or implement policies. In addition, international representation, including in the C40, is carried out by the municipality and not by metropolitan arrangements that vary in structure and governance between the cases. However, this does not mean that we will ignore the complexity of the city, which goes beyond municipal boundaries. The data on population, GDP, GHG emissions, legislation and plans analyzed are those under the jurisdiction of the mayor, but observations regarding the metropolitan region will be made throughout the study.

The dissertation is based both on theoretical and empirical evidence that leads to the main research question, followed by its secondary inquiries. The dissertation questions and the nature of the phenomenon under scrutiny inform the chosen method, which is qualitative comparative analysis.

As a qualitative study, the work is based on primary and secondary sources, encompassing city official documents (i.e. climate plans, international policy strategy, climate laws and decrees, etc.) and literature published within the broad area of International Studies (understood as an interdisciplinary field and therefore also including literature from related fields such as Architecture, Public Policy, Geography, Law and Atmospheric Studies). To complement the collected data, interviews were carried out with actors who are key in the process and the contents of the interviews served to clarify crucial points.

Researching dynamics that are still in progress may imply having access to more limited information but this does not preclude our work, it only exposes the contemporaneity of the theme and the difficulty in establishing conclusive hypotheses. As explained: "Limited information is often a necessary feature of social inquiry. Because the social world changes rapidly, analyses that help us understand those changes require that we describe them and seek to understand them

contemporaneously, even when uncertainty about our conclusions is high." (KING et al., 1994, p. 6).

It is important to note that we have worked with data relative to the local administration, under the jurisdiction of the mayor, and not to the metropolitan area. In the case of Buenos Aires, this entails a difference of more than 10 million inhabitants. However, what will be analyzed in this study does not covers metropolitan areas. The responses we are analyzing here are the ones provided by the municipal government and under the mayor's jurisdiction limits, therefore excluding the metropolitan region. Also, we are examining the responses that were deliberately presented by the city as being related to climate change. Even though other actions may have an impact on climate change, we chose this scope in order to be methodologically cohesive.

The four cases will be explored through the comparative methodology. The comparative method "[...] is here regarded as a method of discovering empirical relationships among variables, not as a method of measurement." (LIJPHART, 1971, p. 683). The choice of Latin America as a place of observation increases the accuracy of the comparative method as it presents a constant control variable, "Comparability is indeed not inherent in any given area, but it is more likely within an area than in a randomly selected set of countries." (LIJPHART, 1971, p. 689). On the other hand, the focus on the region, even though it produces important methodological conditions for the cases selected here, makes it difficult for a possible future generalization to cases outside the region, reducing the level of analysis. Thus, the methodological dilemma between depth of analysis and capacity for generalization imposed by the chosen method is difficult to overcome, but does not invalidate the contribution to possible future research in this sense (STEINBERG, 2015). Furthermore, consolidating this line of research and a more solid database can contribute to future studies in order to produce more generalizations and increase the number of observable cases.

We chose the qualitative method as well as comparative analysis with few cases in order to be able to analyze all the cases in detail and formulate explanations that we otherwise would not have reached. We believe that our contribution to the literature is related to the depth we seek in our analysis combined with personal knowledge about the region.

However, it is necessary to make a point about data on cities. The latter is not standardized, there is no database on cities like there is for countries and the numbers are often not updated and not from reliable sources. Nevertheless, it was our preoccupation to work only with official data and to cross-check it (sometimes tree to four times) in more than one source in order to offer a

more precise picture. This also means that we avoided the temptation to work with aggregated data because we understood that it was not helpful to fully understand our cases. We find it important to highlight this since many studies work not only with aggregated data (as is the case for most C40 and ICLEI publications) but they also do not discriminate between data relative to the city limits, the municipal government under the mayor's jurisdiction and the metropolitan region. We find this extremely problematic in terms of methodology, data collection and data analysis, once the numbers vary greatly and represent different political, legal and governance realities. Therefore, when we used non city-related data, we were very careful to signal it.

Finally, the methodological choice is also an ontological one, exposing the values of the researcher in relation to her work. The choice made here attempts to address these two challenges: to produce generalizations that can be replicated in other cases, without at the same time reducing the complexity of reality to the point of making it unrealistic, once:

> [...] what was given is now problematic; it can even require accepting that what once seemed conceptually impossible may now be emerging as empirical reality – all startling steps that can disturb even the most dedicated observers and burden them with a sense of being caught up in unfamiliar analytic tasks that can readily slip out of control. (ROSENAU, 1990, p.37).

To do so, this work is divided into seven chapters and the final remarks. In the first one we review International Relations literature and theoretical production from related areas in order to understand what it means to study IR in the Anthropocene. Moreover, the chapter explores the emergence of global cities as international actors in a highly interdependent world, exposing the configuration of a polycentric global governance.

In the second chapter we propose the analytical framework based on the concepts and principles developed in the first chapter and in some preliminary empirical observations. The question which underlies chapter II is: how can we read climate responses from Latin American cities? It thereafter exposes the categorization of climate responses in its legal, policy and governance aspects and how their outcomes indicate the level of climate commitment of a city and its leadership role. The chapter goes on to present some specificities about Latin America in order to contextualize our case analysis.

Although we present the cases in separate chapters (3, 4, 5, 6), it is only in order to ease the presentation of data and to be didactic, it does not mean that we understood the phenomenon

of cities responding to climate change as an isolated process. Each case chapter is comprised of an introductory section that contextualizes the city, followed by a section on its aspects as a global city, and finally a list of the city's climate responses. The chapters end with an analysis that crosses its international agenda and climate responses, followed by an investigation of the climate discourse and its implementation.

In chapter 7, we compare our cases, trying to understand how the international agenda and the climate responses interplayed. The chapter follows in order to assess the climate responses implementation – or the lack of it – and establish the cities' climate commitment, finalizing with an inquiry regarding Latin American global cities climate leadership.

As we expose our vision of International Relations in the Anthropocene in chapter 1, it can be understood that our perception is that we live in a highly interconnected and interdependent world. Therefore, the events that we are analyzing are deeply connected and should be understood this way. Nevertheless, the empirical question inevitably leads to a theoretical inquiry about the role of cities in global climate governance. What is their power, agency and autonomy? How do these components interact and how are they shaped by their level of climate commitment?

The literature (BULKELEY; BETSILL, 2013; ROMERO-LANKAO et al., 2013; UITTENBROEK et al., 2014) often refers to local climate change actions as climate responses, in order to embrace the multiple ways in which cities expose their climate concerns. Therefore, we can find many "climate responses" that can vary from policies to discourses and regulations. Here we choose to maintain the use of "climate response" to refer to a city's demonstration of how it plans to deal with climate change. Moreover, after observing our cases, we divided the responses into three categories to ease the understanding of the phenomenon, as it is presented in chapter 2.

However, while conducting field work and analyzing the documents, we started questioning ourselves as to whether what we were observing were actually "climate responses" or if they were some other type of response that the literature seemed to have overlooked because it is mainly centered on solely analyzing climate and environmental aspects or because most of the cases investigated were located in more developed countries, where a policy is usually what it says it is. While we were trying to track down the climate commitments of Mexico City, Rio de Janeiro, Buenos Aires and São Paulo, we started understanding that the links between climate agenda and international relations were higher than expected and that led us to question: what was encouraging Latin American cities to respond to climate responses? And what was the target of those responses?

Furthermore, what was the content of those responses and what was their implementation process and possible outcomes? Finally, how did the kind of response and its outcomes impact the city's position in global climate governance?

The number of questions that presented themselves during the construction of this dissertation were huge (as it is expected), but one that remained throughout the entire process was: what is the involvement of local climate responses in the dynamics of global climate change? Are they capable of contributing to fostering a more sustainable future? And, finally, what does this mean for the study of International Relations in the Anthropocene?

This dissertation is by no means a normative one, although in the final remarks we suggest some policy implications. It is important to stress this since we are working with empirical data which leads to results that question the mainstream political discourses. Yet, we carried throughout the entire research process a commitment to observable reality and drew our conclusions from there, not from an idea of what we thought it should be. Nevertheless, this does not mean that we abstain from making criticism: quite the opposite, we try to present criticism throughout the text. Because this is a relatively new area of research in the Brazilian International Relations academia as well as a contemporary issue, we hope the inquiry we undertook here will help to foster the debate with our colleagues in a critical manner. Hopefully, it will also lead to policy improvements, even though this was not a preoccupation at the beginning of our study.

A note on terminologies

The denomination of government officials and bureaucratic institutions in our city cases varies, but we chose to work with the same terminology for all cases in order to ease communication and to better dialogue with the literature. For instance, we use the term "mayor" to designate the city executive head of government even though for Mexico City and Buenos Aires the direct translation from the Spanish "Jefe de Gobierno" would be "Chief of Government". In the same way, for the secretaries, we use International Relations and Environment Secretary as a common term, but in the specific chapters we make references to the official nomenclature.

INTRODUÇÃO

> "Let there be no doubt: we live in an urbanized world. Our struggle for global sustainability will be won or lost in cities"
>
> Bann Ki-Moon (2012)[3]

As cidades foram proclamadas como líderes do clima por políticos, organizações internacionais e literatura de Relações Internacionais. Nesta dissertação investigamos se é o caso de quatro cidades globais latino-americanas: São Paulo, Rio de Janeiro, Buenos Aires e Cidade do México, para o período compreendido entre 2005 e 2017.

Quando o prefeito Paes, em 2013, do Rio de Janeiro assumiu o cargo de presidente do C40, afirmou que "as cidades estão liderando o caminho na luta contra a mudança climática global, e a cidade de Nova York e todos os nossos membros estão as linhas de frente. Esta é uma posição muito ousada, mas também intrigante, vinda de um prefeito de uma cidade que é conhecida por não ter os maiores indicadores. Esse discurso, combinado com muitos outros que são apresentados aqui ao longo do texto, capturou nossa atenção e nossa curiosidade. Isso foi verdade? As cidades - e cidades de contextos em desenvolvimento como o Rio de Janeiro, São Paulo, Caracas e outros - realmente lideravam o caminho em um problema tão complexo? E o que significava o caminho? Atraídos por essas questões, esta pesquisa se desdobrou. Portanto, um dos esforços desta dissertação é abordar esse processo para entender melhor a dinâmica apresentada e isso foi feito olhando criticamente as respostas climáticas das cidades e suas implementações e resultados. O que significa "liderar o caminho" e "precursores"? Precisamos problematizar essas frases de impacto para entender melhor o processo e lidar com a realidade.

Cidades que já foram os vilões em relação à sustentabilidade eram agora reivindicadas como heróis? O que mudou? Notaremos essa mudança especialmente no caso da Cidade do México, uma vez que a cidade era mundialmente conhecida por ser a mais poluída do planeta e agora é considerada a linha de frente para responder às mudanças climáticas. O aumento da participação das cidades nos fóruns multilaterais remonta ao início dos anos 1990, com Rio92 e

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[3] UN Secretary-General Ban Ki-moon's remarks to the High-level Delegation of Mayors and Regional Authorities, in New York, 23 April 2012. Available at: https://www.un.org/press/en/2012/sgsm14249.doc.htm Accessed: June 20th 2015.

Habitat III (Mauad 2011), mas na agenda climática, é em 2009 durante a COP 15 que os líderes locais se apresentam como salvadores de uma agenda que países estavam afundando. Depois de Copenhague, as cidades aparecem sistematicamente como atores-chave que respondem às mudanças climáticas, inclusive na COP 21, quando divulgaram a "Declaração da Prefeitura de Paris: uma contribuição decisiva para a COP 21".

Nesse contexto, esta pesquisa surgiu, orientada pelos seguintes questionamentos.

Pergunta central: qual é o papel das cidades latino-americanas na governança climática global?
Questões secundárias:
1) Qual é o nível de compromisso climático de São Paulo, Rio de Janeiro, Cidade do México e Buenos Aires?
2) Qual é o impacto do internacional nas respostas climáticas locais?
3) Quais são as implicações de suas respostas climáticas para a escala global?
4) Como essas interconexões ocorreram e o que elas indicam para o IR?

Em conjunto com nossas perguntas, estabelecemos seis premissas para orientar nosso trabalho: 1) o período analisado e no qual a pesquisa se desdobra é marcado pelo Antropoceno; 2) a mudança climática é o maior desafio de médio e longo prazo que a comunidade internacional enfrenta atualmente; 3) as cidades são atores nas relações internacionais; 4) a realidade é complexa e incerta, portanto respostas absolutas não são viáveis; 5) Relações Internacionais é um campo de estudo interdisciplinar; 6) a dinâmica do sistema internacional é marcada pela governança global multinível.

Considerar o Antropoceno como a época que marca este período significa reconhecer o papel da humanidade nas mudanças na atmosfera e no caráter antrópico das mudanças climáticas, mas também que é possível mudar comportamentos para mitigar as emissões de GEE e criar mecanismos de adaptação. A instabilidade do sistema atmosférico exige uma nova perspectiva da realidade, que deve incorporar a incerteza como constante, implicando a necessidade de mudar a análise das relações internacionais. Isto é, percepções sobre segurança, defesa, desenvolvimento, cooperação e conflito precisam ser revisitadas.

Nesse sentido, com a premissa de que as cidades são atores nas relações internacionais, estamos ampliando a noção de responsabilidade internacional em relação às mudanças climáticas.

As cidades há muito são consideradas atores de fato desde o final do século XX e têm participação ativa em uma ampla gama de agendas internacionais, porém, com os desafios colocados pelo Antropoceno, seu desempenho se torna ainda mais urgente, pois as cidades são impactadas diretamente pelo transformações atmosféricas. No caso das cidades selecionadas para esta dissertação, o papel que desempenham no cenário internacional e doméstico é significativo e suas respostas às mudanças climáticas têm impacto nessas áreas. São cidades que ao mesmo tempo precisam resolver problemas locais, como enchentes, gestão de resíduos sólidos e poluição do ar, além de negociarem em fóruns nacionais e internacionais a mitigação e adaptação às possibilidades de mudanças climáticas.

Essa realidade de desempenho local e global não é exclusiva das cidades, é efetivamente uma característica do sistema internacional contemporâneo, caracterizado pela governança multinível. A ampliação dos atores implicou uma diversificação nos níveis de análise, isto é, os níveis doméstico, nacional e local passaram a importar para a dinâmica do sistema internacional. Agendas que são inerentemente globais por natureza, como as mudanças climáticas, não são apenas gerenciadas em nível internacional, mas também nos níveis regional, nacional e local, e envolvem uma miríade de atores que incluem estados nacionais, arranjos regionais, governos locais, indivíduos, ONGs, setor privado e academia.

Portanto, a partir dessas premissas, é possível apresentar o desenho da pesquisa: a proposta é analisar o duplo movimento de São Paulo, Cidade do México, Buenos Aires e Rio de Janeiro na governança climática global e suas implicações locais, numa perspectiva comparativa, a fim de compreender o significado dessas dinâmicas para as Relações Internacionais. A participação das cidades nas agendas internacionais é uma das relações internacionais contemporâneas, no entanto, pouco se sabe sobre seu significado para a dinâmica global, ou seja, até que ponto esse desempenho ultrapassa os limites simbólicos e tem um papel relevante.

No entanto, deve-se salientar que, assim como os Estados nacionais não podem ser plenamente compreendidos como atores unitários e homogêneos, o mesmo vale para as cidades. Portanto, é imperativo perceber esses atores como sínteses de conflitos e disputas internas entre a burocracia local e as forças econômicas e sociais, por isso a pesquisa fará o esforço de não ignorar essas dinâmicas para melhor entender o desempenho das cidades conforme os resultados. gerado a partir dessa realidade. Da mesma forma, como o período analisado é relativamente longo, abordamos as mudanças no governo municipal ao longo do tempo e isso refletirá sobre a análise,

oferecendo subsídios para entender as mudanças na política local, abordando mais de um mandato de prefeitos e presidentes.

O estudo das megacidades apresenta um desafio para o pesquisador, uma vez que a complexidade desses atores é ampliada pelos arranjos metropolitanos. Todos os casos selecionados são o núcleo de uma região metropolitana, mas escolhemos trabalhar com os limites da cidade sob a jurisdição do prefeito, já que a governança metropolitana é difusa e geralmente não apresenta liderança com capacidade de responder ou implementar políticas. Além disso, a representação internacional, inclusive no C40, é feita pelo município e não por arranjos metropolitanos que variam em sua estrutura e governança entre os casos. No entanto, isso não significa que vamos ignorar a complexidade da cidade, que vai além das fronteiras municipais, mas os dados sobre população, PIB, emissões de GEE, legislação e planos analisados são aqueles sob a jurisdição do prefeito, embora observações sobre a região metropolitana possam ser levantadas durante a pesquisa.

A tese é baseada tanto em evidências teóricas e empíricas que levam à principal questão de pesquisa, seguida por suas investigações secundárias. As questões de dissertação e a natureza do fenômeno observado informam o método escolhido para ser implantado, e este é um estudo qualitativo comparativo.

Como pesquisa qualitativa, o trabalho baseia-se em fontes primárias e secundárias, abrangendo documentos oficiais da cidade (planos climáticos, estratégia de políticas internacionais, leis e decretos climáticos, etc.) e literatura publicada na ampla área de Estudos Internacionais (entendida como interdisciplinar, também incluirá literatura de áreas afins, como Arquitetura, Políticas Públicas, Geografia, Direito e Estudos Atmosféricos). Para complementar os dados coletados, foram realizadas entrevistas com os principais atores do processo e servirão para esclarecer pontos que não seriam possíveis sem eles.

Entretanto, a pesquisa de dinâmicas ainda em andamento pode implicar em lidar com informações mais limitadas, mas isso não exclui nosso trabalho, apenas expõe a contemporaneidade do tema e a dificuldade em estabelecer hipóteses conclusivas, como explicitado: ““Limited information is often a necessary feature of social inquiry. Because the social world changes rapidly, analyses that help us understand those changes require that we describe them and seek to understand them contemporaneously, even when uncertainty about our conclusions is high.” (KING et al., 1994, p. 6).

É importante notar que trabalhamos com dados relativos à administração local, sob a jurisdição do prefeito, e não à área metropolitana, que no caso de Buenos Aires implica uma diferença de mais de 10 milhões de habitantes. No entanto, o que será analisado neste estudo não abrange as áreas metropolitanas. As respostas que estamos analisando aqui se referem àquelas fornecidas pelo governo municipal e sob os limites da jurisdição do prefeito, excluindo, portanto, a região metropolitana. Além disso, estamos olhando para as respostas que foram deliberadamente nomeadas pela cidade como sendo relacionadas à mudança climática, mesmo que outras ações possam ter um impacto sobre as mudanças climáticas, nós escolhemos esse escopo para sermos coesos metodológicos.

Os quatro casos serão explorados através de metodologia comparativa, utilizando o método diferencial, uma vez que apresentam características semelhantes, mas parecem indicar resultados diferentes. Além disso, o método comparativo "[...] is here regarded as a method of discovering empirical relationships among variables, not as a method of measurement." (LIJPHART, 1971, p. 683). Além disso, a escolha da América Latina como local de observação aumenta a precisão do método comparativo por ser uma variável de controle constante: "Comparability is indeed not inherent in any given area, but it is more likely within an area than in a randomly selected set of countries." (LIJPHART, 1971, p. 689). No entanto, o foco na região, apesar de produzir condições metodológicas importantes para os casos aqui selecionados, dificulta uma possível generalização futura para casos fora da região, reduzindo o nível de análise. Assim, o dilema metodológico entre profundidade de análise e capacidade de generalização imposta pelo método escolhido dificilmente é transposto, mas não invalida a contribuição para possíveis pesquisas futuras nesse sentido (STEINBERG, 2015). Além disso, consolidar essa linha de pesquisa e um banco de dados mais sólido pode contribuir para futuros estudos, a fim de produzir mais generalizações e aumentar o número de casos observáveis.

Escolhemos o método qualitativo, bem como a análise comparativa com poucos casos, para poder analisar todos os casos e encontrar explicações que de outra forma não poderíamos. Acreditamos que nossa contribuição para a literatura está relacionada com a profundidade que buscamos em nossa análise, combinada com o conhecimento pessoal sobre a região.

No entanto, uma nota sobre os dados relativos às cidades é necessária, uma vez que não são padronizados, não há banco de dados em cidades como os países e os números não são atualizados nem são de fontes confiáveis. No entanto, era nossa preocupação trabalhar aqui apenas com dados

oficiais e dobrar (às vezes quadruplicar) verificá-los em mais de uma fonte para oferecer uma imagem melhor. Isso também significa que evitamos a tentação de trabalhar com dados agregados porque entendemos que eles não são úteis para entender nossos casos. Descobrimos que é importante destacar isso, pois muitos estudos trabalham não apenas com dados agregados (como é o caso da maioria das publicações do C40 e do ICLEI), mas eles também não distinguem os dados dos limites da cidade, do município. governo sob a jurisdição do prefeito e da região metropolitana. Achamos que isso é extremamente problemático em termos de metodologia, coleta de dados e análise de dados, uma vez que os números variam muito e representam diferentes realidades políticas, legais e de governança. Portanto, quando usamos dados que não estão se referindo à cidade, tivemos muito cuidado em sinalizá-lo.

Por fim, a escolha metodológica é também ontológica, expondo os valores do pesquisador em relação ao seu trabalho. Imbricada nessas investigações, a escolha aqui proposta tenta abordar esses dois desafios: criar generalizações que possam ser replicadas em outros casos, sem, ao mesmo tempo, reduzir a complexidade da realidade a ponto de torná-la irreal, uma vez:

> [...] what was given is now problematic; it can even require accepting that what once seemed conceptually impossible may now be emerging as empirical reality – all startling steps that can disturb even the most dedicated observers and burden them with a sense of being caught up in unfamiliar analytic tasks that can readily slip out of control. (ROSENAU, 1990, p.37).

Para tanto, este trabalho está dividido em oito capítulos. No primeiro, revisamos a literatura de Relações Internacionais e a produção teórica de áreas afins, a fim de compreender o que significa estudar RI no Antropoceno e como isso afeta as cidades globais e, finalmente, o que as cidades significa liderança neste contexto.

No segundo capítulo, propomos a estrutura analítica para analisar o fenômeno com base nos conceitos e princípios desenvolvidos no primeiro capítulo e em algumas observações empíricas preliminares. A questão que guia o capítulo II é: como podemos ler as respostas do clima das cidades latino-americanas?

Embora apresentemos os casos em capítulos separados (III, IV, V e VI) aqui, é apenas para facilitar o arranjo de dados e para ser didático, isso não significa que entendemos o fenômeno das cidades respondendo à mudança climática como um processo isolado. processo. À medida que expomos nossa visão de Relações Internacionais no Antropoceno no capítulo 1, pode-se entender

que nossa percepção é de que vivemos em um mundo altamente interconectado e interdependente, portanto, os eventos que estamos analisando estão profundamente conectados e devem ser compreendidos dessa maneira.

A questão de pesquisa surgiu após observações empíricas. No entanto, a questão empírica conduz inevitavelmente à investigação teórica sobre o papel das cidades na governança climática global. Qual é o seu poder, agência e autonomia? E como os elementos desses constituintes interagem / são moldados pelo seu nível de comprometimento climático?

A literatura (BULKELEY; BETSILL, 2013; ROMERO-LANKAO et al., 2013; UITTENBROEK et al., 2014) frequentemente considera as ações locais de mudança climática como respostas climáticas, a fim de abranger as múltiplas maneiras pelas quais as cidades expõem suas preocupações com o clima. Portanto, podemos encontrar muitas "respostas climáticas" que podem variar de políticas, discursos e regulamentos. Aqui escolhemos continuar o uso da "resposta climática" para referenciar as cidades que demonstram como planeja lidar com as mudanças climáticas, depois de observar nossos casos, dividimos as respostas em três categorias para facilitar a compreensão do fenômeno, como é apresentado no capítulo II.

No entanto, enquanto realizamos trabalho de campo e cavamos os documentos, começamos a nos perguntar se o que estávamos observando era de fato "respostas climáticas" ou se eram algum outro tipo de resposta que a literatura parecia ter negligenciado porque está centrada principalmente em casos localizados em países mais desenvolvidos. Enquanto tentávamos rastrear os compromissos climáticos da Cidade do México, Rio de Janeiro, Buenos Aires e São Paulo, começamos a entender que a ligação entre a agenda climática e as relações internacionais era maior do que a esperada e isso nos leva a questionar: o que estava incentivando as cidades latino-americanas a responder às respostas climáticas? E qual foi o alvo dessas respostas? Além disso, qual foi a resposta dessas respostas e como foi o processo de implementação e os possíveis resultados?

O número de perguntas que surgiram durante a construção desta dissertação é enorme (como é esperado), mas uma que segue todo o processo foi: qual é a implicação das respostas climáticas locais à dinâmica das mudanças climáticas globais? Eles são capazes de ajudar a promover um futuro mais sustentável? E, finalmente, o que isso significa para o estudo das Relações Internacionais no Antropoceno?

Esta tese não é de forma alguma normativa, embora nas observações finais nós sugerimos algumas implicações políticas. É importante enfatizar isso quando estamos trabalhando com dados empíricos que levam a resultados que questionam os principais discursos políticos. No entanto, carregamos ao longo de todo o processo de pesquisa o compromisso com a realidade observada e extraímos nossas conclusões a partir dela, e não a partir de uma ideia do que achamos que deveria ser. No entanto, isso não significa que estamos ausentes da análise da crítica, pelo contrário, tentamos apresentar críticas ao longo do texto. Como essa é uma área relativamente nova de pesquisa na academia de Relações Internacionais do Brasil e uma questão contemporânea, esperamos que as investigações que começamos aqui ajudem a promover o debate de maneira crítica por parte de nossos colegas e, esperamos, levar a melhorias na política, não é uma preocupação no início do nosso estudo.

Uma nota sobre terminologias

A denominação de funcionários do governo e instituições burocráticas em nossos casos entre as cidades pode variar, mas optamos por trabalhar com a mesma terminologia para todos os casos, a fim de facilitar a comunicação e um melhor diálogo com a literatura. Por exemplo, usaremos “prefeito” para designar o chefe de governo da cidade, embora para a Cidade do México e Buenos Aires a tradução direta do espanhol “Jefe de Gobierno” seja “Chefe de Governo”. De maneira prudente, para os secretários, usamos o secretário de Relações Internacionais e Meio Ambiente como um termo comum, mas nos capítulos específicos fazemos referências à nomenclatura oficial.

CHAPTER 1 INTERNATIONAL RELATIONS IN THE ANTHROPOCENE: GLOBAL CITIES AND CLIMATE CHANGE

1.1 Introduction

The aim of this chapter is to provide theoretical support to the dissertation by presenting concepts that enable the reader to understand the subsequent chapters. Therefore, the intention with this chapter is not to make it detached from the rest of the text, instead it should provide intelligibility to our cases and to the central argument of the dissertation. Subsequently, the following chapters will constantly bring the ideas and concepts presented here back in and the final chapter will combine everything within our final remarks. The dissertation intends to engage with International Relations literature that approaches global governance, global cities and climate change, following an eclectic approach (LAKE, 2013), instead of subscribing to one theory.

This chapter opens with the issue of living and researching in the Anthropocene. Through the International Relations literature, it then approaches the development of cities as relevant actors in an increasingly interdependent international system, while exposing climate change as one of the most urgent challenges of our time. It ends with a questioning of the concept of paradiplomacy concept and explaining why the idea of global cities is more suitable in order to understand the reality we are analyzing here.

1.2 The end of stability - Amplifying complexity: International Relations in the Anthropocene

The climate crisis faced by humanity today brings forward challenges for the understanding of international relations, both because we observe the physical, chemical, atmospheric and biological changes imposed by it and because inevitably, this growing instability of the Earth system presses for changes in political, social and behavioral dynamics. The natural system's stable conditions that made human development possible during the Holocene are progressively degrading, rendering the atmosphere as unstable and making it impossible to carry out projections based on a constant environment (BAI et al., 2016; BIERMANN; ABBOTT;

ANDRESEN, 2012; CRUTZEN; STOERMER, 2000). Consequently, it imposes the challenge for International Relations to add to its analysis an uncertainty about the environment. Moreover, the Anthropocene imposes an ontological and epistemological revision of the discipline once it forces us to question the nature of the field and its own existence. Central concepts for the discipline need to be revised, since they were based on the assumption of a stable natural systems (PEREIRA, 2017; VIOLA; BASSO, 2016).

The Anthropocene is the new geological epoch which follows the Holocene, and although there are debates regarding its beginning, it is characterized by human activity and its capacity to provoke and accelerate change in the Earth System (CRUTZEN; STOERMER, 2000). This means that systemic changes can be driven by human activity, posing Humanity at the center of a phenomena like climate change.

In this sense, unpredicability regarding extreme events that may occur creates a scenario of permanent uncertainty and insecurity, which can have harmful effects, such as immobility in action and/or misunderstandings in decision making. To mitigate these effects, it is necessary for International Relations analysts and policymakers to incorporate the Anthropocene as a basic premise and to approach change as a central feature of the international system.

However, it is necessary to emphasize that theories and analyzes of International Relations have traditionally dealt with continuity and stability. Although important ruptures have marked history, the periods of change were little explored in order to understand how the change occurs and what elements constitute those inflections. This absence can be understood based on the discipline's concern with establishing general standards capable of explaining the International System and the behavior of agents from their position in the superstructure. The perception that agents could change their correlation of power without significant changes in structure translated into little to almost none work written about what it means and what the consequences are when the stability provided by the structure is no longer available. In addition, "[…] comprehending change and continuity in global governance requires looking beyond interstate cooperation and taking seriously all aspects of political life that play a role — independently or in concert — in ordering the world." (WEISS; WILKINSON, 2015, p.398).

The consequence of the insufficiency of theoretical constructs capable of interpreting change led traditional theories, and partly policymakers, to be questioned with the end of the Soviet Union and the erosion of Cold War power logics as alternative explanations for change emerged.

This was the case of global governance (ROSENAU; CZEMPIEL, 1992) and paradiplomacy (MICHELMANN; SOLDATOS, 1990). However, the challenge imposed by the Anthropocene on international relations thinkers and their operators is even more complex and intense than those of the 1990s, since it breaks with the stability of the atmosphere, generating consequences still not entirely known. The change is so profound and irreversible that it becomes inevitable not to rethink the whole logic of international relations, which means that it also imposes an unprecedented degree of uncertainty and insecurity. Therefore, and as already pointed out, IR needs to incorporate uncertainty and complexity into its logics. (PEREIRA, 2017; VIOLA; BASSO, 2016).

When an element given as a constant cease to be, it becomes necessary to re-evaluate all the others and the connections established between them. The discontinuity of a constancy cannot be ignored, or else we may be analyzing scenarios that no longer have materiality or viability. Consequently, and inevitably, the complexity of the analysis is expanded, imposing methodological and analytical challenges and limits.

Based on this assumption, we propose a reflection on the theoretical concepts developed by the discipline of International Relations, in order to understand the role of cities in global climate governance.

1.3 An interdependent world: from the emergence of cities in global climate governance to polycentric governance

The observation of the climate change phenomena as an independent and well-established agenda in International Relations, and cities as relevant actors in this scenario, exposes the features of the new dynamics of the international system, now marked by a multilevel global governance, characterize by its polycentrism (OSTROM, 2010). The concept of global governance understood as the growing need for cooperation among multiple international actors to address the problems posed by interdependence (BULKELEY et al., 2014; BULKELEY; BETSILL, 2003; GIDDENS, 2009; PATRICK, 2014; ROSENAU; CZEMPIEL, 1992; VIOLA; FRANCHINI; RIBEIRO, 2013). Thus, the reality of contemporary international relations is distinctly different from that observed during the period of the Cold War, when much of the theories of International Relations were developed.

International Relations theory traditionally deals with national States, therefore when the reality of the international system changed in the post-Cold War context, the mainstream theories also had to adapt to a new world order. Furthermore, climate change alters the traditional patterns of interactions in the international arena, the traditional logic of power, agency and capacity distribution among actors. In this regard, this dissertation understands that the climate change logic goes beyond the traditional borders of the Westphalian national State and encompasses a broader notion of power and agency. Therefore, climate change appears as an urgent and challenging agenda to the traditional theoretical standards, as the same time as it stands with an intrinsically global character.

The challenge posed by climate change, in terms of mitigation and adaptation, calls for the engagement of a broader variety of actors in the international arena, demonstrating the perception of a multilevel problem (BETSILL; BULKELEY; BETSILL, 2006; GIDDENS, 2009; KEOHANE; VICTOR, 2011; VIOLA; FRANCHINI; RIBEIRO, 2012). In this scenario, global cities emerged as relevant actors in global climate governance, as increasing GHG emitters, but also as agents capable of coping with mitigation and adaption strategies (MAUAD, 2016). Since their political structure is more fluid than national states, cities would be able to adapt more rapidly to changes and have more freedom to participate in global networks, besides local leaders are closer to the population´s claims and pressures, as explicit ahead:

> By their nature, as national governments deal with more intractable geo-political issues, cities are often able to better cooperate with each other than their host countries. Cities often express the aspirations of their citizens more succinctly and more quickly than higher levels of government, and when these rising voices are credibly articulated, their global impact is considerable. (HOORNWEG; SUGAR; TREJOS GOMEZ, 2011, p.11).

Considering that, cities appears as a complementary option to address the climate crisis and as an alternative to the traditional actors, given that the international community is falling to react in a responsible and cooperative manner. Even after the Paris agreement was signed, the perspectives is that if all countries comply with their NDCs – which is improbable –, it would not be sufficiency to hold the global temperatures below 2ºC (FALKNER, 2016; HÖHNE et al., 2017; VIOLA, 2016). The greatest evidence of this problem is the increasing lack of capacity of the formal climate regime – United Nations Framework Convention on Climate Change, UNFCCC –

to conduct the negotiations to a realistic and at the same time ambitious deal. Challenge already exposed:

> For the last two decades, climate talks and their top-down multinational approaches, have largely failed to curb rising temperatures. Since then, a number of subnational actors (provinces, cities, business, and civil society organizations, among others) have sought to tackle climate change from bottom up. (SIVARAM; LIVINGSTON, 2015).

What the reality is indicating is that the traditional vision of a climate regime is giving place to a global governance of climate change, suggesting a more complex problem to be dealt and how the international community should face it. Moreover, it exposes a more plural, interdependent and globalized world than previous thought (ANDONOVA; BETSILL; BULKELEY, 2009; AVANT; FINNEMORE; SELL, 2010; BULKELEY; SCHROEDER, 2011; HELD et al., 1999; HICKMANN, 2017; INOUE, 2016; OKEREKE; BULKELEY, 2007). The State is no longer the actor with exclusive agency, nor is the UNFCCC the only, or the most relevant, arena. International organizations open space for other scenarios, not necessarily formalized and domestic matters come to pervade international politics.

The decision-making process adopted by the UNFCCC and the majority of international negotiations based on consensus and a top-down approach makes difficult to reach a responsible deal that can meet the metrics to maintain the world temperature below 2°C by the end of the century. In an arena with as many actors as it has in the UNFCCC with vote power, it is almost impossible to meet every parts interest. It is not an effective decision-making process, and it makes the monitoring and evaluation process inoperative. The Paris Agreement, signed at the COP 21, does not change this scenario even though the diplomatic community and the media celebrated it as a great achievement. This is because the final document adopted fails to prevent world temperature from reaching an unsafe mark, the evidence is demonstrated by studies that calculate the sum of all NDCs[4] submitted by countries. For that reason, the Paris Agreement can be considered a diplomatic achievement, but not a climate one (VIOLA, 2016).

Therefore, when it comes to mitigating climate change, gathering the major emitters – regardless if they are countries, multinational corporations or cities – and establishing mechanism of target verification could be more effective to curb GHG emissions (MAUAD; VIOLA, 2017).

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[4] http://climateactiontracker.org/global/173/CAT-Emissions-Gaps.html

However, this framework is contrary to international relations traditions, based in the prevalence of the Nation-State, in its sovereignty and in the division between different levels. Consequently, this kind of arrangement is difficult to be applied, but it is possible to observe some innovative initiatives that challenges the traditional dynamics of climate change international negotiations and points to a more polycentric governance.

One of these examples is the C40 (Global Leadership on Climate Change), a network of global cities organized to fight climate change. Hence, when the largest cities in the world come together to propose mitigation targets and adaptation actions to address the challenges posed by the climate crisis, they are not under the framework of an international regime, they are linked by a network, characterized as a more fluid arrangement (BORJA; CASTELLS, 1997; CASTELLS, 2010; CURTIS, 2016; TAYLOR, 2004). Therefore, the global climate governance concept to describe and understand these new international dynamics seems to be in pace with the present context. Subsequently,

> The concept of governance may prove critical to the emergence of new paradigms for assessing the roles of cities in global politics, lacking as it does the state-centric prejudice of concepts reflecting the modern, or at least Westphalian, assumptions of strictly international relations. (AMEN et al., 2011, p.28).

As discussed before, international relations changed after the end of Cold War, the bipolar division gave space to a more complex reality, marked by the amplification and diversification of actors and agendas. The construction of multiple international regimes regulating key areas opened space for deepening interdependence, generating a complex global governance. In this sense, global governance can be understood as "[...] to include systems of rule at all levels of human activity – from the family to the international organization – in which the pursuit of goals through the exercise of control has transnational repercussions." (ROSENAU, 1995, p.13).

Afterwards, global climate governance encompasses the notion of global governance presented before and now absorbed by the climate agenda. It refers to a global common that has direct impact in the local and therefore, it urges for cooperation to deliver a response to a problem that affects everyone in every part of the world. This calls for the involvement of multiple actors and to make the debate accessible to people beyond the scientific community (GIDDENS, 2009; PATERSON, 1996). Thus, "[...] cities and the environment may, in fact, be the most powerful

mechanism for affecting and effecting governance outcomes at multiple scales." (TOLY, 2011, p. 138).

The dynamics of the C40 network illustrates the possibilities of polycentric governance (OSTROM, 2010), that is, actors of diverse nature, scales and levels cooperate and initiate mitigation and adaptation actions in order to address climate change. The cities networks are partnering with private companies, NGOs and other levels of government, both domestically and internationally, providing spaces for the exchange of good practices and experimentation. In this sense, polycentric arrangements of governance, with the absence of a central command and a rigid hierarchy of control of the decision-making process, may offer new possibilities for cooperation in climate policies, and the empirical evidence provided by the history of global climate governance point in this direction.

With that in mind, local climate politics seems framed in a broader spectrum, encompassing regional and national institutions and actors, this is due to the nature of the matter that contains global aspects and is located in an arrangement of multilevel governance, approaching different layers of scale. Meaning that "[…] the governing of climate change is not confined to arenas of international negotiation or national policymaking, but is also a critical urban issue." (BULKELEY; BETSILL, 2013, p.138).

In that sense, one mechanism largely diffused among cities to cooperate on climate change issues has been the formation around city networks, C40 appears as the most prominent one, since it aggregates the largest cities in the world and counts with the support of major private enterprises. Although C40, and other city networks like ICLEI and UCLG, has gained great relevance in the global governance of climate change, pressing for a more polycentric approach, many doubts still rest in the real impact and meanings of its actions. Like mentioned before, change is something hard to track and the phenomenon we are observing is still relatively new and ongoing, making final statements complicate. Nevertheless, some studies already signalize important observations:

> The C40 represents just this sort of imperfect improvement, marked as it is by struggle, domination, and self-interest. It also represents a source of novelty and experimentation in the global governance of climate change, a means of producing disruption in a system highly resistant to change. The tension between these two imperatives, and the manner in which it is addressed and resolved, will do much to determine whether and to what extend city-networks like the C40 can make a positive contribution. (GORDON, 2016, p. 207).

In this scenario, with the increase of climate actions across different levels of governance, the relationship between cities, states, regions, and the national state may vary between conflict and cooperation and although this observation needs further evaluation, some observations can be made. Betsill and Rabe analyzing the interactions between cities and states in the United States anticipate some conclusions that we can extend to the cases here analyzed, "[…] we foresee a number of potential areas of conflict in the future, especially as the federal government begins to develop its own approach to climate governance. In the case of climate change, the transition between epochs is not linear and involves ongoing political struggles and contestation." (BETSILL; RABE, 2009, p. 222).

1.4 Beyond paradiplomacy: global cities

Like global governance, the phenomenon of internationalization of local governments, named paradiplomacy (MICHELMANN; SOLDATOS, 1990), is a result of the transformations in international relations after the end of Cold War. International Relations scholars began to systematically observe the local sphere in late 1980 early 1990, a research agenda that was facilitated by the development of previous studies signalizing the importance to question the level of analysis and the variety of actors (ALLISON, 1969; KEOHANE; MILNER, 1996; PUTNAM, 1988; ROSENAU, 1997; SINGER, 1961). Moreover, it is with the concept of paradiplomacy that the international actions of subnational governments were theoretical systematize for the first time and it stimulated a new research agenda, that found echoes in many works during the 1990s and beginning of 2000s (ALDECOA; KEATING, 1999; CORNAGO, 2000; LECOURS, 2013; PAQUIN, 2010; VIGEVANI, 2004).

The paradiplomacy concept was important to highlight dynamics that were already in course in a changing international system and to explore theoretically the possibilities of local governments as international relations actors. However, the concept has its limitation and with the intention to explain a complex reality it loses some important aspects on the way. One of these characteristics is the differentiation between size and location among local governments and this is why this dissertation acknowledges the importance of the paradiplomacy literature, but does not deploy it as an explanatory concept. That being said, this dissertation works with the notion of global cities (ACUTO, 2010, 2013; AMEN, M.; TOLY, N.; MCCARNEY, P.; SEGBERS, 2011;

CURTIS, 2011b; GORDON; GORDON, 2016; SASSEN, 1991, 2002) in the aims to be more precise in its explanations, at the same time, we will stress the geographical and political location of our cases, that is Latin America, the "South" (more on chapter 2). Because our main question is an empirical one, we believe that the theoretical literature should be able to inform and provide systematically readings of it.

Although the concept of paradiplomacy had an important role in spreading the new research agenda, it is not precise for this study because it refers to a wide range of subnational governments, which can include small cities, metropolitan regions and regional states. That is not the case for Mexico City, Buenos Aires, Rio de Janeiro and São Paulo, so they are best referred here as global cities and its enrolment in international relations can be understand beyond the concept of paradiplomacy.

Moreover, the majority of paradiplomacy studies developed so far were focused in the interaction between local governments and the foreign policy of their countries, limiting in this way the analysis to only one specific sphere of international relations and not approaching the autonomous dynamics of these actors in the international system. Differently, global cities, as highlighted before, act in another manner and this differentiation is important:

> [...] ´global cities´ specifies something more than size or composition. It specifies a relationship between a city and the rest of the world. It suggests a city no longer embedded, enmeshed, or nested in a national urban system and governance of hierarchy and now participating more directly in global governance (AMEN et al., 2011, p. 24)

Consequently, the idea underlying global cities conveys a perception about the international system dynamics, presupposed as marked by multilevel global governance. More than just engage in international relations, these cities are actors in the global climate governance, "The emergence of a global urban system alters the geography of the world system (perceived traditionally as a collection or hierarchy of nation-states), because it operates both through nation-states and by bypassing their boundaries"(PARNREITER, 2002, p.146).

As discussed before, the climate crisis as a global issue affects everyone and its effects are felt more intensively in the local sphere. In this sense, this work aims to contribute with the agenda by drawing some insights about Latin American cities.

What makes a city a global city? How do we recognize one? Once there is no consensus and the literature present different perspectives, that may be based on numerical indicators, social

concepts, personal perceptions and so on. For this study we understand that global cities should present three dimensions: scale, active international relations politics coordinated by the city government (understood as paradiplomacy for some) and be recognized as such by its peers and other relevant actors. But most importantly, a global city should be one that interacts with and within the international system independently, it should be a political unit capable to surpass its geographic limits.

Is being global a positive feature for a city? In this study we argue that it is, especially for cities that are immersed in contexts of insufficient development, but more than arguing if this is or it is not positive, we need to acknowledge that for a major city nowadays being part of the global economy and politics is not a choice. What can vary is the degree of the engagement that the government perceived with the international. When we are talking about a city as being global it does not mean that it is a homogeneous city, but we can question the position that a city with high inequality and low levels of development can have in the international system and more specifically for this dissertation, in the global climate governance.

In this sense, there are perspectives that argue that global cities go beyond the mere huge scale that those cities present in general, that there is something more than just big numbers relating to population, GDP or GHG emissions. A city that is "big" is just a "megacity" and that does not automatically mean that it is global (PARNREITER, 2002, p. 146). In our case selection, the scale of São Paulo and Mexico City are enormous, they are obvious megacities, nevertheless, Rio de Janeiro and Buenos Aires also have significant figures, but in a smaller scale than their counterparts.

It is obvious that Mexico, Brazil and Argentina are states that are behind in the running line to social, economic and climate development (among others features), besides conforming of a very peculiar region in the world. Nevertheless, the global is an inescapable destiny for our cities, they are immersed in this sphere wanting or not, strategic planning or not. None of our cases could denied its global aspect, this does not mean that they cannot contested its dynamics. The internationalization of cities (an active projection by the city government) can be done valuing its local features and particularities, going global does not mean directly to become homogenized as some studies suggested.

Furthermore, acknowledging the global character of cities explored here means that the international level is a relevant sphere for their policy makers and it may influence the policy

decision process and the policy implementation process at the local level. Meaning that global cities can be seem as players of the two-level game explored by Putnam (1988).

There are many attempts to classify and rank cities by city's indexes, most of them are produced by private companies and consultant firms with the objective to inform investors. Each will determine its focus, methodology and public and in the following chapter we explore some of those indexes in order to track how our cities are perceived by other.

The majority of the literature regarding cities and climate change tends to stress the value and key role that these actors play in global climate governance. Yet, one major problem is that the literature tries to create generalizations often looking into cities well developed, with mature institutions, financial capabilities and that are insert in contexts with strong rule of law. That is not the case of the cities analyzed in this dissertation and this is why we offer a theoretical and analytical framework that can tackle the gaps left by the literature.

It is common to see in the literature affirmations such as the following: "Acting as pioneering and visionary leaders in the international arena, cities and local authorities worldwide are leading efforts to translate global climate needs and commitments into meaningful action on the ground." (LUQUE-AYALA; MARVIN; BULKELEY, 2018, p.13). Although we can observe cities playing that role, like London, Copenhagen or Oslo, the reality for most cities is a little bit more challenging. By working with cases from Latin America, we hope to add to the debate a more nuanced perspective, one that questions the proclaimed climate developments by mayors and city networks.

In that sense, as Bulkekey and Betsill (2013) calls the attention for a second wave of local responses to climate change, Luque-Ayla et al. (2018) stress the evolution on the literature as a second-generation of studies. Our worked can be fit into this "second-generation" as we also research climate responses from the second wave focusing on the political processes. "Key to this shift is thinking about low carbon transitions not solely as technical or infrastructural shifts but also as a way of thinking about society, its politics and economic processes, and its ways of envisioning the development of collective futures." (LUQUE-AYALA; MARVIN; BULKELEY, 2018, p. 14).

Along the research process, we question how does a climate response look like? Following this thinking and after characterizing our climate responses into three categories – legal, policy and governance – we inquired about what should be considered a climate policy. In a similar rational, Luque-Ayala, Marvin and Bulkeley (2018) ask "what does it mean to be low carbon?" (p.15). The

authors stress that a transition to a low carbon city is beyond reducing GHG emissions and is connected to a transformation process. Therefore, looking into the whole picture of a city may indicate its path to a low carbon future.

There is an understanding that city networks are able to foster transformations in cities in the direction of transforming them into low carbon places (LUQUE-AYALA; MARVIN; BULKELEY, 2018). But do they have this impact in all its members? Here, throughout our cases, we try to challenge this assumption because the empirical observation offers some elements that does not points into this direction. As we will see in the following chapters, city networks such as C40 and ICLEI did have a key role in setting the agenda of climate change in Latin American cities as well as helping in the policy formulation process, but they fall short in the implementation phase and in the policy evaluation for most cases. Therefore, we argue that affirming that these networks can change path dependencies and guide all cities in the direction of low carbon futures is problematic and only tells part of the story.

How do cities exercise power? For Johnson (2018) the power of cities in global climate politics can be divided into: 1-Westphalian power; 2- network power; 3- corporate power and 4- performative power.

> By suggesting that cities are "saviours, supplicants and agents of change", I make the case that cities are under certain circumstances able to wield and project considerable power by leading and influencing international climate policy agendas while in others, they are clearly dependents, whose need and demand for international assistance also constitutes a form of power. The third and final face of power is the idea that cities are also important constellations of actors, interests and institutions, whose underlying dynamics create the conditions for resilient, low-carbon development pathways that extend far beyond the urban scale. (JOHNSON, 2018, p. 15)

However, this classification says little about the ways that cities can exercise power, it says more about the arrangements that made possible for cities to engage in the international arena. Being a recognized actor does not imply having capacity to exercise power and it says little about the level of agency and autonomy of these actors.

To solely occupy spaces, such as UNFCCC or others does not mean that cities are exercising power or that they "have" power and perform a leadership role in global climate governance, to affirm that we would have to analyze their impact on these arenas. Are they able to change the agenda, the modus operandi, the implications? But at the same time, this perspective reflects a very traditional view of power. Therefore, what is power and how does cities exercise

them? Do they have power because they were able to break with the Westphalia law by participating in multilateral negotiations? If so, how far does this goes?

The fact that cities are recognized as actors in the international arena and in the multilateral regime does not implies that they have power and agency (AVANT; FINNEMORE; SELL, 2010; BETSILL; BULKELEY; BETSILL, 2006; GONÇALVES; INOUE, 2017). This work is observing the role – and possible power and agency – of cities as independent actors because we believe this helps to understand the process. That is not to say that we do not consider the role that these cities have when they are acting under the umbrella of city networks (specially C40, since ICLEI is too big and too broader). It is evident that C40 as an organization has much more power in the international system than any of its members alone, that is the very idea of networks. Notwithstanding, when we disaggregate the parts we can observe the fragilities of its cities and question the power of the network in relation to its own members. The question underlying is: does the C40 – and other city networks – can still have power if its members lack the capacities to exercise it?

This question can be address in many forms, a positive one would highlight the polycentric/hybrid nature of the network, justifying that it is more than just the aggregation of cities, since it also englobes private companies and philanthropies, and the support of very important public figures like Michael Bloomberg.

Therefore, we question: can cities from Latin America solely exercise power and be perceived as leaders in the global climate governance or do they need to be under the C40 umbrella to do so? Actually, city networks – specifically ICLEI and C40 – were key to project cities not only as actors but also to provide some instance of international power and this is why the timeframe of this dissertation starts at the year of creation of C40. This milestone also exposes the international relations perspective that this dissertation approaches.

If power is much more complex to tackle, autonomy can be addressed more easily. Are cities autonomous when they are in the international system? If they can only assess the multilateral spaces when they are organized as networks – backed by well-established and well-recognized organizations such as the Clinton Foundation, the Bloomberg Philanthropies and the Rockefeller Foundation[5] –, then we suggest that they have a limited autonomy.

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[5] "[…] city-networks like ICLEI and the C40 have become highly dependent upon the contributions of private corporations and corporate foundations, such as Bloomberg Philanthropies, the Rockefeller Foundation and Arup,

In a nutshell, the power and autonomy of cities in global climate governance is limited and fragile. Therefore, if it is based on the assumption that they can be successfully in mitigating and adapting to climate change and they fall short in this task, how can their "leader" position can be maintained? Raising this question, this dissertation intends to go beyond the argument – spread by politicians but also by some academic work – that cities are climate leaders. Consequently, we connect the role that cities can play in the global climate governance with the implementation of their climate responses, informing the level of their commitments, as it is explained in chapter 2.

1.5 Chapter final remarks

Perceiving International Relations as an interdisciplinary field is mandatory to understand a world that is much more complex than previous though. Moreover, any academic field that remains restricted to its only domain will only be able to provide limited answers by making limited questions. However, by expanding our horizons, we are not suggesting we can provide definitive answers since that is unrealistic, but we are acknowledging that the reality we are trying to understand and partially explain, goes beyond our academic borders. That being said, we will make the effort to bring authors and thinking from other field even though we are aware that our starting point is International Relations and that this poses limitations to our understanding of some specific topics.

We can comprehend a lot by looking at the nature of the problem we are trying to understand and by observing the nature of the actors we are analyzing. That being said, this chapter intended to engage in the International Relations debate by revisiting some of the most important works of the field but also by not excluding research that was development in relating areas. By exploring the nature of the climate change problem and digging the nature of global cities we intend to provide conceptual tools to understand the following chapters.

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suggesting a possible limitation on the ability of city-networks to develop an autonomous climate policy agenda." (Johnson, 2017, p. 152).

CHAPTER 2 HOW CAN WE READ CLIMATE RESPONSES FROM LATIN AMERICAN CITIES?

2.1 Introduction

The aim of this chapter is to introduce the analytical framework which will be used to read the climate responses from our cases in the following chapters. The framework is based on two dimensions: the cities' international relations politics and their climate responses, focusing on the implementation process and on the outcomes of those responses at the local level. Subsequently, it debates the implications of climate responses implementation in the cities' climate commitment. In order to provide a contextualized perspective, the chapter also exposes the particularities of Latin America as features that needs to be acknowledged in order to better understand the whole phenomenon. It concludes with a reflection on the meaning of climate leadership.

2.2 How can we read climate responses from Latin American global cities?

Climate Responses

A climate response is understood here as an official act from the municipal government, directly mentioning climate change as the main reason for them to act, it can be related to mitigation and adaptation. For this research, we choose to work only with the initiatives taken by the municipal government that are limited to the mayor's jurisdiction and are explicitly as climate. This choice was made for reasons linked methodology and access to data, as exposed previously. Nevertheless, we found that it was worth exposing here what we understand as a climate response. The most important element to state is that we do not consider a climate response an effective action to address climate change. We see it as a first attempt to acknowledge the matter, that does not mean the city is fully climate committed. Above all, a climate response is always a political response since our starting point is the local government and it is part of an institutionalization process that is neither linear nor gradual, as our cases illustrates.

Firstly, we understood that all climate responses are political responses and that although they are being deployed at the local level, we also need to be aware that they simultaneously target the international community, showcasing their cities as "global climate players". This is why our analytical framework does not end with a list of climate responses. We deemed necessary the analysis of the implementation process and its outcomes in order to provide a more precise picture, even though we are not conducting a public policy analysis. An analysis of a public policy would imply looking into every sectorial action taken by the city related to mitigation and adaptation and this was out of our scope and goals in this research. The proposal to look into the implementation of climate responses is an attempt to separate the cities' climate discourse – materialized in their responses – from what it is being deployed. Once again, this may not be necessary for cities like Oslo, but it is for the context that we are analyzing, as emphasized before and exposed ahead in this chapter. Therefore, the analysis of climate responses is divided in two moments: the first one being the launching of those responses and the second one focusing on the implementation.

At the same time, we do not intend to follow a normative approach, recommending what a "green city" should look like, nor what climate responses should be based on. We are very conscious of the limitations of our discipline and in our access to resources. Nevertheless, we can draw some conclusions using International relations and Political Science tools, while other inferences are left out of the table. This means that we cannot write that the Rio de Janeiro resilience plan is not sufficient to foster resilience, but we can understand that if a city is presenting an increasing GHG emissions trajectory and it is not promoting policies for clean transportation (which is the main emitting sector for all our cases) policies, then it is not being climate responsible and committed. This perspective underlined all the research process and is explicit throughout the text.

Most of the literature on cities and climate change concentrates its analysis on the key role of these actors in proposing mitigation and adaptation commitments but lacks an overview of the climate policy implementation process. However, we argue that the latter can indicate whether and to what extent cities are deploying a consistent climate agenda. Hence, focusing on implementation might provide paths to understand the role of cities in global climate governance.

International Relations and Political Science literatures (Betsill 2001; Betsill and Bulkeley 2004; Bulkeley and Betsill 2003; Bulkeley and Schroeder 2011; Castán Broto and Bulkeley 2013; Hughes 2016; Bulkeley et al. 2014; van der Ven, Bernstein, and Hoffmann 2017; Amen et al. 2011;

Gordon and Johnson 2017; Barber 2013; Bouteligier 2013) have been systematically analyzing climate actions from cities for the past two decades, with a focus on cities from developed countries in most of the published papers. Nonetheless, some studies have also been conducted in cities from less developed countries (LANKAO, 2007; MARTINS; FERREIRA, 2011; PUPPIM DE OLIVEIRA, 2009; SETZER, 2013), following the second wave of climate responses (BULKELEY; BETSILL, 2013). But because this is a relatively new agenda and one that contests the main premises of International Relations, little attention has been given to the problematization of the role of cities in addressing climate change, through the analysis of local climate actions implementation.

We understand that establishing a new research agenda can be challenging in a field reluctant to changes. Nevertheless, we believe that the cities and their climate change agenda can gain more ground if it incorporates the questions regarding cities' climate commitment and leadership role. Therefore, this dissertation intends both to build on the literature already produced about climate change and cities, and to discuss some of its main arguments, based on the examples of São Paulo, Rio de Janeiro, Mexico City, and Buenos Aires.

Observing the responses of cities to climate change from the second wave (BULKELEY; BETSILL, 2013) – located in the South – we notice that it was necessary to take a step back in the debate to question the nature of these climate responses. Therefore, we asked to what extent the climate responses from Latin American cities in general, and from our cases in particular, could be considered as an intention to address climate change challenges. This question arose after initially analyzing simultaneously the implementation process of the climate responses provided by our cases from 2005 to 2017 and their international relations strategy. In this double exercise to try to find answers to our questioning both looking at reality and reading the literature, we understood that we needed to be clear about our research process that leaded to the analytical framework proposed here. Therefore, we found that

> The explanatory framework is explicitly grounded in the empirical data on the three cases as well as in concepts taken from the literature. Consequently, the study is not a test of hypotheses deductively generated from theory. Instead, it represents a heuristic use of case studies, which "inductively identifies new variables, hypotheses, causal mechanisms, and causal paths. (Tjernshaugen 2012, 9, apud VANHALA, 2017, p. 100).

With this perspective in mind, we established that an attempt to read climate responses from Latin American cities would have to include international politics as well as go beyond the limits climate change policies. It was only possible to make this assessment was only possible to reach after some empirical observations. Since the literature has already investigated explanations as to why cities respond to climate change and has provided elucidative answers to this question, we concluded that we needed to start building from there as we intended to highlight the key elements not only triggering those responses but also in implementing them, in a city from the South. Here we indicate that the linkages between the city's international relations policy and its climate change responses are much more intense than what was previous believed. Additionally, we suggest that the role of cities in global climate governance is affected by the local implementation process and by the outcomes of the cities' mitigation and adaptation plans. This challenges the predominant "climate leaders" narrative, as will be discussed ahead.

First, it is important to note that climate change is a cross-sectional agenda and that mitigation and adaptation actions can be developed without any direct reference to "climate change", like transportation policies that are presented as mobility policies and not as climate ones. Nevertheless, this work's starting point is from the responses explicitly addressing climate, even though policies from other sectors could have been integrated in this umbrella. The reason for this choice is that we are aiming to track the level of commitment of the local government to addressing climate change and this requires an explicit exposition of this goal.

Departing from Bulkeley and Betsill 2013 categorization of climate responses in two phases, we localize São Paulo, Rio de Janeiro, Mexico City and Buenos Aires climate responses within the second wave, meaning that the cities' actions are immersed in a broad picture of local governments from the South responding to climate change challenges in the early 2000s. In the first wave, most of the mapped climate responses were concentrated in the developed countries and were based on what the authors called as "municipal voluntarism", suggesting that the small and middle sized cities that began creating climate plans had the political will to do it as well as a sensitivity towards environmental issues. One exception to this was the Brazilian city of Curitiba, which early on in the first wave demonstrated environmental commitment and was recognized worldwide as an ecological capital at the time of Rio 92. Interestingly, one of the most popular transportation policies in Latin America to reduce GHG emissions – the BRT system – was developed in Curitiba in the 1970s.

It is worth noting that the first wave of climate responses was previous to the creation of the C40 and at the time, ICLEI was the most active city network in coordinating and influencing cities to take climate actions, especially via its CCP (Cities for Climate Protection) campaign (BETSILL, 2014). It is also suggested that in this process, new spheres of authority were being formed that were able to surpass the municipal government. Although this may be true in Sweden, it is a distant reality for Latin American cities. In our cases, the municipal government is still the power that concentrates the least elements to respond to climate change systematically – and in some cases not even the bare minimum. Thus, we did not observe a notable shift in authority in Latin America and this is why our analysis is still focused on the initiatives taken by the municipal government, although some civil society groups and NGOs may play relevant roles in pushing the agenda a step forward and in pressing governments for more transparency.

Following that, the second wave is noticed to incorporate cities from developing countries that may have taken part in global climate governance, encouraged by "strategic urbanism". Also, it is suggested that the second wave incorporates more adaptation actions. Our cases fall under this second wave and their climate responses seems to be in accordance with the idea of a "strategic urbanism". The reason for this is that, as we argued throughout this dissertation, their climate responses constitute much more than climate goals: they incorporated international strategies of city promotion. But as can be observed in the specific chapters, we did not observe a predominance of adaptation initiatives as suggested by the literature (BULKELEY; BETSILL, 2013). The latter were still very much concentrated on mitigation efforts, although the dynamics may be indicating a growing valuing of adaptation and resilience lately.

That being said, we can present how we classified the climate responses within three categories. Obviously, they are all-encompassing, but they facilitate the reading of our cases by avoiding the temptation to try to consider every sectorial policy that can play a part either in mitigating or in adapting to climate change. Thus, the climate responses can be divided into the following categories: 1) legal; 2) policy; and 3) governance. The first category refers to the laws and decrees approved by the municipal legislative power explicitly mentioning climate change, providing a legal support for actions. The second one is comprised of the policies created by the city government specifically to deal with climate change, that may be translated into mitigation and adaptation plans. Finally, the governance responses are subdivided into two levels, the local

and the global, and reflects the governance arrangements created (in the case of the local level) or joined (in the case of the global level) in order to oversee the city's climate actions.

The proposed climate responses categorization is useful in order to limit and map what was generated by cities in responding to climate change that goes beyond the mere international acts and speeches. Moreover, it leads to a proposed framework that enables us not only to read climate responses but also to assess the implementation process of the policy responses and to link them with the cities' international agenda. Each type of response informs an expected type of action and a meaning of operating it and this is the second stage of climate responses that we believe the literature has not investigated enough, particularly in cities from the South.

Therefore, it is important to be clear that we are assessing the implementation process and the outcomes accordingly to what was stated in the policy responses, since they usually include traceable measures such as GHG emission reductions targets and climate risk prevention. That is to say, we use the parameters established by the city government and not through an ideal goal. To make it more comprehensive, we assess implementation through policy design, its institutionalization process and its outcomes, allowing us to track the process and to make an analysis that can be deployed before the deadline for reaching the final results.

Subsequently, the next step is to define which elements will be observed in the implementation process and this means looking at the variables affecting the policy design, the implementation process and its outcomes. The literature (BARBI, 2014; BETSILL, 2001; LEE; PAINTER, 2015; MARTINS; FERREIRA, 2011; PUPPIM DE OLIVEIRA, 2009; SETZER; BIDERMAN, 2013; UITTENBROEK et al., 2014) offers some insights regarding which elements should be taken into account, but we found it very difficult to establish a general denomination applicable to all cases without downscaling to sectorial policies, since the empirical observations had demonstrated that local features have a significant impact and that they differ from one region to another and even inside the same national State. To that end, we decided to work with the framework developed by Ryan (2015) that selects the "factors and conditions shaping the development and implementation of climate policy at the city level, with a special focus in developing countries." (p.1) as follows:

Figure 1 – Ryan's (2015) analytical framework

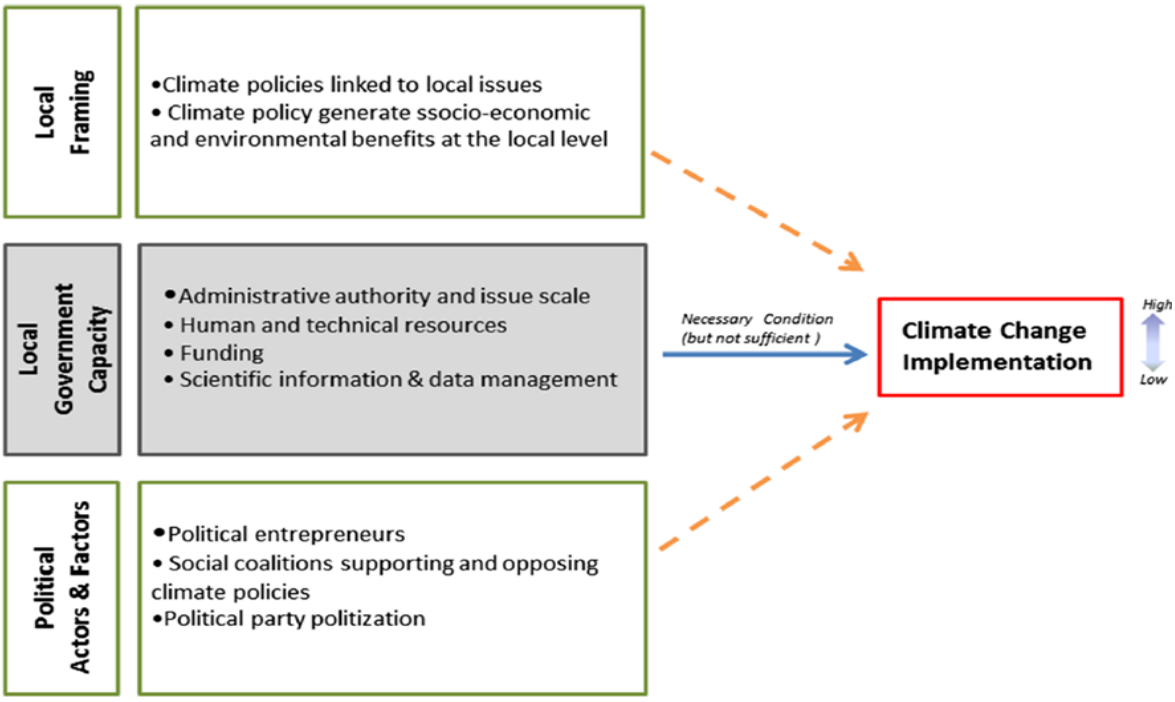

Fig. 1 Analytical framework: key factors affecting climate policy implementation

Source: RYAN, 2015, p. 527

It is important to clarify that this analytical framework proposed by Ryan refers to the city level of a policy. Based on empirical analysis, we concluded that it is key for Latin American cities due to their social, economic and institutional contexts. By doing that, we want to stress the importance that the domestic and local variables have in the outcomes of climate responses, a perspective that we feel the literature has fell short in addressing because it was too focused on the international level. However, we do understand that other factors also affect the results and should be considered in combination with those presented by Ryan, such as the national and the international context. Because many studies have already focused on climate politics of the Nation-State climate politics, we chose not to concentrate our efforts in that direction in order to explore the linkages among the international relations politics of our cities and their climate responses.

Another reason we believe that Ryan's framework is interesting for our propose is that it provides the possibility to analyze the design of a policy, its structure and principles, before it is fully implemented or if it is not implemented at all. Therefore, it allows us to drawn some conclusions and trace projections for policies that have not yet been implemented or have not

presented significant results to date because they are based on long term transformations, which is the situation of some of our cases.

Previous contributions to debate (MARTINS; FERREIRA, 2010) can be highlighted as they build on the knowledge produced to understand the elements contributing to or working against climate policy implementation. Reflecting on others analytical frameworks, we note the one proposed by Uittenbroek et al. (2014) to assess the implementation adaptation responses and the political commitment to climate change of Rotterdam and Amsterdam. It is divided into two approaches: the dedicated and the mainstreaming. The dedicated approach is related to a direct political commitment to climate change and involves: political agenda setting, framing, resource allocation and clear policy objectives. The second one, known as the mainstreaming approach, indicates an indirect political commitment. This is also evalued by our analysis.

Some measures are important to tackle climate policy implementation at the national level, to calculate the sum of all national efforts to mitigate climate change are sufficient to curb emissions to a safe level, as is the case for the carbon budget. However, the parameter of the carbon budget is not viable for cities, since their contribution to the global budget is lower when compared with states and there does not exist a well-developed calculation of the level of that contribution. So, what would be the criteria to identify that a city is on the right track? Developing related institutions could be one parameter in this sense, since they are key to assure the implementation process (MARTINS; FERREIRA, 2010; ROMERO-LANKAO et al., 2015; RYAN, 2012, 2015). The reason for this is that the existence of a law and an action plan does not assure that implementation will follow, as demonstrated by the case of São Paulo.

Focusing our analysis on the combination of the international agenda and on the implementation of climate responses, we intend to tackle the material forces and drivers of the outcomes we are observing as climate commitments. As argued previously in this chapter and in the first one, we aim to contribute to the debate by highlighting the empirical observation and its results. As we see more often now, calls for this approach have been increasing, like "Analyses of climate change that do not recognize the materiality of the city, very often associated with the policy implementation stages, fail to provide an accurate account of the scale and practical impact of the transition." (LUQUE-AYALA; MARVIN; BULKELEY, 2018, p. 24).

Furthermore, and taking as the guide to this dissertation analysis Ryan's three dimensional analytical framework – local framing, local government capacity and political actors and factors –

, we will be able to evaluate the level of a climate response commitment. For instance, if a mitigation plan is not connected to other local policies and the city has neither the resources nor a political actor supporting it, we can suggest that the plan will have low chances to be implemented and be successful. This analysis pondered all policy responses from our cities.

We can anticipate that in our cases climate responses had a great – if not exclusively – discursive component, indicating that they only partially constituted climate responses, since the goal to mitigate and adapt to climate change was, most of the time, secondary.

In this sense, one important indicator for our analysis is the GHG emissions trajectory. Are cities on an increasing, decreasing or stable path? This is a key observation in combination with the policy implementation process, as we need to be aware that climate commitments do not translate straightforwardly into GHG emission reduction:

> Voluntary commitments are also politically derived numbers influenced by varying social and political factors including political leadership and changes within it, including the constantly shifting electoral landscape and other bureaucratic concerns. The commitments are as such more symbolic rather than substantive, and could reflect only aspirations rather than realities in actual implementation actions or urban planning. (KHAN; SOVACOOL, 2016, p.10).

In this sense, both policies – international and climate – investigated here can be described as diffuse, that is, they do not focus on a specific population group and this has an impact on how they are designed and implemented (FREY et al., 2017). This means that they differ greatly when compared with traditional local policies, such as education. The understanding of how they operate or even why they need to exist is not clear to the majority of the population of our cases. Therefore, communicating their goals and their achievements is difficult and may lead to miscommunication or, even worse, to the manipulation of data. This is why this dissertation was carefully designed to assess different information sources in order to mitigate the fragility of some of the data provided by city governments and international organizations.

2.3 Implications: Climate Commitment and the climate leadership question

From climate response categorization and implementation analysis, we can define what we understand as climate commitment and how we observe its variations among our cases. Because

our analytical framework encompasses international and climate dimensions, the variations are related to these two main areas and subject to changes across different municipal administrations.

The implementation analysis deploys the elements enumerated by Ryan (2015) and some of them may match other perspectives, such as the idea of response capacity (ROMERO-LANKAO et al., 2015). Similarly to Ryan who points to "local government capacity" to observe the human and technical resources as well as funding, Romero-Lankao follows the idea that we should observe the "[…] connection between the resources a city is able to draw on for climate change responses and the underlying socioeconomic, physical and political contexts that give rise to those resources." (p.183). It is worth noting that capacity is a feature that only seems to appears in the literature when the case study is a city from a less developed context, where things are not taken for granted such as having qualified personnel or budgetary provisions. This is why the selection of cases matters and also informs the analytical framework.

Furthermore, what does it mean to be a climate committed city? To evaluate this, we first need to acknowledge that this is a multiple and constantly changing perspective, meaning that the elements we choose to analyze here are connected to the cases selected and the time frame that this research covers. Nevertheless, a city committed to address the challenges imposed by climate change should present some basic elements: a decreasing GHG emissions trajectory, international climate commitments, involvement in international climate initiatives, climate responses matching the three dimensions of Ryan's framework, locally framed climate policies, financial and human resources provisioned to implement climate policies, political actors ready to systematically support climate policies, a society aware of the climate challenge and willing to economically pay for transformations. We anticipated that none of our cases matched all these elements. They may present some of them at different points in time, but not all of them at the same time. It was particularly difficult to identify societies aware of the climate challenge and willing to economically pay for the changes required to achieve a transition to decarbonization. This can be explained in various ways, such as human beings' overall difficulty in acknowledging climate change as a real and urgent threat, but also through the economic and social contexts that our cities are immersed in. Therefore, although we observed some degree of commitment, we cannot consider São Paulo, Rio de Janeiro, Mexico City and Buenos Aires fully climate committed, as will be explore in each case chapter.

Subsequently, do the climate responses generated change in Latin American cities' path towards decarbonization and resilience? Or do they maintain "business as usual"? If any change is generated, what kind of change is it? Viola et al. established a classification of Nation-States between reformist or conservative climate powers based on their level of climate commitments. For the authors, the latter is understood as "[…] the level of awareness that a specific society has of climate change as a central civilizational driver. This commitment expresses itself not only in the state's position in international negotiations, but in the emissions trajectory of GHG and in the depth of domestic climate policy." (VIOLA; FRANCHINI; RIBEIRO, 2012, p.13).

Although our goal here is not to classify cities as climate powers, this perspective helps us to understand how the climate commitment of a city is connected to its path and to its role in global climate governance. We cannot classify our four cases as conservative once they made some efforts in the direction of providing responses to climate change, even though some have fell short in implementing their climate responses. Therefore, all cities can be considered reformist forces but they can, at the same time, not be on the path to decarbonization. So what kind of climate path should a city be on in order to have a leadership role in global climate governance? Can a city that is not on a change path to decarbonization can be considered a leader in global climate governance? What kind of change can those climate responses promote?

According to Heikkinen et al. (2018, p.4) we can classify the degree of change in cities climate responses as: 1) incremental adjustments; 2) reformistic change; and 3) transformative change. We find this categorization interesting once it highlights that it is not a linear and progressive process and this is extremely important to understand our cases. Nonetheless, we find ours cases to be at a less developed stage and this is why we propose a more nuanced view for cities in limiting contexts. As we are looking at climate responses provided by the municipal government, we cannot tackle transformations in a society as broadly tough, but in democracies we can assume that the government represents, at least to some extent, the aims of its people, therefore they are not operating in a vacuum. Finally, this classification is useful in order to compare our cases and to explicit their climate trajectories in a conclusive way (chapter 7).

Cities are regarded as global climate leaders by part of the literature, political elites and international organizations. However, what does it mean to be a leader in global climate governance, particularly for a global city from the South? And in what ways do global dynamics interplays with local climate policies? As the capacity of the Nation-State to respond effectively to

the challenges posed by climate change have been put into question in the last two decades, cities have been pointed as the new climate "leaders" by some. What we have observed is that there is a first phase running from 2005 to circa 2014 of optimism regarding the possibilities for cities to address the climate crises and occupy the vacuum left by countries after the 2009 Copenhagen COP. However, after that period, we notice there is a shift towards the redefinition of the leadership role, provoked by two elements: the creation and operationalisation of reporting platforms and the beginning of result collection from local policy implementation. We conclude that there is a change in the dynamics of global climate governance from the first to the second wave of climate responses. Moreover, what our analysis indicates is that international climate leadership is intrinsically connected to local policies, but also that the meaning of leadership should be temporality located once it is susceptible to changes in both, global and domestic dynamics.

The year of 2005 is a landmark because of the creation of C40. It is then that we first observe the collective initiative to put cities in a privileged position in global climate governance. By gathering only megacities, the group had the intention of positioning them as a powerful and significant cluster, one that could have the necessary scale to be a counterpart to nation-states. In 2007, C40 acquired more power by receiving financial and technical aid from the Clinton Climate Initiative and by electing mayor Bloomberg as its Chair. When came 2009 and the COP that the world was expecting to produce an agreement to substitute the Kyoto Protocol and nation-states failed to deliver, cities had already made their move to place themselves at as the international actors willing to take the climate challenge. Many C40 cities went to Copenhagen with something ready to showcase. For example, as it can be observed in chapter 6, Buenos Aires built its climate action plan in time for mayor Macri to present it at COP15. In the following year, cities created another momentum in order to be showcased as "climate leaders", just before COP 16 in Cancun. Mexico City government called for a meeting to sealed cities as climate committed actors and as the "new leaders". 191 cities signed the "Mexico City Pact", agreeing to take climate actions and to report their actions to an open platform, the Carbonn Climate Registry (cCR).

With the creation of Carbonn, it is the first time that a mechanism to track cities' climate commitments emerged, and this already suggests the perception of the need for cities to demonstrate more than just discursive promises. It is worth noting that C40 was already exploring the CDP (Carbon Disclosure Platform) as its depository platform since 2008, but in a very limited way: we did not find data before 2011. The Carbonn platform was designed to be maintained and

administered by ICLEI – but also had the support of UNEP, Mexico City government, UCLG[6] – and this is when we observe the first shift in the meaning of the role of cities in global climate governance, conditioning cities' climate leadership to publicly available climate results. As the executive secretary of UNFCCC at the time, Christiana Figueres, demonstrated: "The Carbonn Climate Registry will facilitate transparency and accountability of local climate actions and help local governments to demonstrate leadership in climate action. "[7]. All of our cases study cities signed the Mexico City Pact and committed to reporting their actions to Carbonn.

Then we observed a period going from 2010 to 2014 of cities rushing to design and present climate responses, such as climate laws and action plans in order to fit under this new idea of leadership. This was true for all of our cases. But this was still the phase in which the declaration of a climate commitment such as approving a climate law or committing to reduce GHG emissions was sufficient to place a city among those declaring leadership in global climate governance. Also, many cities were still developing their first GHG inventories and the ones that already had one were using different methodologies, making comparison difficult. Subsequently, ICLEI, C40, WRI (World Resources Institute) joined efforts to design an inventory methodology that could be used by all cities, the GPC – Global Protocol for Community-Scale Greenhouse Gas Emission Inventories. It was launched in Lima during COP 20 and although it is an important initiative and all organizations have since then promoted workshops to train municipal human resources to perform the inventories with the GPC methodology, not many cities have done it. Within our cases, only Buenos Aires and Mexico City have produced inventories using the GPC.

The picture started to change around 2014, based on two initiatives and on the passage of time needed for cities to start implementing what was being promised since 2005 and to start collecting results. In early 2014, the former C40 chair, Michael Bloomberg was appointed as the United Nations Special Envoy for Cities and Climate Change – a position created on that occasion – and as such he started mobilizing cities to signed another pact to demonstrate their climate commitments. Subsequently, in September 2014, the Compact of Mayors was launched with the same idea as the Mexico City Pact, to register cities climate committed and to report them to the Carbonn platform. The Compact of Mayors was supported by C40, ICLEI, UCLG and UNHabitat.

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[6] Curiously, the C40 did not supported the Mexico City Pact, more on the possible arguments are explored in chapter 5.

[7] Available at: http://www.worldmayorscouncil.org/action/carbonn-climate-registry.html Accessed: November 10th 2016.

Slowly cities stopped signing the Mexico City Pact and the Compact of Mayors gained much more international protagonism, still working with Carbonn as its reporting platform. Later, in 2017, the Compact of Mayors merged with the European Union Covenant of Mayors for Climate and Energy, creating the Global Covenant of Mayors for Climate & Energy.

This trajectory of cities in global climate governance, beginning with the launch of the C40 in 2005 assuming the discourse of "leadership" and positioning cities as the frontrunners in the fight against climate change, illustrates how the idea of "leadership" wass transformed from 2005 to 2014 and to now. If at the beginning declarations of commitments were enough to assume that cities were leaders, this notion was incremented with the introduction of open access reporting platforms and the establishment of a standardized methodology to develop inventories. Therefore, we argue that what was needed to be considered a climate leader in 2005 was different from what was needed in 2014 and in 2017, requiring cities to follow these changes in order to sustain their climate leader discourse.

Additionally, we argue that cities' discourse as global climate leaders is limited by their level of climate commitment and their ability to provide climate responses that foster transformative change, leading to a decarbonized future. Cities are not only required to produce GHG inventories using GPC and reporting to Carbonn and CDP, but they need to show significant advances. The change in city leadership from a more discursive approach to a more policy based approach can be identified in C40 evolution: "If the mantra of the C40 circa 2009 was "cities act, while nations talk" then by 2014 it had without doubt become, "if you can't measure it, you can't manage it."" (GORDON, 2016, p. 175).

Regarding the leadership chorus, cities rely on networks to reinforce their role in this global governance once their power is limited at the global stage:

> This involvement with an international coalition of cities not only provides access to information and resources, but also to the political kudos that arises as part of being part of a 'club' of global cities showing leadership on the issue of climate change. Such forms of leadership are not, however, without their challenges." (BULKELEY; BETSILL, 2013, p. 147).

Also, the reporting platforms are important to encourage governments to keep track of their actions and to make them transparent. Nevertheless, we need to stress that they are designed to be reporting platforms, meaning that cities submit their data, but there is no review of that data

by the administrators of the platforms, it is frequent to find information dated and missing. However, the platforms do create transparency and increase accountability among city commitments once they display information openly and if the information is missing it already sends the signal that something is wrong.

2.4 Latin America specifications

Latin America is the most urbanized region in the world and its biggest cities are epicenters of political dynamics. In 2015, 79% of the total Latin American population was living in urban centers and this number is expected to reach 82% by 2025. For Brazil, the proportion was 85% (2015), for Mexico it represented 79% and Argentina had 91% of its population living in cities by 2015 (UN-HABITAT, 2016, p.199-200). It is important to note that Latin American cities have grown in a chaotic manner, generating problems that still resonate and demand solutions, such as poor infrastructure, inefficient transportation systems, unequal access to decent housing and to the city, limited access to sanitation and to safe drinking water, and high rates of violence, "Even in more advanced Latin American economies, cities such as Buenos Aires, São Paulo, Bogotá, Lima, Rio de Janeiro and Mexico City experience major deficits in basic infrastructure." (UN-HABITAT, 2016, p.150).

An aggravating aspect is that Latin America is the most unequal region in the world. Its countries have high rates of economic and social inequality that are also present within its cities. To illustrate the problem, the Gini coefficient for the region was 0.5 in 2010, above the UN-Habitat international alert line. High levels of inequality translate in many forms in Latin American cities, but to highlight the most obvious: high levels of informality in the economy and labor market, populations living in slums and violence. In 2014, 21% of Latin American cities populations were living in slums (UN-HABITAT, 2016, p.70) and its cities were considered as the most violent in the world with high homicide rates[8].

All of our cases display these characterististics to some degree, limiting their capacity and speed in responding to climate change. That is to say that local political preferences in Latin American cities are concentrated on addressing traditional basic needs. Therefore, climate change

[8] Available at: https://www.economist.com/graphic-detail/2017/03/31/the-worlds-most-dangerous-cities Accessed: April 18th 2017.

appears among the main priorities neither for city governments, nor for populations. Nevertheless, we have observed an increase in environmental policies as a whole and in climate responses since the mid-2000s in the region, as it is illustrated in following chapters by the climate responses from São Paulo, Rio de Janeiro, Mexico City and Buenos Aires.

Similarly, international relations were not presented as key nor as a priority for municipal governments in the region when compared with traditional policies such as sanitation or transportation, but this scenario has also changed significantly since the early 1990s. Latin American cities' international policies have gained importance progressively and as the globalization process intensified, the cities became more internationalized and began to project themselves as global cities. Notwithstanding, these two policy spheres – climate and international – can dialogue very well with the entire municipal structure if we view them in a transversal way and as supporting other policies. Furthermore, they can help foster a sustainable development that may lead to the improvement of other policy spheres, like mobility and housing.

Climate change is intrinsically a global challenge. Therefore, it is logical that the debates regarding the ways to promote international cooperation to mitigate it were introduced within local governments by their local international relations departments, or by the most internationalized department and members of the municipal administration. Since none of our cases is situated in a country from the UNFCCC Annex I, their climate commitments to take voluntary GHG emission reduction targets can be understood as a window of opportunity for our cities to be the first responders to climate change in their national context, putting themselves in opposition with their national governments.

One of the arguments developed throughout the case chapters is that the global aspect of our cities connects them with global trends, exposing their local government to issues that may not be on the local and national debate. Therefore, an interesting way to locate our cities within the global scenario and to see to what extent the global can impact local dynamics is to look at how they perform in international city indexes. In order to track how global our cities are, we choose to analyze the Global Power City Index (GPCI), GaWC and ATKearney's Global Cities Report as they are the ones being periodically produced and are recognized as being systematically designed.

The Global Power City Index (GPCI) produced by the Institute for Urban Strategies of The Mori Memorial Foundation has been issued since 2008, includes 44 cities and considers six main variables: economy, research and development, cultural interaction, livability, environment

and accessibility. From there, 70 indicators balanced the final results produced by renowned researchers such as Saskia Sassen, with external peer reviewing. Finally, the index "evaluates and ranks the major cities of the world according to their "magnetism," or their comprehensive power to attract creative people and business enterprises from around the world." (GPCI, 2017, p.1). São Paulo and Mexico City have been on the rank since 2009 and 2012 respectively, but Rio de Janeiro never made it to its pages and Buenos Aires appeared for the first time only in 2017. None of the Latin American cities figure among the top 10, which is dominated by wealthy cities such as London, New York, Paris and Tokyo.

Looking at São Paulo's trajectory in the GPCI, the ranking varies from the 33rd position in 2009 to 32nd in 2011, to 38th in 2012 and to 39th in 2017. The decrease from 32nd to 39th is in accordance with our analysis of the city's decline in its international profile as well as in its climate commitments, as discussed in chapter 3. On the other hand, Mexico City's position in the rank has a slightly variation from 36th position in 2012, maintaining the 37th from 2013 to 2016 and falling to 38th, in contrast with our analysis regarding CDMX's international profile and climate commitments (Chapter 5). The inclusion of Buenos Aires in the 2017 listed as 40th demonstrates the increase in its international projection, as we also highlight in chapter 6.

The GaWC (Globalization and World Cities) is a rank created by the Geography department at Loughborough University and counts with the contribution of many scholars around the world. The GaWC departs from a global city perspective based on economic international connectedness, looking into their connectivity through four advanced producer services: accountancy, advertising, banking/finance, and law (TAYLOR, 2004). According to the GaWC 2016 ranking, our cities are characterized as follows: Mexico City and São Paulo are considered to be Alpha cities, Buenos Aires is Alpha- and Rio de Janeiro is Beta-[9]. Alpha and Alpha- cities designate "very important world cities that link major economic regions and states into the world economy", Beta- "are important world cities that are instrumental in linking their region or state into the world economy".

The consulting firm ATKearney first published a global city index in 2008, in partnership with the Foreign Policy journal and the Chicago Council on Global Affairs. Subsequently, ATKearney continued to published it annually, analyzing 27 metrics across five dimensions:

[9] Available at: http://www.lboro.ac.uk/gawc/world2016t.html Accessed May 12 2018.

business activity, human capital, information exchange, cultural experience, and political engagement. In combination, they also produce the Global Cities Outlook that evaluates the potential of cities to become part of the most prominent city groups, based on the change rate of 13 metrics across four dimensions: personal well-being, economics, innovation and governance. Of our four cases, only Buenos Aires appears among the top 25 cities in the 2018 Global Cities Index cities. It is in the last position, but still among the top 25 global cities according to ATKearney. But when it comes to the Global Cities Outlook, that takes into account more complex variables that are related to innovation and governance, none of our Latin American cities ranked among the top 25. (ATKEARNEY, 2018).

Besides our cities being considered global, city networks in all their variations, including environmental ones, are important ways for Latin American Cities to participate in international relations. Transnational networks have been their "pass" to the international arena and a way to be noted by more powerful actors. Nevertheless, the idea that all cities within the same network can be perceived as equals is misleading but may have enchanted Latin America cities since it was a way of distinguishing themselves from the rest of their underdeveloped countries. Therefore, the international profile of our cities is closely linked to their participation in these networks. Consequently, being part of C40 and ICLEI represents this perception of international relations perception and it is explored in the specific case study chapters.

2.6 Chapter Final Remarks

Ultimately, how does this framework help us understand the role of cities in global climate change? It helps us by providing some distance from the mainstream discourse of cities as leading actors in addressing climate change. Alternatively, it offers an empirical perspective that relates the implementation process of mitigation and adaptation actions and its outcomes to the position a city can occupy in the polycentric governance of climate change. This means that we link the ability of a city to respond to climate change not only to its legal, policy and governance responses but also to policy implementation process and outcomes, informing their level of climate commitment. Consequently, the question underlying this understanding is: can a city be a global leader in global climate governance without being fully committed to its climate responses? This question is explored in the following case studies.

CHAPTER 3 VERTIGINOUS SÃO PAULO: MIXING CLIMATE CHANGE AND INTERNATIONAL POLITICS IN THE ONCE MODERNIST CITY

> *"A vertigem deles, movida a arte, refletia a vertigem industrialista que assaltava a cidade na forma de chaminés, do apito das fábricas e, naqueles tempos, da bendita fuligem; a vertigem demográfica, traduzida numa infrene escalada populacional; a vertigem social, em que uma massa de operários abalava o antigo sossego dos proprietários; a vertigem urbanística, em que se programava e reprogramava a cidade. São Paulo era a capital da vertigem."*[10] (TOLEDO, 2015, p.15)

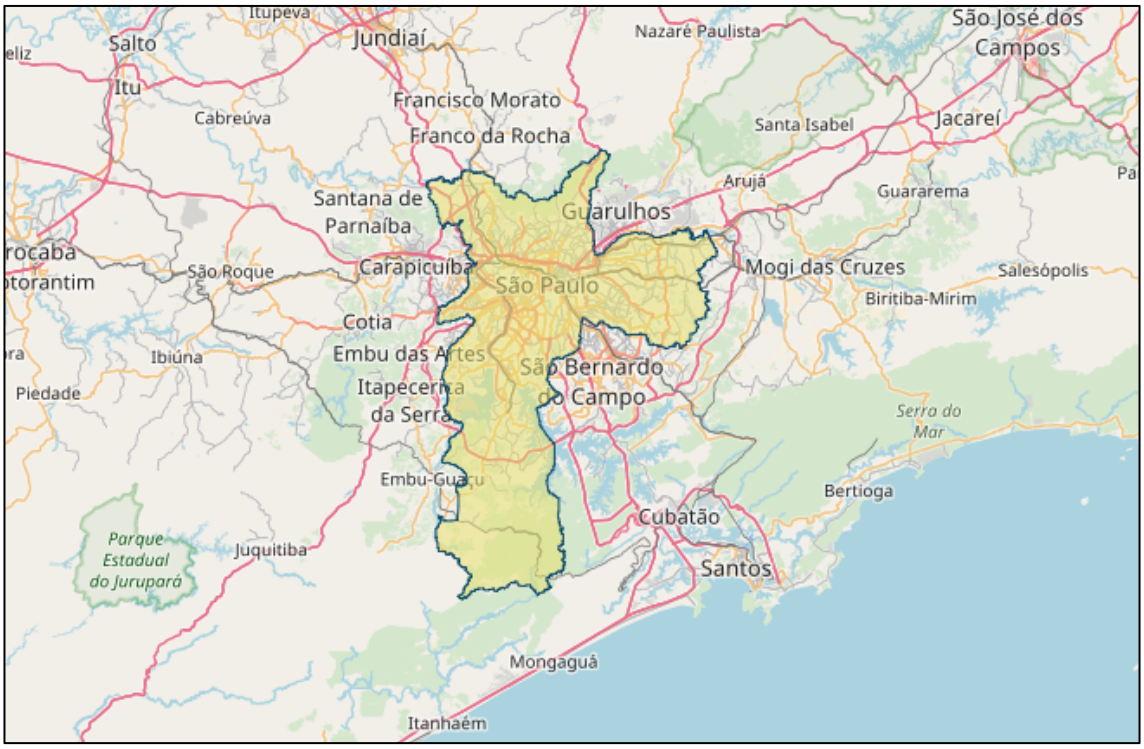
3.1 Introduction

This chapter approaches the case of São Paulo (SP) case by presenting and analyzing the city's climate responses from 2005 to 2017. In the first section, it provides the context in which the city is immersed, acknowledging its geographical space as well as its national, local and international political context. The subsequent section presents São Paulo as a global city and then exposes its climate responses since 2005, divided into three categories – legal, political and governance. Thereafter, the chapter explores the relationship between the city's climate and international policies and closes with the investigation of the implementation of São Paulo's climate responses.

[10] Own translation from the original in Portuguese: "Their vertigo, powered by art, reflected the industrialist vertigo that assailed the city in the form of chimneys, of the whistle of the factories and, in those times, of the blessed soot; the demographic vertigo, translated in an unstoppable escalation of population; the social vertigo, in which a mass of workers shook the owners' former tranquility; the urban vertigo, in which the city was programmed and reprogrammed. São Paulo was the capital of vertigo." (TOLEDO, 2015, p.15)

3.2 Talking about context: geographical, atmospherical, international, national and local

Figure 2 – São Paulo municipality and metropolitan region map



Source: IBGE

Table 1 – São Paulo overview (most recently figures available)

São Paulo/ Indicators	**Municipal Population**	**Metropolitan Region Population**	**GDP *per capita***	**HDI**	**Gini Coefficient**	**GHG emissions (tCO2eq) *per capita***
	12,106,902 (2017, estimated)	21,391,624 (2017, estimated)	54,357.81 BRL (2015)	0,805 (2010)	0.55 (2009)	1,47 (2005)

Source: own elaboration based on IBGE[11] and Prefeitura Municipal de São Paulo

The municipality of São Paulo is located in the southeast of Brazil and it is the largest urban center in the country, encompassing a metropolitan region that includes 39 municipalities. The environmental challenges are numerous in a city with an estimated population (2017) of more

[11] Available at: https://cidades.ibge.gov.br/brasil/sp/sao-paulo/panorama Accessed: January 16, 2018.

than 12 million people (IBGE[12]) living within the city's limits, marked by rivers that were drained and had their courses changed throughout its intense developing process. São Paulo's topography is impacted by the diversion of its rivers – which leads to constantly floods –and the deforestation of its biome, Mata Atlântica (Atlantic Forest). The climate in this high tropical city is marked by summer rains and an average temperature varying between 19 and 27C (~66-80F).

São Paulo's urbanization process was based on the perspective of a modernist city based on cars and drained rivers. We can identify these features in the project that mayor Prestes Maia (1938-1945) imagined and sold to investors. This then determined the urbanist design of the city to the present day and makes it more difficult to develop a city which is resilient to climate change in the 21st century.

Table 2 – Municipality of São Paulo population growth

Years	Population	Growth rate
1872	31,385	
1890	64,934	4.1
1900	239,820	14.0
1920	579,033	4.5
1940	1,326,261	4.2
1950	2,198,096	5.2
1960	3,781,446	5.6
1970	5,924,615	4.6
1980	8,493,226	3.7
1991	9,646,185	1.2
2000	10,434,252	0.9
2010	11,253,503	0.8

Source: IBGE[13].

São Paulo is Brazil´s most populated city and the heart of its financial system. With more than 11 million people living in the city, it is no surprise that it is also the greatest GHG emitter in the country. The city has been involved in the global conversations about climate change since it reached the international agenda and although initiatives in the direction of mitigating emissions were brought forward, with the inclusion of a municipal law, its climate commitment can be questioned.

[12] Available at: https://cidades.ibge.gov.br/brasil/sp/sao-paulo/panorama Accessed: January 16, 2018.
[13] Available at: http://smul.prefeitura.sp.gov.br/historico_demografico/tabelas/pop_brasil.php Accessed: January 12, 2018.

After a period of being considered as a climate villain for its high deforestation rates, Brazil presented itself in Copenhagen as a possible climate leader because of its successful policy of decreasing GHG emission by avoiding illegal deforestation in the Amazon (VIOLA; FRANCHINI, 2018). The national discourse helped to promote an international image of a country involved in climate change and creating successful policies addressing the matter. Subsequently, this "green vision" of Brazil made it easier for its cities to be seen in the international system as important climate actors, even though the reduction of Brazil's GHG emissions during the period had almost none relation with those from urban areas, since they were mostly related to the AFOLU (Agriculture, Forestry and Other Land Use) sector.

São Paulo projected itself as a global city committed to environmental issues – as will be demonstrated more extensively in the following sections of this chapter – by engaging with transnational climate networks such as ICLEI and C40, and by even hosting the C40 biannual summit in 2011. Nevertheless, this scenario is neither constant nor gradual during the whole period we are analyzing. We can observe this especially during mayor Gilberto Kassab's term (2006-2012), followed by a retraction from this international position during mayor Fernando Haddad's administration (2013-2016) and with mayor João Doria (2017-2018) there were some signs that São Paulo could recover a more active role in the global climate governance once again, but his short term did not presented a consistent environmental agenda.

It is important to highlight that it is a huge challenge to manage a city the size of São Paulo, with alongside this many institutional, economic, social and cultural deficiencies. However, another variable needs to be added to the equation, and that is the metropolitan challenge (JACOBI, 2013). The jurisdiction and power of a mayor only extends to its city limits. Yet, in a metropolitan set and dealing with problems that do not respect boundaries, such as air pollution and GHG emissions, the conurbation of the urban space makes every policy design more complicated. São Paulo Metropolitan Region (RMSP, in its Portuguese acronym) encompasses a total of 39 cities and a population of more than 21 million people, exposing the challenges of designing and coordinating policies at the municipal level that are intrinsically connected with its surroundings. Nevertheless, as mentioned in the introduction, we are focusing our analysis on the municipality, that is on the territory under the mayor's jurisdiction.

Within the municipal institutional structure, we are focusing on the activities of the Municipality's Green and Environmental Secretary (Secretaria do Verde e Meio Ambiente –

SMVMA in its Portuguese acronym) and the International Relations Secretary (SMRI in its Portuguese acronym). As can be observed in the table ahead, with the exception of the period between 2005 and 2012 when the SMVMA was under the coordination of Eduardo Jorge, a well-known environmentalist in Brazil, the following years were marked by constant changes in its directory and this represents the political use of the Secretary, as well as the decrease in the importance of the environmental agenda within the local context. The structural changes in the SMRI after 2013, as explained ahead, can also be understood as a result of a conflict of political perspectives. Both demonstrate how susceptible municipal institutions are to electoral changes.

Table 3 – List of São Paulo mayors, environment and international secretaries 2005-2017

Year/Mayor/Environment Secretary/International Secretary	Mayor (political party)	Environment Secretary	International Relations Secretary
2005-2006	José Serra (PSDB)	Eduardo Jorge (2005)	Helena Maria Gasparian (Jan 2005-2017)
2006-2012	Gilberto Kassab (PFL, DEM, PSD)	Eduardo Jorge (2005-2012); Carlos R. Fortner (interim, Aug. 2012-Dec. 2012)	Helena Maria Gasparian; Alfredo Cotait Neto (2007-2012); Guilherme F. Mattar (2012)
2013-2016	Fernando Haddad (PT)	Ricardo Teixeira (Jan. 2013 - Feb. 2014); Wanderley Meira do Nascimento (Feb. 2014-Jun. 2015); José Tadeu Candelária (Jun. 2015-Dec. 2015); Rodrigo Pimentel Pinto Ravena (Dec. 2015- Dec. 2016)	Leonardo Osvaldo Barchini Rosa (2013-2015); Vicente Carlos Trevas (2015-2016)
2017-	João Doria (PSDB)	Gilberto Tanos Natalini (Jan. 2017- Aug. 2017); Fernando Von Zuben (interim, Aug. – Nov. 2017); Eduardo de Castro (Nov. 2017-)	Julio Serson 2017-)

Source: own elaboration based on Prefeitura Municipal de São Paulo website

3.3 São Paulo as a global city

São Paulo can easily be conceived as a global city without further analysis if one looks at its dimension, the number of transnational corporations with offices in the city, the variety of nationalities living within its limits and its international politics. Additionally, it is constantly cited in global cities indexes (AT KEARNY, 2004; ATKEARNEY, 2017; GPCI, 2017). In the ATKearney global cities index, São Paulo varies its position from 33rd in 2012 to 34th in 2016 and 31st in 2018. However, some may disagree with this classification, raising the point that its high inequality rates are an impediment to positioning São Paulo as a global city (FERREIRA, 2003). Our perspective is that its global character surpasses all the city's contradictions. Therefore, we perceive the city as global by considering different variables and taking an International Relations approach. Nevertheless, we do acknowledge that the social, spatial and economic inequalities of São Paulo have an impact on the limits of its global features, once these gaps - along with others highlighted in this chapter (such as institutional weakness) – holds the city's international projection at a certain level.

As developed in previous chapters, we consider a city as being global when it surpasses its national limits, when it is no longer embedded only in its local, regional and national context, but when it is capable of connecting directly with the world and is impacted by international movements (ACUTO, 2010, 2013c; AMEN et al., 2011; LEE, 2013; SASSEN, 2005). With that in mind, we consider São Paulo as a global city. Furthermore, SP's global presence gave to its human resources an awareness of an agenda that was gaining momentum among the international community. In this process, the role of the International Relations Secretary was key to raise awareness regarding climate change and to secure the engagement of the city in global climate initiatives.

Although São Paulo had an international presence from the moment when it became the center for coffee exportation in the middle of the 19th century, it was only in 2001 that the city added an International Relations Secretary to its institutional framework. It was the first one of its kind in Brazil, opening the national debate and research agenda regarding the international relations of subnational units. This was a landmark once it institutionalized a political practice that had a legitimacy which was still questioned by the national government at the time. Although its

institutionalization provided legal grounds for its existence, it did not guarantee a linear trajectory, being subject to changing political preferences at every electoral cycle.

During the Serra and Kassab administrations, the Secretary applied a global and economic focus to its activities, connected with global trends and pushing an image of a modern and connected São Paulo. During their term, cities networks like UCLG and Metropolis gave space to a more incisive global action, centered mainly on C40 (ROSA, 2014). Also, under this global city perspective, São Paulo demonstrated the willingness to host the Expo 2020, once it would receive some of the FIFA World Cup games in 2014 and thought this could boost its application to host a megaevent. Mayor Kassab prepared the application, but the continuation of the process was managed by the following administration, that had different perspectives and different international connections. Finally, São Paulo lost to Dubai. This could have contributed to the city's international projection, as was the case for Rio de Janeiro when it hosted the Olympics. This is explored in chapter 4.

When mayor Haddad took office, he changed the institutional structures, to add to its remit the coordination of the city's relations with federal entities and mostly to the federal government, changing its nomenclature in order to incorporate these new responsibilities (SMRI became Secretaria Municipal de Relações Internacionais e Federativas – SMRIF). It is important to notice that at the time, the SP mayor and the President of Brazil shared the same political party. This institutional adjustment demonstrates the perspective of the new government which did view international relations as a priority, so the city would be more focused on its national and regional context.

Moreover, the SMRIF changed its focus to a more regional approach, prioritizing an active involvement within Latin American city networks, like Mercociudades, and holding back on its participation in global initiatives like the C40. Interviews with civil servants working at the SMRIF indicated that shift was a result of the ideology perspective of the mayor and of the SMRIF Secretary: both had a more contesting view of the international system and were more aligned with a peripherical perspective than a global one. A closer look at the 2013 SMRI agenda provides an indication of this ideological preference. To exemplify, São Paulo attended the following international events: WACAP – Global Alliance of Cities against Poverty; GNSC – Global Network of Safer Cities; Meeting of Coordinators and Sub-Coordinators of the Mercociudades Network; Social Forum And Local Authorities Forum (Tunis, Tunisia); CIDEU – Ibero-American

Center of Strategic Urban Development; FALP – Forum of Local Peripheral Authorities; Meeting of the Executive Committee of the UCLG; Metropolis – World Association of Great Metropolis; and AICE – Meeting of Educating Cities of Latin America. It is worth noting that none of them were related to environmental issues nor climate change (ROSA, 2014, p. 61).

This change in the approach to the city's International Relations politics is evident in the variations of its international projection and participation in global forums. Because the climate agenda was so intrinsically linked to the city's international projection, we can observe the same decreasing movement in the climate agenda and in the relationship with C40 and ICLEI.

3.4 Responses to climate change: law, mitigation and adaptation plans, governance structures

It is important to acknowledge that previous to the climate responses mapped here dating from 2005, São Paulo – like Mexico City – faced an air pollution crisis in the 1990s: "During the 1990s, the São Paulo Metropolitan Region – RMSP was subject to severe episodes of air pollution, especially during the winter, because of the combination of pollutant emissions and climatic conditions unfavorable to dispersion, resulting in serious problems to public health" (BRASIL, 2004, p. 203). After this sequence of extremely pollutant days in São Paulo, many actions were taken that involved the state government as well as the metropolitan region. The launch of a policy to control car use named "rodízio" was one of the most successful actions and it is still in place today. The vehicle restriction policy from 1995 to 1998 consisted in restraining 20% of the vehicle fleet circulation in SP and in more nine other cities surrounding the metropolis. According to Brazil's national communication to the UNFCCC, this program was successful in reducing CO2 emissions by 19% in 1998 and was also relevant because it began to raise awareness within the population about the link between transportation and air pollution and it also fostered more public transportation policies (BRASIL, 2004, p.203). However, this optimistic interpretation can be balanced once there was no significant public transportation policy in the following years. SP would need – and still does – a complete revolution in its mobility plan in order to drastically change its situation based on motorized individual transportation and on its inefficient public transportation service. The air pollution is still a matter of worry as it is estimated that four thousand

people die prematurely every year in São Paulo, and 50% of the air pollution originates from buses and trucks circulating in the city[14].

Years later, São Paulo reacted to the challenges posed by climate change by addressing the three types of responses: legal, political and governance, as demonstrated in the table ahead. This process is concentrated between 2005 and 2011 having its highpoint in 2009 with the approval of the climate law. We extend our analysis beyond this point, until the beginning of 2018, in order to observe the following implementation process of these responses. Therefore, we cover four mayors' administrations: José Serra (2005-2006), Gilberto Kassab (2006-2012), Fernando Haddad (2013-2016) and João Doria (2017-2018). We can identify a continuation from Serra to Kassab with the maintenance of Eduardo Jorge as environmental secretary. Then a rupture with Haddad, who did not demonstrated sensibility towards climatic issues, nor towards the international relations agenda, having changed its environment secretary almost every year, totalizing four different nominations (BACK, 2016; MACEDO, 2017; SETZER; VALENTE DE MACEDO; REI, 2015). Regarding the Doria administration, although we can point the nomination of an environment secretary who was well-known for his climate commitment (Gilberto Natalini) and the approval of a law that finally modifies the 2009 climate law, there were no major events to draw any comprehensive conclusion concerning his term. He renounced to his position as mayor to run for governor in the 2018 October elections.

Table 4 – São Paulo Climate Responses 2005-2018

Year	Mayor	Legal	Policy	Governance
2003	Marta Suplicy (PT)			Global: ICLEI
2005	José Serra (PSDB)	Decree n. 45,959 (June 6th 2005) creates the Climate Change and Ecoeconomy Municipal Comittee		Global: C40
2009	Gilberto Kassab (PFL, DEM, PSD)	Law 14,933 (June 5th 2009) – Climate Change Law establishes São Paulo Climate change policy	Climate Change Policy (PMMC)	Local: Climate Change and Sustainable Ecoeconomy Municipal Committee

[14] Studied available at: https://www.saudeesustentabilidade.org.br/noticias/onibus-e-caminhoes-emitem-metade-da-poluicao-do-ar-em-sao-paulo/ Accessed: July 20th 2018

				(created in 2005, operationalized in 2009)
2011			Guidelines for the action plan of the city of São Paulo for mitigation and adaptation to climate change	
2018	João Doria (PSDB)	Law 16,802 (January 18th 2018) modify Law 14,933 redefining new deadlines for the public transportation fleet to become cleaner		

Source: own elaboration based on Prefeitura Municipal de São Paulo

Legal Responses

The city's first legal instrument regarding climate change is also a governance response and it is dated to 2005. The decree 45,959 established the creation of the initial Municipal Committee on Climate Change and Sustainable Ecoeconomy (Comitê Municipal sobre Mudanças Climáticas e Ecoeconomia Sustentável), that had its coordination under the Municipal Green and Environmental Secretary. The committee was later replaced by the one specified in the climate law, the Municipal Committee on Climate Change and Ecoeconomy (FURRIELA, 2011). The main aim of the Committee is to provide support for the implementation of the climate law, but it only has an advisory mandate, so its decisions are limited to be recommendations. The Committee is composed of other municipal secretaries and members of the civil society organizations, including ICLEI and Greenpeace, but as can be noted in the minutes of its meetings, representatives from organizations not officially listed could also attend its meeting and influence in the process, as it was the case of representatives of other international organizations such as the Clinton Foundation and C40.

Subsequently, the highpoint of São Paulo national and international projection was the approval of its climate change law. The SP Climate Law was the first one to be approved in a major city in the country and in Latin America, anticipating the national law by six months. Sanctioned on July 5th 2009, the Municipal Law 14,933 established a mandatory reduction of 30% of GHG

emissions by 2012 (based on a 2005 inventory, with 2003 as the baseline year) and the need to publish an inventory every five years. In comparison, the Brazilian law was ratified on December 29th 2009 and set the a voluntary target of GHG emission reduction of 36,1% and 38,9% by 2020, having 2020 emissions projected as the base (SETZER, 2013). It is important to note that by Brazilian political and legal structure, a policy can be established by a law and then it is revised periodically through decrees or other laws.

The debate around the creation of a climate law for São Paulo is said to have started in 2005, when the environment secretary, Eduardo Jorge, began doing consultations with specialists on the matter. But interviewees suggested that it was only after mayor Kassab attended the C40 Summit in New York, in 2007, that the idea began to gain substance (BACK, 2012; BIDERMAN, 2011). In that occasion, Kassab publicly committed to launching public policies to address climate change challenges and when he got back to SP he provided greater support for the climate law project that was being developed by Eduardo Jorge in partnership with representatives from ICLEI and EAESP-FGV (Sustainability Studies Center), with support from UNEP and some specialized researchers and city council members. The process took more than a year to be completed and then mayor Kassab sent the law project to the legislative power that approved it unanimously (Furriela 2011, p. 244). Therefore, the creation of the climate change law in São Paulo was a process that can be seen as an unorthodox one, since its draft did not emerge from the Legislature, but was commissioned by the mayor to a University group in partnership with ICLEI and UNEP.

In this regard, it is interesting to note that the municipal law takes stands from a principle long defended by the national government, but one that is complicated to translate into a local perspective, that is the principle of common but differential (CBD) responsibilities defended by the Brazilian government during the Conference of the Parties negotiations. This is a rhetoric resource to state that although the Brazilian government is committed to address climate change, it believes that the hardest efforts should come from those countries that were emitting GHG before and with more intensity than developing nations. Although this argument points to an important historical aspect of the process, it is also used as a way of justifying immobility by the Brazilian government (VIOLA; FRANCHINI, 2018) That being said, the question about why the São Paulo climate law brings this argument is inevitable. Was the law already creating mechanisms to defend its possible future failure?

The law objectives clearly states that the municipal climate legal response is a reaction to the international community, when it cites the UNFCCC. It makes direct references to international norms and principles, acknowledging those as its own as well, that is the case of the very own objective of the law. The document states that its objective is to make a contribution to the UNFCCC to help it achieve its goals in stabilizing the concentration of GHG in the aims to avoid dangerous anthropic interference (PREFEITURA DO MUNICÍPIO DE SÃO PAULO, 2009, Título II, Art. 4º, p.5).

The law, as part of the establishment of the municipality's climate change policy, set its mitigation goals. These were to reduce 30% of aggregate anthropic emissions resulted from the municipality by 2012, expressed in CO2e, having 2003 as baseline year, the inventory produced by the city government was published in 2005 (PREFEITURA DO MUNICÍPIO DE SÃO PAULO, 2009, Título III, Art. 5º). The goals for the following years after the first one was concluded in 2012 would have to be set by a new legal instrument two years before the deadline. This meant that the second emissions reduction goal would have to been set in 2010, only one year after the adoption of the 14.933 law, something that had never happened.

In accordance with the law, a new GHG inventory should have been conducted and publicized every five years, using accepted international methodology and the resources to finance it would come from the Special Environment and Sustainable Development Fund (Fundo Especial de Meio Ambiente e Desenvolvimento Sustentável – FEMA). The first one was published in 2005 and the following should have been published in 2010, and 2015.

The law was also responsible for creating a governance body to manage its climate policy, the Municipal Committee about Climate Change and Sustainable Ecoeconomy (Comitê Municipal sobre Mudanças Climáticas e Ecoeconomia Sustentável). The Committee is composed of the state and municipal government, civil society, workers, academy and private sector and was established through the Decree n. 45.959 from June 6th 2005.

As is exposed in the implementation section of this chapter, the law was not abided to and most of the proposition never went beyond the written form. So, when in 2018 the deadline to change the public transportation fleet to a less polluting one came and the municipal government had not complied with what was established in the 2009 climate law, it had to approve a legal instrument to redefine new deadlines. That is when the Law 16,802 (January 18th 2018) was approved, modifying Law 14,933.

Policy Responses

The São Paulo climate policy established by law n. 14.933 is an ambitious one, but probably its grand proposal and recent its more controversy is the article 50 that demanded that the public transportation fleet should have begin in 2009 reducing ever year 10% of fossil fuels use until reach in 2018 the total fleet with renewable fuels by all municipal buses. Accordingly to one technical person from the SMVMA there were no interest by the Transportation Secretary to implement the climate law and to push the transportation private sector to do so, they simply ignored the law and only after a legal warning the law was mention in the bidding to by new vehicles but even so it was later ignored. One of the reasons for that is the amount of investments and the power politics involved. This goal would have tremendous impact in the São Paulo GHG emission and on air quality, nevertheless it was not put into practice.

A law that promises a transformation in the way São Paulo does its planning, its purchase of goods, its investments, its education and so on can only be seen – in distance – as a revolutionary law. However, the political, economic and institutional contexts that São Paulo was and still is immersed alerts to its excessiveness proposals to transform so many aspects of the city. The climate policy is audacious in a scenario that does not provide any incentives to be so. How was the law going to be put into practice when there were no signs of material conditions to do so? These questions need to be made if we want to understand the process in which the law was approved and its implementation. What point, or what image they were trying to pass forward? Did São Paulo had the urgency to showcase itself as a global city, aligned with international trends, such as the one to fight climate change and did that via its climate law?

The climate law is too broad and encompasses a great variety of areas, such as energy, buildings, health, transportation, which exposes the transversally characteristic of climate change. Nevertheless, it ignores the fact that São Paulo may not have the institutional structure and personnel capable to put everything into practice (local government capacity). One example is that for buildings and waste management modifications accordingly with the climate law, it would require lots of inspections to monitor the implementation of the standards proposed by it, something that is not feasible due to the lack of personnel to do this work. Therefore, in this context of fragile

rule of law, private actors rely on the incapacity of the municipal government to inspect their activities to continue with its practices that do not take into consideration climate change factors.

Furthermore, the guidelines for the action plan of the city of São Paulo for mitigation and adaptation to climate change was a document released right before the 2011 C40 Summit in São Paulo and contains generic recommendations regarding the implementation of the climate policy. There is no provision of resources required by the climate actions to be implemented, nor timeframes for them to comply. Therefore, although we considered it here as a policy response, it had little connections to the policies that were being deployed on the ground and we find that the document was never acknowledged by political leaders and people working on the secretaries as a document that should be rigorously followed. At the end, it is referred to as a more external policy response than one directed to the municipality.

Governance Responses

The two global governance response from São Paulo are the affiliation to the ICLEI CCP campaign in 2003 and to C40 in 2005. Both had a significance impact in fomenting climate actions in the city. Nevertheless, the participation of the city in these networks varies greatly over the period we are looking into. The engagement with ICLEI tends to be more linear, after the installation of its office in São Paulo, although it is not much demanding nor requires greater engagement in the sense of reporting its climate actions. The Cities for Climate Protection campaign had the role to foster SP to develop its first GHG emissions, but after complying with its five milestones, the city did not appear as a protagonist. ICLEI later signed a cooperation agreement with the municipal government in order to foster the adoption of sustainable patterns for its public procurement.

The local governance response was the creation in 2005 of the Climate Change and Sustainable Ecoeconomy Municipal Committee, that only latter in 2009 become operative. In Brazil, public policies often originate from laws, as it was the case of the climate law, and it is also standard for it to establish a public committee to coordinate that given policy. In this landmark, the Climate Change and Sustainable Ecoeconomy Municipal Committee began to work, meeting monthly, but with very little capability to influence the sectorial decisions from other municipal secretaries that could impact in the climate policy.

3.4 Crossing urban international relations and climate responses

In the process of São Paulo acquiring climate awareness, the role of the SMRI was key, because it secure the engagement of the city in global climate initiatives, like C40. In this sense, the active involvement of São Paulo with global climate governance begins in 2003 when the city adheres to the ICLEI campaign Cities for Climate Protection (CCP) even though it was already an ICLEI member since 1991 (MACEDO, 2017). From this affiliation, São Paulo assumed its first international climate commitment, that included the 5 milestones established by ICLEI: 1) conduct an energy and emissions inventory and forecast; 2) adopt an emissions reduction target for the forecast year; 3) develop a Local Action Plan; 4) implement policies and measures; 5) monitor and verify results[15].

The ICLEI CCP campaign was important to São Paulo, although the city had begun its awareness to climate issues even before joining the ICLEI campaign, as the national government highlighted in its first UNFCCC communication in 2004 (BRASIL, 2004). However, it is undeniable that the international commitments adopted by CCP pushed São Paulo forward, leading to future initiatives such as its climate law in 2009. In 2006, the ICLEI office that had its regional office based in Rio de Janeiro, moved to Buenos Aires but opened a headquarters for projects in São Paulo, intensifying its collaboration with the city government, that still remains (MACEDO, 2017p. 79).

Moreover, the changes in the physical address of the ICLEI office in SP as described by Macedo (2017) reveals the non-linear relationship among the city and the transnational organization and how the command of the partnership shift from the International Relations Secretary to the Environment. Until 2006, the organ responsible for dealing with ICLEI was SMRI and after that it became SMVMA since the Environmental Secretary hosted the ICLEI office in one of its own buildings, until 2013. This situation was a result of conflicting understandings from the municipal legal advisory that did not allowed São Paulo to pay for its ICLEI affiliation fee, so until 2013 they had a cooperation agreement instituting that ICLEI could host its office in one

[15] Available at: http://archive.iclei.org/index.php?id=810 Accessed: January 30th 2018.

municipal building without paying rent in order to provide São Paulo technical assistance. This arrangement was terminated with the new administration in 2013 (MACEDO, 2017, p. 170).

During Hadadd's term as mayor, São Paulo not only paralyzed its climate policies but it also distanced itself away from transnational climate networks such as ICLEI and C40. Nevertheless, this coincides with the period that these networks began developing reporting platforms such as the "carbonn" from ICLEI and the CDP from C40, these platforms required that the city reported its climate actions plans and São Paulo did commit to do so but did it poorly. As Macedo (2017) calls attention, São Paulo only reported to CDP to receive a prize from C40:

> Between 2013 and 2016, when reporting initiatives began, São Paulo was no more de facto involved in climate networks. As a member of the C40 network by default, however, it submitted the report to the C40 so that it could receive the Bloomberg Philanthropy City Challenge Award for innovative ideas for municipal management in 2015; the initiative requires that the candidate is up to date with commitments to the C40.[16]

In that sense, we can see how the C40 network had a great impact in pushing the climate agenda forward in SP, the C40 summit in 2011 hosted by the city stimulated the city to publishes its "Guidelines for the action plan of the city of São Paulo for mitigation and adaptation to climate change". The climate responses from São Paulo are intrinsically linked to its international relations agenda. We can suggest that the climate law and the guidelines were targeting the international community, at least until 2013 São Paulo perceived itself as a global city and because of that it should be part in the leading global debates, and at that point climate change was presented as the most prominent one. It was not that São Paulo was targeting specific the climate agenda because of its importance, but because it was the one providing great visibility to the city.

3.5 Speech X reality: responses implementations and its local and international repercussions[17]

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[16] Translated from the original in Portuguese: "Entre 2013 e 2016, quando começaram as iniciativas de reporte, São Paulo não participava mais de fato das redes de clima. Como ainda era membro da rede da C40 por 'default', porém, apresentou o relatório à C40, de modo a poder receber em 2015 o prêmio Desafio das Cidades da Bloomberg Philantropies, para ideias inovadoras de gestão municipal; a iniciativa requer que a candidata esteja em dia com os compromissos junto à C40." (MACEDO, 2017, p. 148)

[17] All data from the Comitê Municipal de Mudanças Climáticas e Ecoeconomia meetings are transcript and are public. Available at: http://www.prefeitura.sp.gov.br/cidade/secretarias/meio_ambiente/comite_do_clima/atas_do_conselho/index.php?p=15108 Accessed: January 19, 2018.

After mapping São Paulo climate responses and its international connections, we propose to tackle its implementation gap by working with the framework proposed in chapter 2, since as mentioned before, providing legal, policy and governance responses does not guarantee their implementation. And this includes the process of joining a transnational network, such as ICLEI and C40. These networks can definitely push cities to respond to climate change, but are they able to foster sustainable transformations and change path dependencies? Our analysis of the São Paulo case leads us to respond negatively, suggesting that the implementation process is much more connected to local features that are difficult to change. Nonetheless, our other cases will suggest a more nuanced conclusion regarding this topic.

The framework has three major categories to be analyzed: (1) local framing, (2) local government capacity and (3) political actors and factors. The first one suggests that it is important that the climate policies are linked to local issues and that they can generate socio-economic and environmental benefits at the local.

The period highlighted here from 2005 to 2012 is marked by an active climate politics, resulting in responses to climate change and in an international projection regarding environmental issues. This conclusion is also present in other works (SETZER; BACK, 2016). The subsequent period, from 2013-2017 that comprehends the government of Fernando Haddad and the first year of João Doria is noticeable by the retraction from the climate agenda. Although Back (2016) points out that there were some improvements in the urban development agenda, that may be valued for future climate actions, they were never articulated in combination to climate responses. Moreover, Haddad demonstrated a weak interest in the climate agenda and even when other policies addressed climate issues they were not framed as such, demonstrating an underappreciation of the problem and the low awareness of São Paulo inhabitants to it. His administration was ready to announce the creation of bicycle lanes and bus corridors as improvements in the mobility policy but never linked it to the climate policy.

What Back (2016) calls as "discursive disarticulations"[18] we understand as local framing (1), and for the urban policies developed under the Haddad administration to not be framed as also climate policies indicate more than just a choice of words, it meant a political choice (3). Since the nomination of its environmental secretary and then the constantly changes in its command indicates

[18] Free translation from "desarticulações discursivas"

a perception of the climate agenda as an unimportant one. And ultimately, this political choice can be observed in the outcomes of the climate policy by the end of its term, resulting in: the suspension of the vehicle inspection program, increase in GHG emissions, no substitution of old buses running by diesel for new ones operated by cleaner fuels (as established by the law 14,933), no new GHG inventory. Therefore, during 2013-2016 the impact of the mayor's political view and perception of climate change was greater in the implementation process of the climate policy than any other factor (3).

Haddad had an advantaged compared to the previous mayors, he was from the same political party as the President of Brazil and this situation means, most of the time, more access to financial resources, possibly leading to an administration able to deliver more positive results. Nevertheless, that was not the case, even though Haddad and Rousself had a closer relationship, the period was not favorable to neither and campaign promises made by Haddad that were dependent upon the support of the Federal government were mostly frustrated. Some of them were related to the mobility policy and could have had a positive impact on the climate policy, such as the BRT corridors, it was promised to build 150km with federal revenues that never went to São Paulo. Instead, only 42 km of BRT corridors were delivered and it was built 423km of exclusive bus lanes[19] that are less expensive but also less efficient in mitigation GHG emissions, still much more than the previews administration, that did not deliver a single km of BRT and only 11km of exclusive bus lanes[20]. Also regarding the mobility sector, the Haddad administration built 400 km of bicycle lanes, something that was unthinkable before – mayor Kassab delivered only 18km during his entire administration[21] – alternating the dynamics of many streets in the city and galvanizing the opposition of more conservative social segments[22]. However, likewise the exclusive bus lanes and the BRT, the significant increase in bicycle lanes were never framed as a climate policy.

It is interesting to note that the local framing given to policies can also be shaped by the influence of international actors. As Back (2016, p.119) emphasized in the analysis of the 2005-

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[19] https://www1.folha.uol.com.br/cotidiano/2016/12/1844359-haddad-encerra-mandato-com-so-metade-das-promessas-cumpridas.shtml Accessed: August 28th 2017

[20] https://vejasp.abril.com.br/cidades/a-cidade-que-kassab-nos-entrega/ Accessed: August 28th 2017

[21] https://www.ciclocidade.org.br/65-noticias/clipping/299-kassab-entrega-apenas-45-km-de-ciclovias-por-ano Acessed: August 28th 2017

[22] https://www.nytimes.com/2015/10/05/world/americas/mayor-fernando-haddad-of-sao-paolo-strives-to-ease-gridlock.html Accessed: March 16th 2016.

2012 energy policy report, even though the retrofit change in the lightning grid of São Paulo had no significance impact in the total GHG emissions since its energy comes mostly from hydropower, it was presented as a climate change policy improvement, following the outline of ICLEI and C40 and demonstrating that the Kassab administration was willing to frame any possible policy as a climate one.

The climate policy undertaken during 2005-2012 period was highly influenced by international agents focused on mitigation actions resulting in a depreciation of the adaptation actions. This demonstrates how the international debate regarding climate change, including the national and the one being sponsor by UNFCCC, focused on the reduction of global GHG emissions impacted in the local framing of the São Paulo climate policy. Consequently, even if a municipal policy had the potential to mitigate or promote adaptation to climate change if it was not explicit or if it was not in the menu of international organizations it was probable that São Paulo would not frame it as climate policy. This certainly highlights the impact of these organizations in the policy design, but also suggests the low sensibility or even unfamiliarity to climate change issues from the administration, its technicians and its constituencies.

Studies (BACK, 2016; DI GIULIO et al., 2017) suggests that São Paulo climate policy is not well connected with the other important urban policies, such as urban planning, housing, mobility and so on. Our analysis also leads to this conclusion even though it was not our focus to look into all the other sectorial policies, nonetheless, our point is that the only area that the climate policy of São Paulo was intensively linked was to the international relations policy. And this connection was crucial for the first moment of climate responses from the city but was not observed during the following implementation period. According to our framework, climate actions that are able to frame and foster socio-economic gains and environment benefits contribute positively to its implementation, as this was not a clear objective of São Paulo during the whole period analyzed here, we can suggest that the lack of communications demonstration co-benefits influenced negatively in the implementation. Back (2016) points to this in the case of the space occupation and soil use policy,

> Although actions aimed at eliminating risk areas are convergent with the purposes of adapting to the effects of climate change, they were not considered discursively as such, even during the period when the climate agenda was on the rise, between 2009-2012. This

> indicates that at the time the focus of the climate change policies approach prioritized the relationship with GHG mitigation.[23]

Regardless of this mitigation perspective, São Paulo was not able to reduce its GHG emissions, in fact, it increased as can be observed in the table below:

Table 5 – São Paulo's total emissions from 2003 to 2011

Table 6 – Total GHG emissions from 2003 to 2011

Sector	2003	2004	2005	2006	2007	2008	2009	2010	2011
	($GgCO_2e$)								
Energy	12,911	13,065	12,689	12,544	13,114	13,860	12,384	13,642	13,990
Waste	2,199	2,260	2,335	2,474	2,658	2,307	2,363	2,445	2,440
Total	**15,110**	**15,325**	**15,025**	**15,018**	**15,772**	**16,167**	**14,748**	**16,087**	**16,430**

Source: (INSTITUTO EKOS BRASIL, 2013)

The dissonance between São Paulo discourse and its climate actions are so great that in the GHG inventory published in 2013, the one that recognizes the increase in the city's emissions, the opening letter written by the Environment Secretary, Ricardo Teixeira, states that the city is an international reference, because it was pioneer in publishing its first GHG inventory in 2005 and because of the approval of the first climate law in 2009 (INSTITUTO EKOS BRASIL, 2013).

That demonstrates low commitment to climate policies, but also exposes the low quality of institutions and a distorted perspective of reality. The discourse that São Paulo was a "climate leader", developed mainly because of the climate law approval, continued to resonate much afterward than 2009, including after it was already knowing that the city would not be able to comply with the law targets. Finally, this also displays the disconnection of the climate leader discourse and the materiality of mitigating and adapting to climate change. But as we questioned in chapter II, can a city be a climate leader without really reducing GHG emissions and foster

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[23] Translated from the original in Portuguese: "Embora as ações visando a eliminação de áreas de risco sejam convergentes com os propósitos de adaptação aos efeitos das mudanças climáticas, essas não foram consideradas discursivamente como tais, mesmo durante o período em que a agenda climática estava em alta, entre 2009-2012. Isso indica que à época o foco da abordagem das políticas de mudanças climáticas priorizava a relação com a mitigação de GEE." (BACK, 2016, p.130-131).

resilience? As São Paulo began to progressively lose international recognition on the climate agenda, with the introduction of the reporting platforms and its retraction from C40 initiatives, we found that this discourse has an expiration data if it is not based on effective domestic climate policies (MAUAD, 2018).

Other reasons for the insufficient response of São Paulo in mitigating GHG emissions may rest in other spheres, but it certainly rings a bell for a parsimonious analysis regarding the impact that city networks may have, as stressed in a case study

> […] paradiplomatic activity lost importance at the implementation stage of the municipal climate change policy (Setzer, Valente 2014). While transnational climate governance offers a fascinating laboratory in which to study larger shifts in the nature of global governance (Hale, Roger,2014), evidence of its effectiveness in the implementation of local policies and measures is insufficient." (SETZER; VALENTE DE MACEDO; REI, 2015, p. 36).

In the global governance response, C40 is certainly one of the main channels, alongside with ICLEI. Although São Paulo is one of the founders of C40, as the city joined the network in 2005, its participation in international affairs, including climate change, has been irregular since 2013. The city has been involved in the global dialogue on climate change since it gained the international agenda and we found that these transnational governance arrangements had great – if not decisive – impact in fostering climate responses in São Paulo, but almost none during its implementation phase (SETZER; VALENTE DE MACEDO; REI, 2015, p. 36).

The local government capacity (2) is considered by Ryan (2015) as a necessary but not sufficient category to improve the level of climate policies implementation, for the São Paulo case we find that several of these elements were crucial in the process and in the negative outcomes, particular during the period that there was a political sensibility to the matter. No administrative authority was directly designed to implement the climate law and no specific project was develop to that end (aside from sectorial projects), besides the guidelines published in 2011, no action plan for mitigation nor adaptation was developed to guide implementation. The local governance arrangement created to provide support for the implementation was only designated as an advisory Committee and felt short to make more incisive proposals, limiting itself to debate the problem of climate change and providing recommendations to action that were ignored, even though there was an effort to make its discussions more specific by forming working groups. After a year of its activity, the representative of Clinton Foundation described how the Committee was perceived "It

deals with part of the problem of information exchange among the different municipal institutions, which is normal. But it does not address implementation." (*apud* Furriela 2011, p. 291, our translation). Consequently, no one was directly overseeing the implementation of the SP climate change policy.

Although cities in Brazil have a constitutional duty to "protect the environment and combat all types of pollution", accordingly to the 1988 Constitution, climate was not among the explicit concerns of the SMVMA. Until now, the SMVMA does not have any special department to address climate change nor any specific budgetary, instead, it still counts only with an advisory committee. Correspondingly, the environmental secretary does not have special department nor personnel to tackle the climate change policy, leaving it to technicians that are already work overloaded with other policies and initiative and spread among many different secretaries. This also means that the city of São Paulo does not have the technical nor the human resources to produce its GHG inventory, having to hire an external company to do it every five years or not doing it at all by lack of funding to pay for it. How could the institution move forward with its climate policy implementation without having the data to work with?

Following, one of the key elements to guarantee the implementation of a policy is to have the resources needed to be aligned with the political will (3). As previously discussed, São Paulo did not had the resources needed to implement the climate policy established by the 2009 law and the political will to do it varied considerable during the period analyzed here.

The literature (ACUTO, 2013a; BARBER, 2013; BEAL; PINSON, 2014; CURTIS, 2014; JOHNSON; GORDON, 2016) tends to stress the political actors and factors (3) for cities climate actions, especially the role of the "climate entrepreneurs" and here we would like to make some observations on the case of São Paulo regarding this topic.

During the first period of climate responses, from 2005 to 2012, the leadership of the environment secretary, Eduardo Jorge, was key. He is well known for his long-life commitments with the agenda and he was able to persuade mayor Serra and Kassab that climate change was an important matter for São Paulo (BACK, 2016; FURRIELA, 2011; MACEDO, 2017). Therefore, during this period, the SMVMA did not find any significant obstacle to its activities, on the contrary, the mayor was willing to promote and to attend climate change events, including to bear the costs of hosting a C40 Summit in 2011. Consequently, the climate entrepreneurship of the

environment secretary and of the mayors guarantee the possibilities to provide all the legal, policy and governance responses from 2005 to 2012.

After that, with the change in the administration, also meaning a change in the command of the SMVMA, the element of a climate leader was no longer present, implicating in the implementation process of the climate policy and in its international participation in city networks. Mayor Haddad changed its environment secretary almost every year and nominated secretaries that were not involved with the agenda, demonstrating little appreciation for the SMVMA work. One episode illustrates the political choice from 2013 to 2016 regarding climate change: all the work that was being carried out by the Committee was suspended at the beginning of 2013 (Committee 51th meeting report – Ata 51/March 24th 2017). The Committee did not hold any meeting for more than one year from 2013 to 2014, breaking its regularity established since 2009, its activities were only resumed after the demanding by the public prosecutor in 2014. This is even more critical once it was the only governance instrument exclusively dedicated to deal with climate change. In a nutshell, the lack of climate leadership from the mayor and its environment secretaries had a negative impact on the climate policy implementation process during Haddad's term.

The political institution responsible for the implementation of the climate law and its follow-up, the SMVMA, did not had the resources to do it nor the political capital and this may explain the weak implementation of the climate policy. The evolution of its budgetary is an indicating about how this was not a priority of the municipal government, according to Macedo (2017, p. 127), the percentage of spending with the SMVMA related to others in São Paulo varied like this: 0.52% (2005); 0.59% (2006); 0.60% (2007); 0.82% (2008); 0.71% (2009); 1.05% (2010); 0.73% (2011); 0.6 (2012); 0.56% (2013); 0.41 (2014); 0.35% (2015); 0.31% (2016); 0.40% (2017). The observation of the evolution budget of the environmental secretary demonstrates changes in the perception of its relevance to each administration.

Accordingly to the 14,933 law, the costs to do the GHG inventory was supposed to come from the FEMA, this means that there was already a established source that could be accessed to guarantee the frequency established by the law to produce a GHG inventory every five years. Nevertheless, São Paulo only produced two GHG inventories, and one of them was funded by the Global Environmental Facility (Ata 52/April 25, 2017 Comitê Municipal de Mudanças Climáticas e Ecoeconomia). It was argued that there was the perception that the funds from FEMA should be used to finance social directed projects and not to do an inventory. So, why was this established by

the law and from where should the money came from instead? This illustrates the disconnection of the climate law with the functioning of the municipal government, as well as the perception that climate action was not a priority. Consequently, the city did not produced other inventories, making it hard to track its GHG emissions path and to design and adapt policies to better address the challenge.

In addition, Haddad also did not demonstrate much interested in the international relations agenda, weakening the presence of São Paulo in city networks. The mayor was reluctant to attend international events and many times he sent his vice mayor to represent the city instead of him. This was remarkable when he did not attend the 2015 C40 Latin America Mayors Forum in Buenos Aires, a city that SP has many partnerships and that by then was projecting itself as a climate leader under Macri's administration. Important noticing that by that time, the director of C40 was Eduardo Paes, Rio de Janeiro's mayor and from an opposite party. Party issues, as well as political ideologies, may have influenced the less prominent role of SP in the international arena during this period, at least in climate governance, since the SMRI started directing its activities towards other agendas and fostering more projects within Latin America.

The succeeding administration, Doria, only lasted 15 months as he renounced to run for governor, so we cannot conclude much about his political effect on the international and on the climate policy. Nevertheless, we can make some observations about his first year. The mayor presented himself as a global mayor and was very attracted to international agendas, so we could have expected a more active international policy. Concomitantly, he nominated as his environment secretary Gilberto Natalini, a council representative from the green party, who had actively worked for the approval of the climate law back in 2009, but then before the end of his first year, Natalini was substituted. Doria has demonstrated an erratic pattern to all matters of his administration, but regarding climate and environmental policies, we can highlight that: he did not renew the vehicle emissions control program ended by Haddad, he removed bicycle lanes, and take investments off the fund to build more BRT corridors.

It is important to highlight that just before the approval of the law 16,802 (January 18th 2018), that modifies the climate law, by redefining new deadlines for the public transportation fleet to become cleaner, less than 4% of SP fleet would be considered adequate to what was established

in 2009[24], exposing the lack of actions that should have been taken in the previous years to follow the climate policy. The new law to updated the deadlines estipulate by the 2009 law was approved, but still did not get to be regularized, meaning that there is no expectation that it will – once again– be implemented[25]. This demonstrates the fragile rule of law in SP – but we can argue that this is a feature of Brazil as a whole and to some extend a shared characteristic of Latin America – as well as the low priority given to climate change as an urgent agenda.

According to Ryan (2015), social coalitions supporting and opposing climate policies as well as political parties' polarization may together with the political entrepreneur affect the political actors and factors influencing the implementation process of a climate policy. In São Paulo, we identify the political entrepreneurs easily but because the climate agenda has not yet gained enough public attention, it is more difficult to spot the other elements, a part from some NGOs such as "Nossa São Paulo" and "Observatório do Clima" and the green party (that has little presence in the legislature) advocating for a more robust and constant climate policy, we were not able to map others in this scenario.

Finally, the perspective that the São Paulo – but also other major cities in Brazil, such as Rio de Janeiro and Belo Horizonte – climate responses were not followed by a systematic planning is shared among many observers as can be noted in the testimony of one person from an important civil society organization (Observatório do Clima) given to Macedo (2017) when mentioning the SP climate law: "It happened specifically, opportunistically, motivated by partnerships or by participating in ICLEI activities. In none of the three cities has the process been continuous, systematic or integrated into long-term development policies, or urban, territorial planning of cities."[26] (MACEDO, 2017, p. 139).

Nevertheless, it is undeniable that one spillover effect of the SP climate law was the creation of a momentum in Brazil that mobilized other cities to also design and propose their own climate laws and policies, such as Belo Horizonte. The downside of this momentum is that it was

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[24] Statistic available at: https://diariodotransporte.com.br/2016/10/24/custo-anual-dos-transportes-na-cidade-de-sao-paulo-so-com-combustivel-poderia-ser-r-200-milhoes-menor-com-lei-de-mudancas-climaticas/ Accessed: January 26th 2018.

[25] https://g1.globo.com/sp/sao-paulo/noticia/prefeitura-de-sp-nao-regulamenta-lei-que-preve-que-empresas-de-onibus-zerem-emissao-de-gas-carbonico-e-outros-gases.ghtml Accessed: July 20th 2018.

[26] Our translation from: "Aconteceu pontualmente, de forma oportunista, motivada por parcerias ou pela participação nas atividades do ICLEI. Em nenhuma das três cidades o processo foi contínuo, sistemático ou integrado a políticas de desenvolvimento de longo prazo, ou a planejamento urbano, territorial das cidades."

created over a law that was impracticable, contributing to generating other climate responses in Brazil that did not found ground in reality.

Ultimately, what is being brought into question is not the intense participation of the international relations secretary, nor the high degree of international influence in São Paulo's climate responses, it is the objective of these responses once they were not implemented in order to decrease GHG emissions nor to foster the development of a resilient city.

	SP Climate responses/Implementation factors (Ryan, 2015)	**Local Framing**	**Local Government Capacity**	**Political actors and factors**
Legal Response	Climate Law n. 14,933	+-	-	+-
Policy Response	Climate Change Policy (established by Law n. 14,933)	-	-	+-
	Guidelines for the action plan of the city of São Paulo for mitigation and adaptation to climate change	-	-	-

Source: own elaboration

3.6 Chapter final remarks

Climate change as discussed in the first chapter, has traditionally be a national issue instead of a local one, but this began to change in the 1990s, at least for cities in the North and global cities in the South. This means that cities began to perceive climate change as an agenda that should be addressed by the local government. And this happens due to many factors, having

international relations a central role. In this logic, the climate agenda is initially brought to São Paulo by international organizations such as ICLEI and by its International Relations Secretary perspective on global projection.

However, as the case of São Paulo demonstrates, without local government capacity, englobing technical and financial resources, how could São Paulo have implemented its climate policy? The policy designed by the law 14,933 was built to be implemented by a city with government capacity and political actors and factors that São Paulo did not had and it would have been extremely hard for it to developed that in the following years in order to respond to a climate agenda that its constituencies seemed not much aware of its urgency to be willing to pay for its costs. Moreover, the law falls short in framing and communicating climate change as local policy that could foster local development and generate co-benefits when aligned with its sectorial policies.

Studies (BACK, 2016; DI GIULIO et al., 2017) also suggests that São Paulo climate policy was not well connected with the other important urban policies, such as urban planning, housing, mobility and so on. Our analysis similarly leads to this conclusion even though it was not our focus to look into all the other sectorial policies, nevertheless our point is that the only area that the climate policy of São Paulo was intensively linked was the international relations policy. And this connection was positively crucial for the first moment of climate responses from the city, but was indifferent observed during 2013-2016 period. As São Paulo decreases its international relations agenda, its climate also suffers retraction, demonstrating that their linkage continuous to matter in an unconstructive scenario.

In addition, although São Paulo climate law states that it will assess mitigation as well as adaptation actions, it recognizes mitigation instruments in detriment of adaptation ones even when the adaptation policies are known to receive more support from local communities since they usually promise to increase the quality of life of the most vulnerable.

In a nutshell, São Paulo was a frontrunner in responding to climate change in Brazil – and even in Latin America – by creating legal, political and governance instruments, but the city was unable to put its responses into practice, failing in implementing its climate law and policies. Therefore, São Paulo can be characterized as a discursive leader but a letdown in following its discourse.

It is interesting to note that the approval of the climate law by São Paulo, that put the city on the spotlight, had almost zero costs for the administration. It was not a controversial topic, and its unanimous approval by the municipal legislative power attest for that. Therefore, the government had no political cost for supporting the climate law crafted by international organizations and local civil society groups.

CHAPTER 4 THE MARVELOUS CITY LOOKING FOR A GREEN IMAGE: RIO DE JANEIRO AND CLIMATE CHANGE

4.1 Introduction

This chapter presents the case of Rio de Janeiro by linking its climate responses to its international projection, a connection much valued by the megaevents that the city hosted and by its position as C40 Chair during 2014-2016. After exposing all the data, the conclusions are interesting when compared to our other cases, once Rio increased its GHG emission even thought it had a great exposition to international resources, access to quality data, had the political entrepreneur and other positive indicators. This is certainly a paradigmatic case that challenges all the theoretical and international understanding regarding cities' response to climate change and clearly exposes our point that local context in developing cities have great weight in the outcomes, potentialized by political changes in the executive power.

4.2 Talking about context: geographical, atmospherically, international, national and local

Figure 3 – Rio de Janeiro municipality and metropolitan region map

Source: IBGE

Table 1 – Rio de Janeiro overview (most recently)

RJ Indicators	**Municipal Population**	**Metropolitan Region Population**	**GDP *per capita* *(USD)***	**HDI**	**Gini Coefficient**	**GHG emissions (tCO2eq) *per capita***
	6,520,266 (2017, estimated)	12,280,702 (2010)	14,047 (2012)	0.799 (2010)	0.58 (2009)	3.58 (2012)

Source: own elaboration based IBGE[27], ICLEI (2014)

Rio de Janeiro (RJ) is located in the southeast of Brazil, it is a coastal city, surrounded by foothills that used to be entire covered with Atlantic Forest. Its unique topographic, with the

[27] Available at: < https://www.ibge.gov.br/estatisticas-novoportal/por-cidade-estado-estatisticas.html?t=destaques&c=3304557>

mountains and Guanabara Bay made it famous as the “marvelous city”. This same geographic configuration facilitates air contamination spread, but also make the city highly vulnerable to heavy rains, leading to floods and landslide. The economic and social inequality are graphicly represented by people living in the favelas, precarious located in the hillside and mangroves, making their dwellers the most vulnerable to climate hazards in Rio.

Like our other cases and most Latin American cities, Rio also experienced a rapid and disorganized urbanization process, leading to poor infrastructure, inadequate public transportation and the favelas. The urbanization process of what used to be Brazil’s capital was conflicted, marked by the creation of public spaces inspired by the Parisian boulevards that dislocated the poor to live in inadequate spaces, like the hillsides and the mangroves. This created not only a social problem but also an environmental one once people had to degraded those areas to build their homes (JACOBI, 2016). Thus, the addressing of climate change in this setting is certainly a challenge, but also an urgent matter once the increase in extreme climatic events combined with Rio’s topographic, social and economic situation, will put at risk the most vulnerable.

The Environment Secretary (SMAC) was created in 1994, during Cesar Maia first term as mayor, but the bureaucracy has changed over the years. Its most recently change meant its downgrading. Now the institution responsible for environmental issues of Rio de Janeiro is called as SECONSERMA (Secretaria de Conservação e Meio Ambiente), meaning it is subordinated under the secretary responsible for infrastructure maintenance. During Paes administration and while he was C40 president, not only the SMAC was operating, but the mayor counted with a special advisor for climate change (2013-2016), an important addition to a city that was beginning to develop its institutions to deal with climate change. However, the SMAC budget represented in 2016 only 0.34% compared to total municipal government budgetary, which still demonstrates how environmental issues were perceived, even with a favorable scenario.

One important bureaucracy in Rio for our study that is not the Environment Secretary nor the International Relations Department is the Pereira Passos Institute (IPP, in its Portuguese acronym). The IPP is an institute responsible to Rio’s urbanization processes and is also a source of data provision. In the climate change responses arrangements, IPP was left responsible for many environmental policies and international partnerships, such as the one Rio has with NASA and with the World Bank in the framework of the Low Carbon Project. During mayor Maia’s administration it was coordinated by the environmentalist Sérgio Besserman, that later became president of the

sustainable development technical chamber (Câmara Técnica de Desenvolvimento Sustentável) and was a key figure in the construction of Rio's climate responses.

Besides the traditional key players such as the mayor and the secretaries, mostly during Paes administration, Rio had a few key officers playing important roles in fostering climate change responses, they were the manager of climate change (gerente de mudanças climáticas), Nelson Moreira Franco, the special advisor for C40 Chair, Rodrigo Rosa and the manager of resilience that during Paes administration was also the coordinator of the Operations Center (COR, in its Portuguese acronym), Pedro Junqueira. As it will be demonstrated along this chapter, Rio developed many institutional and legal mechanisms to assure its climates responses. The strategic planning was one of this mechanisms that helped foster the vision of a global city, but moreover, a global environmentally friend global city (BESEN, 2016). While São Paulo had a global city perspective that encompasses many features, being the climate just as one more, for Rio, its international projection was also deeply linked to an environmental responsible vision.

Table 6 – List of Rio de Janeiro mayors, environment and international secretaries 2005-2017

Year/Mayor/Environment Secretary/International Secretary	Mayor (political party)	Environment Secretary (SMAC)	International Relations Department (CRI)
2005-2008	Cesar Maia (PTB, PFL, DEM)	Ayrton Xerez (11/2002-03/2006);	Raul Fernando Leite Ribeiro (2005-2008)
2009-2016	Eduardo Paes (PMDB)	Carlos Alberto Muniz (2009-2016)	Stelio Marcos Amarante (2009-2012); Laudemar Gonçalves de Aguiar Neto (2013-2016)
2017-	Marcelo Crivella (PRB)	Rubens Teixeira da Silva; Jorge Felippe Neto; Roberto Nascimento da Silva; Justino Carvalho Neto (SECONSERMA)	Antonio Fernando Cruz de Mello

Source: own elaboration based on Prefeitura Municipal do Rio de Janeiro website[28]

[28] Available at: < http://www.rio.rj.gov.br/web/arquivogeral/governantes-do-rio-de-janeiro> Accessed March 12th 2017.

4.3 Rio de Janeiro as a Global City

Rio de Janeiro is used to be under the international spotlight because it was the capital of Brazil until 1960 and it receives a great number of international tourists. Meanwhile, Rio de Janeiro municipal government had realized it could gain with this exposition and start very early its official international relations politics. Since 1975 the municipal government had its ceremonial support, that lead to the creation in 1986 of an International Advisory office that was turned in the next year into the International Relations Department (Coordenadoria de Relações Internacionais e Ceremonial, CRI in its Portuguese acronym), working under the mayor's office and having a federal diplomat as its coordinator (BESEN, 2016; MENDES; FIGUEIRA, 2017; MÈRCHER, 2015; PREFEITURA DA CIDADE DO RIO DE JANEIRO, 2016).

Therefore, Rio always perceived itself to be a global city and projected itself internationally. This perception from the municipal government is shared with some part of its population and business, but it is also questioned by others. The different perspectives are explored ahead, nevertheless, we consider Rio de Janeiro as a global city and this is one of the explanations to its climate responses. Also, we can notice an increase in Rio global features throughout the period we are analyzing, beginning during Cesar Maia administration, reaching its highest point with Eduardo Paes government, but with a decrease tendency that began with mayor Crivella election. This analysis also matches Rio de Janeiro role on global climate governance, following the same pattern of São Paulo.

According to Besen (2016), since the 1996 Rio de Janeiro strategic planning, followed by the 2004, 2009 and 2013, the internationalization of the city was presented as a goal, together with local development. As the author explains, the internationalization process of Rio was a well though strategy and dated back to its the foundation, in 1565, reaching its peak under mayor Paes administration. Among the different strategies that Rio worked with to developed its internationalization, Besen points the most important ones as being the strategic planning connected to global trends fostered by famous architectures – inspired by Barcelona and London – , the megaevents like the Pan-American Games in 2007, the Rio+20 and the 2016 Summer Olympics, the paradiplomacy and the environmental policies, like its climate law (BESEN, 2016; MENDES; FIGUEIRA, 2017).

As part of Rio internationalization strategy, we can highlight its network membership, the city is part of twenty city networks, among those we can emphasize the ones that are more relevant to this work, between brackets is the year of affiliation: ICLEI (1993), UCLG (2004), C40 (2007), 100 Resilient Cities (2014), AL-LAs project (2016), Carbon Neutral Cities Alliance (2016), Circular Cities Ellen MacArthur Foundation (2016) (PREFEITURA DA CIDADE DO RIO DE JANEIRO, 2016, p. 64). ICLEI, C40, and 100 RC are obviously the ones that interests us the most and particular C40 because mayor Paes was Chair during 2013-2016.

The Cesar Maia administration – that for this study we are analyzing only from 2005 onwards – valued international relations as a local policy, the mayor was fond of projecting the city, but also himself internationally. He understood that major international events could boost the image of Rio as global city as well as himself, therefore, Rio submitted its candidacy to host many "megaevents" during his term. Cesar Maia was elected mayor three times and during his administrations, the city submitted in 1996 to host the 2004 Summer Olympic Games, in 2001 to host the 2007 Pan American Games, in 2004 to host the 2012 Summer Olympic Games, in 2007 to host the 2016 Summer Olympic Games (BESEN, 2016). It won the 2007 Pan American Games and the 2016 Olympics, both very important goals for Rio strategic planning and international projection, especially the Olympics that take place during Paes's term.

Eduardo Paes was an ambitious young politician when he took office and early on he also understood the importance of international relations to project himself nationally and internationally. Therefore, under Paes administration, the CRI increased its profile and its personnel from four to twelve people, reaching eighteen at its peak (BESEN, 2016; PREFEITURA DA CIDADE DO RIO DE JANEIRO, 2016). The mayor knew that with Rio +20, the 2014 FIFA World Cup and the 2016 Olympic Games he would be under the spotlight and to amplify this he added to the image of Rio the environmental dimension. Besen (2016) argues that the environmental aspect is part of the prescription from international urban consultancies that combined the views of a global city to a sustainable one, like it was the case of Barcelona and London. Nevertheless, mayor Paes was pragmatic during his term and was able to sell the idea of a "green global Rio", even though this was only part of the story.

To support the international action of the municipal government, many efforts were taken, including the creation of the BRICS Policy Center, a research institute coordinated by the International Relations Institute of PUC/RJ and supported by the municipal government[29].

Moreover, Rio de Janeiro projected itself as an environmentally "friendly" city when it hosted the United Nations Conference on Environment and Development (Rio 92) and planned to repeat the success with Rio +20. During the days that Rio hosted Rio+20, many side events took place, including the C40 Summit, and mayor Paes was at the center of the news. The C40 Summit, parallel to the main event of Rio +20, gathered many mayors, including Macri from Buenos Aires and Kassab from São Paulo and created a momentum for cities to show their case. As a result, the C40, supported by other international organizations such as UCLG, UNHabitat, ICLEI, Ford Foundation, among others, presented a letter to the conference that lead to an entire section about sustainable cities and human settlements in the document "The future we want".

As a result from Rio+20 for the city of Rio in particular we can highlight the cooperation agreement with the World Bank, the "Rio Low Carbon City Project" that was designed to foster low carbon projects like the BRT, bikeways and sustainable solid management and support the climate law approved in the year before. Rio is also credit to have launched the creation of CB27, a forum that gathers all 27 capitals of Brazil to debate environmental issues, with the support of Konrad Adenauer Foundation (KAS). Also, the establishment of UNDP office in Rio focused in addressing sustainable development, the Centro Rio+.

Following Rio +20, the next international move of mayor Paes was to settle himself as a global climate leader and this was facilitated by his appointment to be C40 Chair, substituting Bloomberg and being the first C40 Chair from a developing city. Paes was acclaimed C40 Chair at 2013 and took the position on the C40 Mayors Summit in Johannesburg in February 2014. There is no indication on C40 communications about the process of electing the Chair, raising questions among observers about it. Some speculation was made in informal conversations along the corridors of C40 Summit, suggesting that the process of selecting the Chair is made by the Steering Committee and that Bloomberg have a great weight in the final call. In this rationale, it was shared by some that the Steering Committee understood that it was strategic to have Paes as the Chair during the period of 2014-2016 once Rio would be in evidence because of the World Cup and the

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[29] More information about the BRICS Policy Center can be found at: < http://bricspolicycenter.org/homolog/sobre_o_bcp> Accessed at: June 23th, 2015.

Olympics as well as it would discharge the critics that C40 was a network of "rich cities". Noteworthy, none of the justifications that we heard were related to the climate performance of Rio de Janeiro.

During his term as Chair, he increased the number of cities affiliated from developing countries, a strategy that can be questioned based on the climate commitments of those new members. Meanwhile, he projected himself internationally, but this was limited by Rio de Janeiro capacity to mitigate and adapt to climate change, as we discussed in chapter 2 and onwards in respect of the meaning of climate leadership.

One important initiative that Paes took as C40 Chair that is related to the increase in members from developing countries was the C40 Finance Facility (CFF), an initiative to foster sustainable infrastructure financing. Once one of the main problems cities from developing countries faces to implement climate actions is how to finance those actions, Paes as Chair was key to put this on the agenda and to promote the creation of mechanism to do it. The C40 Finance Facility was launched during COP 21 and has the economic support of the German Federal Ministry for Economic Cooperation and Development, the USAID, and the IADB. Later, Rio de Janeiro hosted its most important C40 event while mayor Paes was Chair, the C40 Financing Sustainable Cities Forum gathered in March 2016 to discuss the implementation of the CFF presented in Paris. The first cities to receive the technical and financial support from CFF are located in Latin America: Bogotá and Mexico City, for cycling and electric public transportation projects respectively.

This is a remarkable achievement from Paes as C40 Chair, because often times the debate is about assuming commitments that the cities, particular the ones from developing contexts, do not have capital to put into practice. Therefore, we consider that bringing the finance question into C40 was a bold move from Paes.

As C40 chair, Paes projected himself globally and received support from his peers and from international personas like the United Nations Secretary General and this was positive for someone with high political ambitious like he is. After the 2016 Olympic Games in Rio, nineteen mayors published an open letter[30] saluting Paes for coordinating the Olympics and developing urban transformations such as the BRTs (BESEN, 2016, p. 74). Nonetheless, the change in C40 Chair

[30] Available at: <https://www.huffingtonpost.com/anne-hidalgo/after-the-closing-ceremon_b_11796702.html> Accessed at: August 2sd, 2018.

from Bloomberg to Paes demonstrated the power gap among them, "The capacity of Rio to claim the institutional capital traditionally associated with the position of C40 Chair is clearly undermined by a limited capacity to claim agential or structural capital in the field." (GORDON, 2016, p. 186).

However, the evaluation made by the government and by many analysts is that the term of Paes as C40 Chair was important to project Rio de Janeiro internationally as a global city committed to fight climate change. According to an evaluation made by CRI about the participation of Rio in C40 and the impact of it the city's international relations:

> This may be the best practical example of successful paradiplomacy during the Paes administration. As C40 Chair, Mayor Eduardo Paes has brought issues related to environmental sustainability, such as resilience and climate change, closer to municipal politics. The City benefited both from its membership in the C40, and from the fact that its Mayor occupied the Chair position within the network. Rio's affiliation to the C40 in 2007 alone has meant that several measures in the field of sustainability have to be taken, since the C40 establishes a series of goals that the member cities must attain, in addition to submitting the cities to an annual performance evaluation. The mayor's term as Chair, in turn, increased the political will to achieve these goals.[31]

As discussed before, the meaning of climate leadership is differently interpreted by each actor and it changes across the period we are studying, thus, the perspective of Rio de Janeiro as a climate leader can be contested. Looking from the city and its mayor perspective, it is obvious that exercising the C40 Chair position was an achievement, even though it may not seem the same way for other players. During 2016 C40 Summit in Mexico City, when mayor Paes was passing the C40 Chair to mayor of Paris, Anne Hidalgo, many people, including Bloomberg, claimed him as the possible next Brazilian President. This from a domestic perspective sounded naïve, anyone informed by the messy political situation in Brazil knew that Paes was out of the ballot.

[31] Translated from the original in Portuguese: "Esse talvez seja o maior exemplo prático de sucesso da paradiplomacia durante a gestão Paes. Como presidente do C40, o Prefeito Eduardo Paes trouxe para perto da política municipal temas relacionados à sustentabilidade ambiental, como a resiliência e as mudanças climáticas. A Cidade beneficiou-se tanto da sua filiação ao C40, quanto do fato de seu Prefeito presidir a rede. A adesão do Rio ao C40, no ano de 2007, por si só, fez com que diversas medidas no campo da sustentabilidade tivessem que ser tomadas, já que o C40 estabelece uma série de metas que as cidades-membro devem atingir, além de submeter as cidades a uma avaliação anual de desempenho. A presidência do Prefeito, por sua vez, aumentou a vontade política de atingir essas metas." (PREFEITURA DA CIDADE DO RIO DE JANEIRO, 2016, p. 66)

Nonetheless, this illustrates the weight that C40 mayors, and its Chairs, are assumed to have and how the network works as a strategic platform for ambitious politicians like Paes.

Beyond Paes as C40 Chair, Rio de Janeiro won several awards under his administration: the 2013 and 2015 "Sustainable Transport Award" from ITDP; 2013 C40 City Climate Leadership Award in the category of "Sustainable Communities" for "Morar Carioca" project. The International Relations Department (CRI) is the one responsible for submitting Rio to participate in those competition and under mayor Paes administration the number of submissions increased as well as prize won. However, some critics can be raised relating to the criteria used to give the awards that may not be comprehensive enough, leading to a situation in which a project is internationally recognized as a "good practice" but faces disparagement at home from its own citizens (BESEN, 2016). Nevertheless, those awards did bring the Rio de Janeiro international image as a climate committed city a step forward.

Following, the COP 21 was also an important event for Rio de Janeiro, Mayor Paes attended the Climate Summit for Local Leaders hosted by Paris mayor, Anne Hidalgo, and Especial Envoy of Secretary General United Nations for Cities and Climate Change, Michael Bloomberg. Also, during the national preparation process, Rio attended meetings with the Brazilian government, insisting on the inclusion of a note on the INDC recognizing the importance and the efforts of local governments to address climate change, it was finally accepted and added to the final Brazilian INDC (PREFEITURA DA CIDADE DO RIO DE JANEIRO, 2016).

When mayor Crivella took office in January 2017, he promised a management shock in the municipal administration, therefore he closed 16 secretaries from the 28 previous existent and let many people go[32]. This also affected the CRI personnel structure and budgetary, but although no major activity was registered during the mayor's first year, the coordination kept its main projects, differently to what happened with the environmental secretary. One activity is worth mentioning in this dissertation framework, is that Rio committed at the end of 2017 to participated in the C40 Forum Urban 20 and to attend the meeting to be held in Buenos Aires in October 2018, giving continuity to its international partnership with C40. Due to its early stage, the international

[32] More information about the first year of Crivella as a mayor can be found at: < https://www.nexojornal.com.br/expresso/2018/01/23/O-ano-de-estreia-de-Marcelo-Crivella-no-comando-do-Rio> Acessed: March 18th 2018.

action of Rio de Janeiro under Crivella's administration remains to be evaluated, but we can assure that it has a lower profile.

The global aspect of Rio can be controversy due to its high inequality rates, as it is the case of our other cities as well. Some question Rio as being a global city, pointing that what there is in fact are "globalization islands" (BESEN, 2016). Noticeably, the global city aspect does not overcome Rio de Janeiro's problems but it inserts the city in a broader dialogue that may provide solutions to some challenges as well as bringing new ones. In the next section we explore how the climate responses offered by Rio were connected to its global insertion.

4.4 Responses to climate change: law, mitigation and adaptation plans, governance structures

The high level of vulnerability to climate change that Rio de Janeiro faces may have informed at least to some degree climate responses, since it already faces sea-level rise, landslide with increase in heavy rains, and flooding. But, as we have been discussing here, the internationalization of Rio had a great share in those responses as well, if they were not determinant, as it is explored ahead. Different from São Paulo and even from our other cases, nature in its rough form is very present in the urban space in Rio, it is in its beaches, in its urban forests, in the Lagoon Rodrigo de Freitas and in the structure of its favelas that can be located in preservation areas like the hillsides and mangroves. This direct contact with nature may have generate some awareness to environmental issues, but it is not straightforward regarding climate change and does not guarantee a population conscious of the importance to implement measures that requires changes in their customary behavior, like the excessive use of private cars or voting in politicians not committed with the environment.

Therefore, we can read Rio de Janeiro climate responses as a result of the combination of its internationalization, that provided the ground for international organization such as ICLEI and C40 to act in the city and have influence over the municipal government, and ambitious politicians that saw in this a window of opportunity to project themselves nationally and globally.

After Rio 92 conference, that mobilize the city to see environment issues as a significant arena, with many high international figures circulating in the city, we can also point the affiliation to ICLEI in 1993 and its CCP campaign as having a great impact in Rio de Janeiro climate perception. It was throughout the campaign that the city engaged itself in the global climate regime,

becoming the first Latin America city to host an ICLEI office and to commit with the CCP campaign. In the Brazilian scenario this is remarkable once the city climate actions initiatives, along with ICLEI recommendations, Rio de Janeiro was mentioned in the First Brazilian Communication to the UNFCCC in 2004 as a leading city taking sound climate actions (BRASIL, 2004; MACEDO, 2017).

Meanwhile, the development of RJ first GHG inventory in 1998 was encouraged by ICLEI. Rio de Janeiro would probably not have done an inventory if this was not a requirement from the CCP campaign, once there were no domestically incentives nor demand to do it. And although we do not consider GHG inventories as a climate response here, it is certainly an important step to bring climate responses forward later on. Ahead we explore Rio de Janeiro's climate responses.

Table 7 – Rio de Janeiro Climate Responses 2004-2017

Year	Mayor	Legal	Policy	Governance
1993	Cesar Maia (PMDB/PFL)			Global: ICLEI
2007	Cesar Maia (PTB, PFL, DEM)	Decree n. 27,595 (Feb 14th 2007) Protocol of Intentions to mitigate global warming effects		Global: C40
2009	Eduardo Paes (PMDB)			Local: Carioca Climate Change and Sustainable Development Forum (Decree n. 31.415)
2011		Climate Law 5,248 (1/27/2011)	Plan of action to reduce emissions of greenhouse gases in the city of Rio de Janeiro	
2012			Low Carbon City Development Program (June 19th, Rio+20)	
2014				Global: 100 Resilient Cities

2015	
2016	Resilience Strategy of the City of Rio de Janeiro (May);
	Climate Change Adaptation Strategy for the City of Rio de Janeiro (December)

Source: own elaboration based on official documents cited along this chapter

Legal responses

During the period analyzed, the first legal response tracked was the Decree n. 27,595 from February 14th 2007, that is a Protocol of Intentions about the measures to mitigate the effects of global warming in the city of Rio de Janeiro[33]. Although a protocol of intentions is a very fragile legal instrument, it is important for our analysis because it signalize an awareness of the problem and the willingness to provide a response to it, locally and internationally. The decree is a general letter of intentions, without any plans or budgetary provision, nevertheless it holds an interesting paragraph: it explicit the intention to propose to the Federal government for Rio to host COP 15 in 2009[34], demonstrating the early link between climate responses and international projection of Rio de Janeiro. In an interview (MARCOS SÁ CORREA et al., 2007), mayor Maia stressed that he was not an environmentalist, justifying that the Protocol of Intentions was a response to its constituencies that were questioning the impacts of climate change in their everyday life. The main direction on the protocol is regarding education and the need to build conscious in the population about climate change.

After that, in 2009, a series of decrees were approved that had some climate component to it, here we will present them with the goal to acknowledge them, but we are not recognizing

[33] Decreto n. 27.595 de 14 de fevereiro 2007 Protocolo de Intenções do Rio, relativo às medidas que mitiguem os efeitos do aquecimento global na cidade do Rio de Janeiro.
[34] As well-know, COP15 was held in Copenhagen.

them as climate responses[35]. This is because they are dispersed among different sectors, not representing a systematic response to climate change and as a decree they do not have the power that a law has. In fact, they are often ignored. The exception to it is the one that creates the Carioca Forum, but it is treated here under the governance responses section. The decrees created stimulus to regulations over: GHG emissions reduction on the waste management (n. 31,416), the establishment of a program to reduce GHG emissions on the transportation sector and on the mobility policy (n. 31,417), healthy and civil defense adaptation to the impact of climate change (n. 31,418), creates the program of ecoefficiency and sustainability for the resources utilized by the city government (n. 31,419). Worth noticing is the decree n. 31,180 (September 30th 2009) that establishes that all civic construction approved by the municipal government should compensate its GHG emissions.

The decrees are a signalization of a movement that was forming in the municipal government that the city should provide some response to climate change, that was finally formalized with the approval of the climate law in 2011. Rio de Janeiro approved its Municipal Law on Climate Change and Sustainable Development, n. 5,248 on January 27th 2011 and its complementary law 112 on March 17th 2011. The law establishes voluntary GHG reduction targets of: 8% until 2012, 16% until 2016 and 20% until 2020, based on 2005 emissions. To keep track with emissions trajectory, the law determines the necessity to update its GHG inventory every four years (RIO DE JANEIRO, 2011). Although the climate law establishes numerical targets to reduce GHG emissions, there is no clear indicator of how that would be put into practice, since the goals separated by sectors do not specifies this, only presents general proposes. Furthermore, there is no clear provisional of how much money is needed to finance the change necessary to avoid business as usual, the sources indicated in article 23 are seasonable and it is not clear how much of each source would be directed to climate politics.

Regarding the cooperation among powers, the climate law reinforces the need to work together with the state and the national government as well as with international organizations. It is worth noticing that differently than São Paulo, Rio de Janeiro's climate law came afterward there was an existing climate law from the state and from the Brazilian government. Therefore, the law

[35] All decrees can be found at: < http://www.rio.rj.gov.br/web/smac/exibeconteudo?id=2209052> Accessed: March 23th 2016.

from Rio recognized those legal instruments and positioned itself in order to complement and not to overcome them.

The law presents a controversial article regarding the energy policy, that mainly is under the responsibility of the federal government. In article 12, it states that the municipal government should promote actions to end subsidies to fossil fuels. This is an obvious action that can help reduce GHG emissions, especially in cities that have the transportation sector as its main emitter, but it is also a very audacious and complicate position for any government to pursue, even more delicate for Rio de Janeiro that is part of a state that has a great share of its revenues coming from the oil industry.

Controversially, the law established that the GHG emissions from the steel complex located on the west side of the city (TKCSA) should be accounted separately, this has a great impact in the total of Rio's emissions once the steel companies have a great share in the emissions. This places Rio in a more comfortable position, with a total of GHG emissions significantly lower than it actually is. We did not find in any of our other cases, nor in the literature, something similar and we are not sure how this fit into the GHG Protocol for accounting emissions in cities. Afterwards, the GHG inventory added the TKCSA emissions to the total anyway, implicating in a enormous increase, as it is demonstrated in following sections of this chapter.

Finally, the law (Art. 19) determines three instruments for the implementation of Rio de Janeiro climate politics: the municipal plan about climate change and sustainable development, the Carioca Climate Change and Sustainable Development Forum, and the municipal fund about climate change and sustainable development.

Policy Responses

Previous to climate policy responses, all cities designed GHG inventories and most of the cities received international expertise to do it and that was no different for Rio. Rio received technical assistance from the World Resources Institute to design its first inventory using the GHG Protocol and it was funded by the World Bank (WB, 2013).

The plan of action to reduce emissions of greenhouse gases from Rio de Janeiro, published in 2011, after the approval of the climate law, was written in cooperation between the municipal environmental secretary and a renowned research institute affiliated with the Federal University of

Rio de Janeiro (COPPE/UFRJ), assuring a more precise perspective. Therefore, the plan is based on the inventory that established 2005 as the base year to reduce GHG emissions, done using IPCC methodology, and the mitigation options that Rio had at that point. The main actions thought in the plan to reduce GHG emissions are in the transportation and waste sector: the implantation of the three BRTs (TransOeste, TransOlímpica and TransCarioca), the expansion of the subway (although it is under the responsibility of the state government, therefore we are not going to analyze it), the increase in bicycle lanes up to 280km until 2013, vehicle inspection, and capture of biogas (FRANCO; ROVERE; COSTA, 2011, p.22).

The action plan works with three scenarios, one of business as usual (A), one considering the policies already planned to contribute to mitigate GHG emissions (B), and one with extra actions that could increase the mitigation potential (C). As it is known, inventories and scenario carry uncertainty, nevertheless they are extremely important to inform policy decision-making and the Rio de Janeiro action plan had a great contribution in doing so. Yet, that does not mean that all actions proposed on the scenario B were implemented nor that they were able to mitigate the amount of GHG estimated, this is investigated in following sections of this chapter.

The 2012 Low Carbon City Development Program (LCCDP) was a result of a partnership with the World Bank, part of a bigger project ("Rio de Excelência") to modernize the municipal public administration, the core funding came from the WB. Interesting, it was launched during Rio+20, providing one more element for mayor Paes to promote Rio and himself as "climate leaders". As described in the document, the LCCDP is presented as a very ambitious program that "acts as a channel for all the plans in the city. The Program will quantify the carbon component of the various initiatives, which in turn will help to maximize the potential for sustainable development." (WB, 2013, p.6). The program received the certification ISO 14064-2 and ISO 14001.

The LCCDP notes that the GHG emissions would rise in the following years due to the investments related to the megaevents, but stressed that Rio would be able to comply with the climate law because of its several mitigation actions spread across different sectors. It also suggests that the GHG reduction could be achieved by bottom-up measures, which is not clear of what this would be.

In a nutshell, the LCCDP is a document that presents – in English – what was already established by the climate law and the data presented in Rio's GHG inventory. The program affirms

that Rio only started responding to climate change after the publication of the 4th IPCC Report in 2007 and that the mayor became aware of the problem only by them. Although we do see the year of 2007 as a turning point for climate action in Rio, we cannot ignore the slowly process that had begun before. Nevertheless, it is interesting that it states that it was because of IPCC that Rio responded to climate change.

The Resilience Strategy of the City of Rio de Janeiro ("Rio Resiliente"), was launched in 2016 and a special position was created to coordinate the program based on the Center of Operations Rio (COR). The strategy is a result of Rio's association with the 100 Resilient Cities from Rockefeller Foundation, signed in 2014, and is based on a diagnostic study about risky areas. The strategy has six main goals, we can highlight the following: to better understand and mitigate impacts severe weather and climate change; mobilize Rio to be prepared to respond to extreme weather events and other shocks; promote an inclusive, diversify, circular and low-carbon economy (JUNQUEIRA, 2016). Most of the initiatives proposed by the strategy do not present deadlines nor financial provisions, but it does present a more structured strategy than the previous responses, like the LCCDP and the following adaptation plan. The resilience strategy divided its goals into initiatives and detailed each initiative, listing indicators, focal points, potential partners and funding (although not to all initiatives). This structure is probably due to the partnership with Rockefeller Foundation, that contributed with technical assistance and had already a framework for its 100 cities to build their resilience strategy in a similar standard.

Still regarding adaptation policy responses, the municipal government released in December 2016 the Climate Change Adaptation Strategy for the City of Rio de Janeiro. It was developed in collaboration with COPPE/UFRJ, as it was the case of the climate action plan, providing it with precision data and sophisticate analytical framework. The strategy was based on data collected about the riskiest areas and socioeconomic vulnerability to climate change done previously in cooperation with INPE (Brazilian National Institute for Space Research, in its Portuguese acronym) and financed by the British government. The Strategy presents a vulnerability index that combines the sensitivity index and the adaptive capacity index. It sustains that Rio de Janeiro already has more hot days, less cold ones and increase in frequency and volume of heavy rains, leading to landslides. It calls attention for the high vulnerability to sea level rises and increase in wave sizes that can dramatically change the image of Rio based on its beaches and coastal avenues (PREFEITURA DA CIDADE DO RIO DE JANEIRO; CLIMA/COPPE/UFRJ, 2016).

The adaptation strategy was designed to serve as a guideline to help build the adaptation plan and differently from other climate policies, the actors responsible for each action are designated, although the finance to it is not presented. Interesting, there is only an English version published of the strategy. The adaptation strategy is a more robust policy response than others provided by Rio, but it is still just a strategy, that without a plan is too fragile and cannot assure the implementation of the adaptation actions suggested.

Before the strategy, Rio had established in 2014 an office for Resilience The decree to regulate the climate law and the establishment of the Resilience and Sustainability Office received the support of Bloomberg Associates and C40, demonstrating the key role of international actors in provoking climate responses. (PREFEITURA DA CIDADE DO RIO DE JANEIRO, 2016, p. 68). As it is explained ahead, mayor Crivella closed this office in 2017.

In January 2016, after public consultation, the city government launched the Vision Rio 500 ("Visão Rio 500"), a strategic planning for the next fifty years and although it is not about environment nor climate policies, it contains important commitments on that. It set the goal for Rio to become a global reference for resilience and carbon neutral by 2065, both objectives seem very ambitious considering the political, economic, social, regional and national context that the city of Rio is inserted. The Resilience Strategy is pointed as a connection between the Vision Rio 500 and the strategic plan for 2017-2020, both were presented at the same time.

Governance Responses

Under our framework, the first governance response was an international one, Rio de Janeiro joined ICLEI in 1993 and adhered to the CCP in 1998. Unlike São Paulo, Rio de Janeiro joined the CCP before the establishment of ICLEI's office in Brazil. RJ recognized as a global city, was immersed in the global dynamics of environmental governance and negotiated its participation directly with ICLEI's international office. Moreover, this engagement pushed Rio de Janeiro to produce the first GHG inventory of a major Brazilian city in 1998 (MACEDO, 2017). Furthermore, ICLEI established its first regional office for Latin America in RJ from 2001 to 2006 working closely with the municipal government.

Succeeding, came Rio's second climate governance and the one that had a huge impact in fostering climate action and international politics: the C40 affiliation. Being part of the network

expose Rio to the global debate and facilitated the establishment of many partnerships. Inside the C40 dynamics, Rio took part in many of the its initiatives and later as Chair, Rio was able to introduce other debates, like the one about financing resources for climate actions from developing cities.

Both international governance responses, being part of ICLEI and C40, were a game changer for Rio once these networks opened many possibilities for technical and financial support as well as international engagement and experience exchange with other cities and international organizations. Particularly C40 when mayor Paes occupied the Chair position and made climate change one of the city's priority.

Regarding local governance responses, in December 2009, the decree n. 31,415 created the Carioca Climate Change and Sustainable Development Forum, a local governance response to manage climate change in Rio. The Forum is composed by individuals from different sectors, from the municipal government, to civil society organizations, the private sector and international institutions, gathering around 27 people. It works as a consulting bureaucracy regarding mitigation and adaptation policies. Interestingly, it was created before the climate law and the plan of action to reduce GHG emissions, anticipating the need to have a coordination and a monitoring arrangement of climate actions. The mayor is the president of the Forum, being followed in the hierarchy by the environmental secretary, who is usually the one conducting the meetings, it is supposed meet once every month.

Later on, Rio intended to advance its adaptation agenda and the next international affiliation was key in providing opportunities to it. In 2014 Rio signed to be part of the 100 Resilient Cities initiative from Rockefeller Foundation, it proportionated real gains for Rio, once the city received consultancy from Accenture company to design its resiliency strategy, and the Rockefeller Foundation financed two advisors to assist the city in its implementation process. All the support that Rio received for being part of 100RC were very strategic and demonstrates that the initiative understands that cities lack technical, human and financial resources to put in practice international commitments.

Therefore, this approach is very interesting for cities like Rio de Janeiro. Nevertheless, they are not immune to changes in the political scenario. Although the partnership with Rockefeller Foundation offered many advantages for Rio, once the major costs were not coming from the city's treasure, when mayor Crivella took office he put the initiative on hold, as our interviewees

observed. At the moment (July 2018), the website of 100 Resilient City[36] do not have indicated the chief resilience officer for Rio de Janeiro, as all cities have and as Rio once had, marking the holdup of the program.

4.5 Crossing urban international relations and climate responses

The cities networks had great impact in pushing local governments to respond to climate change, and that is not different for Rio. Actually, Rio have been partnering with international organization on environment matters since Rio 92 and this engagement and cooperation has only grow after that. Therefore, it is difficult to establishes from where one climate decision is coming as a result of this symbioses and each player will assume the positive results as their own. Just to exemplify, C40 stated in a document that "At the first stage of the partnership, C40 supported Rio positioning climate change as a central role in the strategic planning of the city. […] C40 has developed a partnership with Rio in all stages of municipal climate policy and projects: envisioning, elaboration, implementation, monitoring and evaluation." (C40, 2016)

In this sense, the cities networks provided the ticket that Rio needed to be part of the global debate and to be recognized as an important player in global climate governance. Furthermore, Rio de Janeiro was able to make the best of its affiliations to bring climate actions into its local policies. Intensely in the case of Rio, we can observe that practically every climate response that we listed here were fostered by internal factors and actors and the documents related were not only published in Portuguese, but also in English, not a very common practice in Brazil's local policies. Moreover, and differently from São Paulo, the impact of the international continued during the implementation phase as well.

Due to Rio's position as C40 Chair and as part of the 100 RC, the city received not only financial help from institutions as the World Bank, but most importantly, it received technical support, having specialized personnel working along the city's civil servant. This was key because Rio not only was able to develop more robust policies, like the resilience plan, but it also changed the work dynamics of municipal bureaucracies into more professional and internationalized ones. Many civil servants were trained and acquired knowledge and expertise that they would not have

[36] Available at: < http://www.100resilientcities.org/cities/rio-de-janeiro/> Last access at: July 27th, 2018.

the opportunity otherwise and this is a great asset that influences the implementation process greatly and change the dimension of "local government capacity". As one example, we can mention the partnership with NASA that made possible for personnel from the IPP to receive training to perform complexes mitigation and adaptation software, that may lead them to produce the next GHG inventory.

Hence, the linkage between Rio de Janeiro's international politics and its climate responses can be easily observed. For example, the 2007 Protocol of Intentions to mitigate global warming effects approved by mayor Maia presents the intentions of Rio to be committed to the international community and demonstrates the intention to host COP 15. Other examples are: the Low Carbon City Development Program supported by the World Bank and the Resilience Strategy constructed in partnership with the 100RC from Rockefeller Foundation.

The same logics is also applicable to the megaevents. The international organizing committees for the FIFA World Cup and for the Summer Olympics requires a sustainable approach from the hosting cities, consequently, it had a positive impact in Rio, increasing its climate ambitious and international profile at the same time (BESEN, 2016; MACEDO, 2017; MENDES; FIGUEIRA, 2017).

Besides Rio de Janeiro's climate commitments officially assumed domestically, like the climate law containing the GHG reduction targets, the city also take several international commitments, most of them were reaffirmations of its local politics. Nevertheless, Rio as this global city committed to climate change and trying to seal an international "green image", it signed in front of the international community other pledges. We can highlight: the Mexico City Pact and the Compact of Mayors. Also, we can highlight mayor Paes declaration after signing the C40 Clean Bus Declaration during the C40 Latin America Forum, held in Buenos Aires in 2015, committing to have 10% of its fleet of electrical and hybrid buses until 2020. His declaration, in the position of C40 Chair reinforced the perception of cities as climate leaders: "By taking these decisive steps here today, Latin American cities are leading the way in driving urban action that reduces greenhouse gas emissions and climate risks, while increasing the health, wellbeing and economic opportunities of urban citizens."[37]

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[37] Available at: <https://www.c40.org/blog_posts/c40-latin-american-mayors-forum-showcases-region-s-bold-climate-leadership> Accessed: June 14th 2017.

Notably, after the end of his term as mayor, Eduardo Paes started an international career, passing by IDB, and assuming the BYD vice-presidency for Latin America (except Brazil). After his international experience, staying away from the political turbulence in Brazil and the state of Rio de Janeiro in particular, he got back to local politics and is now running for the position of governor of the Rio de Janeiro State. During mayor Crivella's term, both the international relations and the climate politics were put on hold, but that does not mean that they are no longer highly interconnected.

4.6 Speech X reality: responses implementations and its local and international repercussions

In order to tackle Rio de Janeiro's climate responses implementation, we look into their three dimensions: local framing; local government capacity; political actors and factors. In addition, we tracked the GHG emissions trajectory and verified that in the period analyzed, even with all the domestic and international commitments that Rio assumed, the emissions increased considerably. The motives for the growing in GHG emissions can be found in more than one explanation and we will present them ahead, nevertheless, what the data indicate is that there is an inconsistency between the city's discourse and the reality on the ground.

The first climate legal response from Rio was the Protocol of intentions and as such, it had little and unclear goals for us to tackle. It did not have a well-defined local framing; the intentions were disconnected from the local reality and from other municipal policies. Rio also did not have local government capacity to implement the generic goals stated in the document, additionally it also did not have the political actors and factors needed to put it forward, not even with the mayor strongly supporting the environmental agenda. The proposition to host COP 15 obviously did not went forward, as it was hosted by Copenhagen.

The most relevant climate response in terms of mitigation is the 2011 climate law. It established Rio de Janeiro's climate policy and its main goals to reduce GHG emissions in 20% until 2020, accumulating 8% reduction until 2012 and 16% until 2016. The law does link its aims with other local policies, at least acknowledging that this is important and it does present the climate actions as being able to generate socio-economic and environmental benefits at the local level (local framing). On the other hand, the local government capacity is a much more sensible area, once at that time Rio did not had the human and the technical resources needed, also, the law do not present

clarity about the amount of money needed to put the actions into practice and only suggests that it may come from the Fund. The climate law, similar to what happened in São Paulo, defined reduction targets without having a clear picture of possible projects to mitigate them, demonstrating the need to present commitments even though it was not precisely known how to achieve them.

Nevertheless, Rio took advantage of its international relations to mitigate these limitations and was able to provide technical training for its civil servants, contract finance help from several institutions, including the World Bank, and received directly technical assistance from C40, NASA, ICLEI, EPA and the Rockefeller Foundation. All of these did contribute for Rio to move forward with its climate agenda, but it was not able to overcome some structure and political dynamics in order to decrease its GHG emissions.

During Paes administration, the climate law had political actors and factors supporting it and this was key to implement many plans, like the VLT. Paes was a political entrepreneur, committed to put his strategic plan to work, including the climate goals and for the most part he had the support of other powers, like the municipal legislative, and also the Federal government. The context of his administration matches the years of political optimism in Brazil, people were vibrating with the World Cup and the Olympics and this made easier to implement a series of plans that may have faced more opposition during other periods. That is not to say that there were no opposition, some social groups did contest the urban transformations like the BRT, the "Porto Maravilha", the construction of the golf course and many others, but they were not massive nor gained sufficient ground to barrier those changes.

In 2005 the total emissions of Rio accounted for 16% of the Brazilian's, the transportation sector was responsible for 39% of all city emissions, followed by the waste sector with 21% of the total. According to the action plan, if the city fully implemented the mitigation actions that were planned in 2012 it would still not be able to comply with the targets established by the climate law (FRANCO; ROVERE; COSTA, 2011, p.14).

Nonetheless, even with a favorable scenario for the implementation of the climate policy, Rio was not able to reduce its GHG emissions until 2012, at least not until this point (the inventory for 2016 data is being produced while this dissertation is being written). The trajectory can be observed in the table ahead:

Table 8 – RJ GHG emissions, GDP and population of the City of Rio de Janeiro, 2005-2012

Table 16 – GHG emissions, GDP and population of the City of Rio de Janeiro, 2005 and 2012

	2005	2012	2012/2005 Increase (%)
Total emissions (million tonnes CO_2e)	11.61	22.64	95%
GDP (billion Reals at 2012 prices)*	167.00	242.50	45%
Population (million inhabitants)	6.10	6.32	4%
Total emissions/GDP (t CO_2e/million 2012 Reals)	69.54	93.35	34%
Total emissions per capita (t CO_2e/inhabitant)	1.90	3.58	88%

Source: Authors, with GDP and population data from IPP (2013).
**Amount estimated from the 2010 amount.*

Source: (CENTRO CLIMA, 2013, p. 39)

The substantial increase in GHG emissions can be attributed to several factors, but the installation of the steel companies (particular TKCSA) in the west region of the city was the major contributor, although in the climate law they were proposed to be accounted separately, they appeared in the global GHG emissions results in the 2013 inventory. National policies also had an impact on the final result, as it was the case for São Paulo as wells. Brazil sustained policies for subsidizes oil prices and provided wavers in taxes over the purchase of private vehicle, in addition to an incremental use of thermoelectric in its energy matrix, leading to global GHG emissions rising in the country and, subsequently, in Rio de Janeiro (CENTRO CLIMA, 2013; VIOLA; FRANCHINI, 2018).

Consequently, the implementation of the 2011 plan of action to reduce emissions of greenhouse gases in the City of Rio de Janeiro were obviously frustrated, yet sectoral actions must be observed in order to tackle mitigation actions deployed by the city government. In the case of Rio, the waste and the transportation are the most relevant ones once they accounted for the highest share of GHG emissions. Regarding the first one, the operations of landfills like the ones in Seropédica, Gramacho, Nova Iguaçu and Alegria STS could have contributed to the reduction of emissions from the waste sector. However, due to changes in schedules combined with regulations and technologies, they did not achieved the targets up to 2012, and even worse, the GHG emissions from the waste sector are expected to increase in the years ahead if no other measures like

technology adaptation are taken, but only the new inventory will be able to confirm that (CENTRO CLIMA, 2013, p.52).

Nevertheless, some progress can be observed in the transportation sector, the ampliation of the bicycle lanes, reaching 450km in 2016 from only 150km is obviously remarkable, even though the clashing of the seaside bicycle lane "Tim Maia", one of Paes's administration symbol, raised questions regarding the construction contracts and the resilience studies.

The construction of the BRT was the transportation sector endeavor with the highest capacity to mitigate GHG emissions and it also received international aid to be implemented. From 2008 to 2012, the "Latin American Hybrid and Electric Bus Program" a cooperation with C40 and ITDP provided technical support for Rio de Janeiro to build its BRT system (Transoeste, Transcarioca and Transolímpica corridors), demonstrating how international relations were key in fostering policy changes in order to comply with the city's climate ambitious.

The revision of the 2011 plan of action to reduce emissions points to the increase in the total GHG emissions, but suggests that the target established in the climate law of reducing 16% until 2016 may still be achieve if the policies planned are implemented accordingly: "Due to reasons already mentioned, the estimates of the current study show that the actions carried out by the City Government until 2012 were not enough to achieve the 8% target. However, for 2016, the projected actions, if actually implemented, will be close to achieving the 16% target." (CENTRO CLIMA, 2013, p. 52).

This represents a very optimist perspective, the economic and political crises that the State of Rio, Brazil and the city of Rio de Janeiro faces today do not provide any indicative that climate policies, and even others like the transportation ones will be implemented. The crises are extremely deep and there are no signs by now that the state and the city can overcome it, which is leading to the paralysis of every basic policy, leaving no space for the development of a climate policy. To worse this scenario, the escalation on urban violence lead to a Federal military intervention in Rio in the beginning of 2018 and it is still unknown for how long that will remain.

As expounded before, the Low Carbon City Development Program, supported by the World Bank, is a combination of what was already stated in the climate law and in the strategic plan. Its objective is the creation of a system to register and monitor GHG emissions city wide and it proposes a contribution form of bottom-up mitigation suggesting the participation of various social sectors, but the document was only published in English, making it difficult to be spread

among different stakeholders, including civil servants from the municipal government. Therefore, we evaluated it as not being local framed, although it had political support, we find it was low in local government capacity.

Finally, the system to monitor GHG emissions was not developed, consequently, the main goal of the Low Carbon City Development Program was frustrated. Rio received technical and financial support from the World Bank to build its GHG monitoring system, but this was never achieved. The official information in the city's website is that it is under construction since 2010[38], but the evidence is that it was abandoned, once the monitoring system was under the project "Rio de Excelência", but the project passed by a revision in December 2017 and had all environmental actions excluded[39].

Concerning the adaptation policy responses, the Resilient Rio Program was designed under the impact of the 2010 heavy rains that killed 66 people and this influenced its local framing, once after that, the city had realized it needed to develop a system to better respond to those events, particular because the risk areas mapped pointed to a growing tendency of heavy rains. Afterwards, Rio began a series of actions to prevent those disasters, like mapping the most vulnerable areas, installing alert systems in those areas, contracting meteorologists to work for the city and so on (NERY, 2015). The creation of an office to deal with the resilience policy under Operations Center (COR), the Sustainability and Resilience Office (decree n. 42674 of December 19th 2016) was a result of this program.

It is still too early to tackle the impacts of the Climate Change Adaptation Strategy for the City of Rio de Janeiro, but we can make some observations. The first one is that the strategy is well constructed and that it seems to have a clear indication of what needs to be done and which municipal departments and civil society groups needs to be mobilized (local framing), the other is that we detected the predisposition of people to support (political actors and factors) more adaptation policies than mitigation ones because they realize they can feel the impacts and understand what needs to be done, like floods and landslides, for example. Having these two dimensions in Ryan's (2015) framework can contribute to policy implementation, but they do not guarantee it.

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[38] http://www.rio.rj.gov.br/web/smac/exibeconteudo?id=2812823
[39] http://www.rio.rj.gov.br/web/smf/descricao

Moreover, as we observed for all climate responses, the local government capacity seemed to be insufficient to cope with all the climate commitments that Rio has taken, although the city has advanced significantly on this area. In addition, there is some indicatives that the newly elected mayor Crivella do not have the intention to support climate policies (political actors and factors), which can make the adaptation strategy inoperative. The adaptation Strategy should be followed by an adaptation plan in order to put the policies into practice, but until now the plan has not been published and we did not find any evidence that it is being construct.

Furthermore, it was noted that the activities in Rio de Janeiro of 100RC after 2017 were suspended and this is very worrying for the adaptation policy. This case illustrates how important it is to have a society mobilized over climate responses, as well as social coalitions supporting it. It is difficult to understand the shutdown of a positive initiative that had reduced finance costs, and fostered Rio's resilience to climate change, a city that is highly vulnerable to it. At the same time, this situation also reinforces the need to look into implementation process and outcomes from Latin American cities climate responses via a framework that encompasses the different dimensions, as we tried to do here.

Still thinking about the international governance arrangements and how they interplayed with the climate outcomes, we can highlight that the 2016 Olympic Games were a turning point for Rio de Janeiro in many aspects, including the international projection of the city and of its mayor as well. It is interesting to note how mayor Paes articulated this strategy, by connecting it with the promotion of Rio as a sustainable city, Chair of C40. Furthermore, it is noteworthy that the marketing strategy "Rio para Todos" vehiculated before the Games, was designed by Bloomberg Associates.

Although the new Master Plan approved in 2011 acknowledges climate change as a transversal problem that should be address by all policies, including the international showcase from mayor Paes, the "Porto Maravilha", combined with the mobility project that includes the LRV, BRT and bicycle lanes (JACOBI, 2016, p.11), it was never fully implemented. Observing the increase in GHG emissions and other disconnections between the discourse of a climate committed city and the implementation of its climate responses, some have raised questions "Hoje, o Rio desempenha um papel importante no rol internacional de "melhores práticas sustentáveis". Esse reconhecimento, ponderamos, não é necessariamente devido a conquistas práticas e efetivas

neste campo – uma série de outros fatores levaram o Rio a conquistar esse espaço no debate sobre a sustentabilidade" (BESEN, 2016, p.67).

The Carioca Climate Change and Sustainable Development Forum held a higher profile during its meetings under Paes administration, but after the end of his term, the meetings became more technical and recently they were suspended with the downgrading of the environment secretary.

To make things worse, we need to stress the violence crisis that Rio is facing. All of our cases have problems related to urban violence, but in Rio it goes beyond and affects the functioning of basic public services, including those related to the climate responses we presented here, such as the BRT. Under mayor Crivella, the transportation system implemented by Paes suffered many budgetary cuts and some of the lines were closed, leading to abandoned stations that were occupied by drug dealers and homeless people[40]. The situation is so critical that we do not see any possibility for climate policy at all in the following years.

All in all, the prospects for climate change policies implementation in Rio de Janeiro for the next years are terrible. Although we observed throughout the climate responses a process of institutionalization via legal mechanisms, plans and the establishment of bureaucracies, the case of Rio demonstrates that this is not a guarantee of the continuation of climate initiates, as suggested by institutionalist theory. Mayor Crivella, made many institutional changes in the municipal government when he took office on January 2017 and onwards, but downgrading the Environmental Secretary (SMAC) to a subsection of the Secretary of Public Works and then to a coordination (now named as SECONSERMA) of it was the last straw[41]. If the implementation of climate responses was already a challenge, now without the minimum of personnel, budgetary autonomy and institutional support, there is no indicative that it will happen. Therefore, the scenario for climate and more broadly, environmental policies, in Rio are the worst thinkable. This illustrates clearly the weight that the dimension of "political actors and factors" have in climate policies outcomes. At this point, there is no element that indicates the possibility for Rio to mitigate GHG emissions actively – solely if it is a result of economic depression –, nor to foster resilience.

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[40] More information and pictures about the Rio BRT situation can be found here: <https://www1.folha.uol.com.br/cotidiano/2018/09/cartao-postal-olimpico-brt-do-rio-sofre-com-tiroteio-e-vandalismo.shtml> Accessed: September 3rd 2018

[41] The legal mechanism to do so were: Decreto n. 42719/17 and Decreto n. 43915/17.

Also, the resilience strategy is seemed to have been neglected, one of its core implementation offices, the Sustainability and Resilience Office, was under the administration of the COR and it was relegated since mayor Crivella took office. Even more problematic, since 2017 the project Rio Resilient was dislocated to be under the directorial responsibility of the Sub-secretary of Planning and Government Administration[42]. The employees of COR have been denouncing the municipal administration for abandoning it and not providing funding, including for the payment of salaries[43], the situation seemed to be serious and requires further observations to tackle the impacts on Rio de Janeiro's adaptation policy implementation.

This also illustrates the limits of transnational networks to change local cultures and to promote decarbonization in places that have weak institutions and low sensibility to climate change and environmental problems. The cases selected for this dissertation demonstrates how different cities among a transnational network can be and how it is complicated to develop analysis that are based on generalization to explain the phenomenon of cities "responding" to climate change. If a city that had its mayor as the C40 president is not able to at least guarantee the continuation of its bureaucracy that deals with environmental issues, what is left for others that had lesser exposition and technical and financial support?

Raising these questions is important in order to acknowledge the structure features that may have more impact in the outcomes than the traditional analysis is used to recognize. It calls the attention for looking into domestic features and political dynamics that transcend the environmental agenda. Cities and mayors can definitely offer important responses to climate change and can cooperate with Nation-States, private corporations and NGOs to address the challenges, but we must hold them accountable.

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[42] <http://cor.talentstecnologia.cloud/resiliente/> Accessed: April 25th 2018.

[43] <https://g1.globo.com/rj/rio-de-janeiro/noticia/funcionarios-do-centro-de-operacoes-rio-reclamam-de-falta-de-manutencao-e-atraso-nos-salarios.ghtml> Accessed: July 11th 2018.

	RJ Climate responses/Implementation factors (based on Ryan, 2015)	Local Framing	Local Government Capacity	Political actors and factors
Legal Responses	Decree n. 27,595 Protocol of Intentions to mitigate global warming effects	-	-	-
	Municipal Law on Climate Change and Sustainable Development, n. 5,248	+	- (slightly mitigated after a period of the climate law was in practice)	+-
Policy Responses	Plan of action to reduce emissions of greenhouse gases in the city of Rio de Janeiro	+-	-	+-
	Low Carbon City Development Program	-	+-	+-
	Resilient Rio Program	+	+-	+-
	Adaptation Plan	+	+-	-

Source: own elaboration based on the documents referred along the chapter

Finally, it is important to remember that the analytical tool provided by Ryan (2015) is to analyze climate change implementation at the city level and that the positive sum of all dimensions do not guarantee the full implementation of that policy. This is why we made the effort to look into its regional, national and international contexts in order to have a better assessment about why the GHG emissions of Rio increased in the period studies.

4.7 Chapter final remarks

Rio de Janeiro is a very interesting case, because it is not the capital of its country, nor the most relevant one in terms of GDP, population and GHG emissions, nevertheless, it occupied a significant role in global climate arena by being able to articulate a well succeed international relations strategy. Rio aligned its international projection with a “green” image, an image of a city committed to fight climate change, both spheres were closely linked by its narrative and its climate responses.

Obviously, this varies over the period analyzed but it was the main strategy for the great part of it, especially during mayor Paes administration. And what is more interesting is that Rio took many international and domestic commitments to reduce GHG emissions while at the same time the city was increasing it, totalizing 95% of expansion from 2005 to 2012. Moreover, when these results were published, Rio was nominated to be C40 Chair, gaining more international projection based on a topic that it was already failing to address at home.

Nevertheless, Rio de Janeiro was innovative in the Brazilian scenario by adding GHG emissions reductions as one of its goals in its strategic planning and some important improvements in the city were fostered by this international agenda. That was the case of the BRTs, the bicycle lanes, the training and qualification of civil servants, the resilience strategy that created climate risk alerts and other small increments. Although Rio de Janeiro – during the period comprehended in this work – was unable to comply with its mitigation targets, the city began a trajectory in the direction of incorporating climate change as a crucial variable for policy design and implementation. Furthermore, it popularized the issue among its powers, including the legislative, and among its constituencies by constantly inserting climate change in its campaigns and in the mayor's (Paes at least) speeches.

Meanwhile, Rio de Janeiro is a case that put into question the meaning of the idea of cities as climate leaders. After all, can a city be a leader in the global climate governance if it is not being capable of not only holding its GHG emissions back, but increasing it significantly? How far can an idea go without empirical support? This is also why, we need to avoid generalization, cities are very different from each other and they are not all responding to climate change in the same way.

Finally, the recent events in Rio also exposes the limits of transnational city networks to foster local transformations in the direction of decarbonization. As discussed along this chapter, Rio received many international backings to bring its climate responses a step forward, but even the minimum of the conditions – the existence of an environment secretary – can be threatened by changes in power. In this is why in our final conclusions we need to stress the role of the political actors and factors dimensions intensively affecting politics and policies outcomes.

CHAPTER 5 MEXICO CITY: FROM THE MOST POLLUTED CITY IN THE WORLD TO A GLOBAL CLIMATE LEADER?

"Camino sin avanzar/
Estoy rodeado de ciudad/
Me falta aire" (Octavio Paz, Vuelta)

5.1 Introduction

This chapter presents Mexico City (CDMX in its Spanish acronym) as a global City, linking its international relations strategy with its climate responses – legal, political and governance. The higher number of climate responses from CDMX and their consistency and regularity when compared with our other cases is notable. Therefore, we attempt to tackle all of them in a historically and analytical manner. CDMX trajectory is even more interesting if we acknowledge that it began in the 1990s with its air pollution crisis and the United Nations declaration that it was the most polluted city in the world. Since them, the city government have put into practice many policies in order to improve its air quality, today it does not figurate among the ten most polluted cities in the world. In this scenario, CDMX introduced the climate agenda to its ongoing environmental actions, and then this local policy was combined with the city's internationalization in a process that suggests a persistent increasing trajectory.

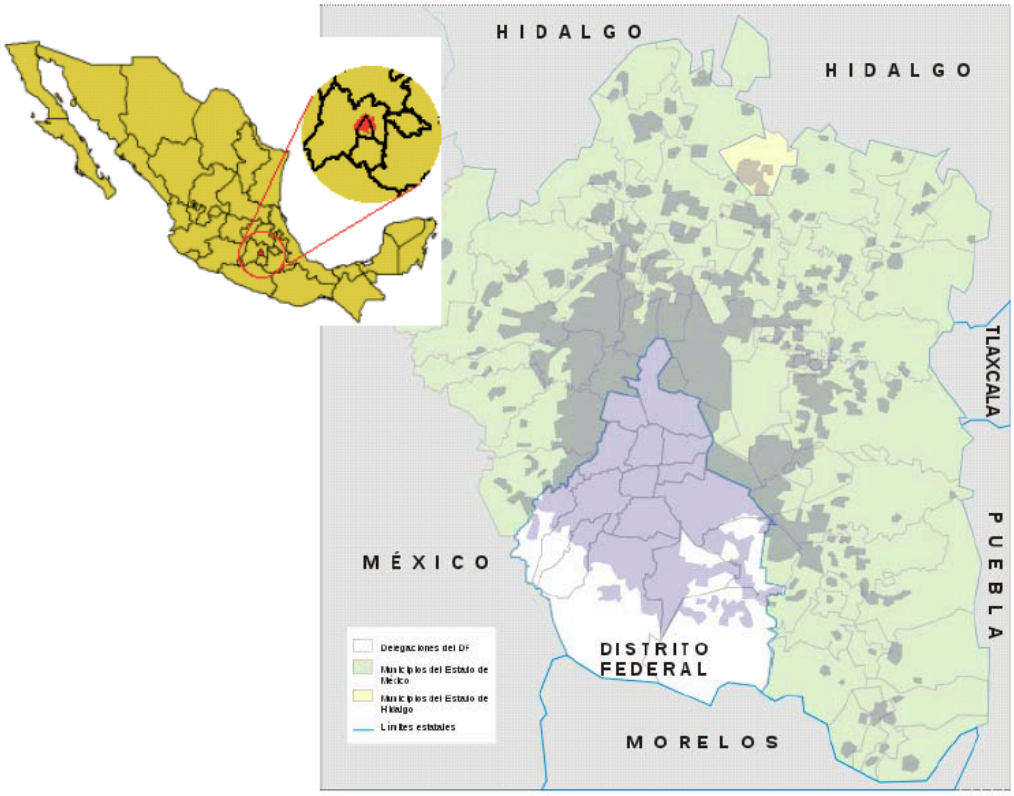
5.2 Talking about context: geographical, atmospherically, international, national and local

Table 1 – CDMX general overview (most recently figures)

CDMX/ Indicators	**Municipal Population**	**Metropolitan Region Population**	**GDP *per capita* *(USD)***	**HDI**	**Gini coefficient**	**GHG emissions (tCO2eq) *per capita***
	8,918,653 (2015)	21,892,724 (2015)	26,229 (2015)	0,8982 (2015)	0.49 (2010)	4.25 (2007)

Source: own elaboration based on INEGI. Dirección General de Estadísticas Sociodemográficas. Encuesta Intercensal 2015.

Figure 4 – CDMX municipality and metropolitan region map



Source: World Bank, 2011

Located in Mexico Valley, CDMX is the most populated city in the country and one of the biggest urban agglomerations in the world, it is the center of a metropolitan area that encompass 60 more municipalities and 16 neighborhoods ("delegaciones"). Besides its grandiosity in many features, the subtropical highland climate and the geographical and topographic conditions of Mexico City are an aggravating feature of its vulnerability to climate change. The city is situated at an altitude of 2,240 meters above sea level and it was built upon a drained lake, enclosed by mountains that create a situation complicated for air pollution spread. In addition, the city is also located within a seismic sensible territory (RODRÍGUEZ et al., 2014, p.58). The sum of all these natural vulnerabilities combined with social and economic problems was recently exposed by the

2017 earthquake that had a great impact in the city, destroying buildings and urban infrastructure, killing more than 155 people and injuring many more[44].

Furthermore, as it is shared with the majority of Latin America cities, Mexico City is a result of an unorganized urbanization process, worsening several key issue areas, such as housing and transportation. As the economic center of Mexico, contributing 17% to the national GDP[45], the capital attracted people in hope for a better life, leading to increase in the population growth rate and leading to many social problems, such as those related with inadequate housing. The poor were pushed to the periphery of Mexico City, adding to the growth of the metropolitan region of the Mexico Valley, an area that has fewer public policies to address all the challenges its population faces then the capital, adding complexity to the difficulties of metropolitan governance.

Table 9 – CDMX and its metropolitan region population growth (millions)

Years	CDMX	Metropolitan Region
1990	8,235,744	15,563,795
1995	8,489,007	17,297,539
2000	8,605,239	18,396,677
2005	8,720,916	19,239,910
2010	8,873,017	20,137,152
2015	8,918,653	21,892,724

Source: own elaboration based on INEGI data[46]

In this context, it is important to remember that since the 1990s, Mexico City has been facing significant political changes that matters to understand its role in global climate change. Mexico City was known as "Distrito Federal – DF" because of it is the national capital and for hosting all the federal branches, but then in 2016 the city passed by a political reform that transformed it into a federal state, giving it more autonomy from the national government and changing its acronym to CDMX. In the same way, it is important to note that only in 1997 Mexico City had its first directly election for mayor – "Jefe de Gobierno" –, before that it was the national government which nominated the municipal leader.

[44]https://www.nytimes.com/interactive/2017/09/23/world/americas/mexico-city-earthquake-surveying-destruction-damage.html

[45] Available at: http://cuentame.inegi.org.mx/monografias/informacion/df/economia/pib.aspx?tema=me&e=09 Accessed: June 17th 2018.

This was a long process, some say the debate surrounding Mexico City autonomy started right after Mexico independence with the 1824 National Constitution. Nevertheless, the political reform, promulged by president Peña Nieto in January 2016, lead to the creation of a Constitution and the substitution of the Legislative Assembly by a local Congress with autonomy to judge constitutional reforms. The new Constitution will come into force in September 2018 and may promote more international actions, since it recognizes CDMX as a global city and international relations policy as a key instrument to foster the city's development.

In this context, the city was not alone in its modernization process, Mexico as a national state was also facing many changes in the 1990s, integrating itself into the global economy and joining the NAFTA agreement with United States and Canada, and OECD. Therefore, the national and international scenario boosted the global feature of Mexico City and in combination with its local transformations, the city projected itself internationally.

However, during that time, Mexico City was seen as a huge, chaotic and polluted city. The air pollution was, along with its population size, the most remembered feature by the international community. The 1992 Human Development Report by United Nations named Mexico City as the most polluted city in the world, damaging its international image.

After its "bad fame" it is no surprise that the international strategy of CDMX was combined with its environmental actions in an attempt to change the international perception of Mexico City from the most contaminated city in the world to a leader in the fight against climate change.

Regarding the awareness of environment issues in the city, we can highlight that although in the beginning the problem of air pollution was not addressed as a climate one, many of the policies put into place to improve the air quality were synergetic to future climate policies and were then packed as climate ones.

To understand how all these policies operate it is worth noticing how the municipal administrative institutions we are working with are structured. In this chapter we focus on the role of the mayor, the International Affairs Office (CGAI in its Spanish acronym – Coordination de Asuntos Internationales), and the Environment Secretary (SEDEMA in its Spanish acronym) in responding to climate change. Other bureaucracies will be presented along the chapter, when relevant.

Therefore, we underline the political changes in the coordination of each bureaucracy in the following charter in order to observe modifications in the approaches and political choices. Different from our other cases, Mexico City has been governed by the same party since its first direct election, the PRD (Partido de la Revolución Democrática). Accordingly, we did not notice any major political shifts during the period analysed, the process was more continuous, without radical breaks, distinctly from our previous cases, São Paulo and Rio de Janeiro.

Table 10 – List of Mexico City mayors, environment and international secretaries 2005-2017

Year/Mayor/Environment Secretary/International Secretary	Mayor (political party)	Environment Secretary (SEDEMA)	International Affairs Office (CGAI)
2000 - July 29th 2005	Andrés Manuel López Obrador (PRD)	Claudia Sheinbaum Pardo	Virginia Martínez
August 2nd 2005 – December 4th 2006	Alejandro Encinas Rodríguez (PRD)	Eduardo Veja López	Virginia Martínez
December 5th 2006 – December 4th 2012	Marcelo Ebrard Casaubón (PRD)	Martha Delgado Peralta	Victor Kerber; Mauricio Camps; Francesca Ramos Morgan
December 5th 2012 – March 29th 2018	Miguel Ángel Mancera (PRD)	Tanya Muller García	Cuauhtémoc Cárdenas Solórzano

Source: own elaboration based on CDMX website

5.3 Mexico City as a global city

As the process of modernization and growing autonomy of Mexico City that had begun in 1997 with its first directly election for mayor, the city has progressively increased its international presence. It was also chosen the best travel destination by the New York Times in 2016[47], a promotion that some attribute to the city's international relations policy. Moreover, Mexico City have international offices to support its population living in the United States and to promote the city, they are known as "Casas de la Ciudad de México" and are based in Los Angeles and Chicago.

Aside from being the base for many transnational corporations and host to 103 foreign representations (embassies, consulates, representative offices), the local government has also

[47] https://www.nytimes.com/interactive/2016/01/07/travel/places-to-visit.html

fostered an active international policy. In fact, the government action was very important to positioned Mexico City as a global city recognized internationally, in the words of its CGAI coordinator, it "[…] has opened up to the world so as to become a global player that occupies positions of leadership on the world stage." (GOBIERNO DE LA CIUDAD DE MÉXICO - COORDINACIÓN GENERAL DE ASUNTOS INTERNACIONALES, 2012, p. 35-36). One of the strategies that worked in this direction was the affiliation within cities networks.

The international projection of Mexico City as an official and systematic agenda can be dated after the first elected mayor took office, in 1997. After elected, Cuauhtémoc Cárdenas Solórzano created the first city department to deal with international relations, the Coordinación de Asuntos Internacionales (CGAI). Interesting, he later became the coordinator of CGAI from 2012 to 2018. As it is often observed within Latin American municipal international relations secretaries, CGAI had moments of more intense activities that were interrupted by a period of retraction. During its earliest years, CGAI began an active political engagement with other cities via twin-cities agreements and had fifteen people directly working on it. The scenario changed during Andrés Manuel López Obrador mandate, CGAI was shut down and turned into a mere protocol subdivision with only one person responsible. However, with the election of Marcelo Ebrard Casaubón, the CGAI was retrieved and international relations became a priority once again, especially because Ebrard had a degree in international relations and recognized the importance of international matters. With the retake of the international agenda in 2006, CDMX started a process of international networks affiliation and increased the number of personnel working on CGAI, reaching more than 40 people in 2011 (GDF, 2011).

Ebrard (2006-2012) fostered the international agenda of CDMX in a high speed, increasing the city's engagement with international networks and affiliating it to new ones. As examples, we can underline the most important ones for this research: C40 membership in 2006; in 2008, CDMX took the presidency Commission on Megacities on the Metropolis network; in 2009 Ebrard assumed the presidency of the World Mayors Council on Climate Change; and, in 2009 the SEDEMA Secretary, Martha Delgado assumed the vice-presidency of ICLEI (GDF, 2011). All the international investments that mayor Ebrard did culminated with his recognition abroad, and one of these demonstrations was his nomination as the 2010 "Best Mayor in the World"

by the City Mayors Foundations[48]. Although we can question the validity and significance of this prize, it is certain that this can be understood as a result of Ebrard's international promotion and one that his Latin American fellow mayors would also would like receive. All in all, "By taking part in transnational networks, local officials such as Mexico City Mayor and Chair of the World Mayors Council, Marcelo Ebrard, were able to advance the climate efforts and showcase their climate action policies internationally." (ROMERO-LANKAO et al., 2015, p. 192).

Among all the international relations strategies, those with a focus on environmental issues gained ground once the goal was to reverted the international image of Mexico City as the most polluted in the world. Therefore, the promotion of "Plan Verde" was intense, but its recognition paid off. The environment macro program that also included climate policies to reduce GHG emissions and build resilience was recognized in 2008 by the International Conference about Green Plans in San Francisco.

From PROAIRE to "Plan Verde" to PACCM, the most popular projects to venture Mexico City as a global environmental example was "Metrobús", the BRT system substituted a great number of small, inefficient and informal buses and contributed to the reduction of GHG emissions. In 2006, Mexico City signed with Buenos Aires a sister city agreement that latter forwarded cooperation among them regarding urban mobility, focused in exchange experience gained by "metrobús" and Ecobici programs.

The World Bank had a significant impact in fostering climate responses in Mexico City, the local government received a series of training, technical support and investments. Among those projects, we can highlight the task force on urban poverty and climate change that began after COP15 and was active from 2009 to 2010 and it engaged Mexico City and São Paulo, among others. The task force produced a series of documents that were important in informing future climate risks policies.

All the initiatives to promote Mexico City as a climate committed city culminated in the 2010 World Mayors Summit on Climate Change, that lead to the signing of the Mexico City Pact by 152 mayors and the creation of the Carbonn Cities Climate Registry (CCCR). The Summit happened right after UCLG Congress and right before COP16, creating a momentum for mayors to showcase their climate responses. Ebrard and his team were political smart to propose the

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[48] < http://www.worldmayor.com/contest_2010/world-mayor-2010-results.html> Accessed: October, 16th 2016.

Summit before COP 16, providing the opportunity for him to be designated as the speaker for cities at COP16 as he presented the Mexico City Pact, projecting himself internationally. As a result, for the first time in a COP cities were acknowledged as strategic governmental entities in the international efforts to fight climate change, a recognition that opened new opportunities and new spaces of actions (PENSAR, 2011). This perception grew and mature in the following years and we can point the first conference on cities and climate change under the UNFCCC umbrella gathered in Edmonton (Canada) in 2018 as an example.

The Mexico City Pact was first signed by 138 cities that assumed the commitment to reduce GHG emissions voluntary, by developing mitigation actions and designing adaptation strategies and reporting their endeavors into the Carbonn platform. Therefore, they were not only committing their cities to take climate actions, but also accepting to do so in a transparent way, by making their developments public. All of this contributed for the international projection of CDMX and its mayor, Ebrard.

Noteworthy, C40 is not listed among the Mexico City Pact sponsors, as the traditional organizations working with cities are, such as ICLEI, UCLG, and Metropolis. This absence is difficult to understand looking back, since C40 was at this point a leading actor in global climate governance. The literature and the documents researched do not indicate any reasons for that, the topic was only addressed in the interview with Martha Delgado, SEDEMA's Secretary for the period. Delgado suggested that the Mexico City initiative to organized the World Mayors Summit on Climate Change was previously shared with C40 and that they turned it down, according to her because of power politics and conflicts between Ebrard and Bloomberg, whom at the time was C40 Chair. After that, CDMX became more distant from C40 and the network did not sign the Mexico City Pact. After its launched, more cities sign the Pact and two annual reports were published (2011 and 2012), but with the new initiative launched in 2014 by United Nations, under the coordination of Michael Bloomberg, the Compact of Mayors, the Mexico City Pact was left in standby and cities began to report to the Compact via its CDP platform and not via Carbonn anymore, although it is still available online.

The reasons for C40 to be out of Mexico City Pact are arguably, nevertheless it calls attention for the power struggles that can be identified in cities climate governance, although the literature does not address this question properly. Noteworthy is that in the year after the Mexico City Pact and the apparently differences between Mexico City government and C40 directory,

mayor Ebrard did not attend the 2011 C40 Summit in São Paulo, when it was an important moment for Latin American cities once it was the first time that the Summit would take place in a city of the region, mayor Macri from Buenos Aires and mayor Paes from Rio de Janeiro both attended.

Previous, at COP 15, it was decided that next COP would be hosted by Mexico City and not Cancún, the change may have been made because of political conflict among the CDMX and Mexico national government, according to Delgado. Therefore, it is important to highlight that an agreement was signed by mayors in contrast to what was being negotiate by Nation-States at COP16.

Succeeding, mayor Mancera not only gave continuity to its predecessor's international policy but he also increased its profile by including international action as a transversal axis of the city's General Program of Development[49], the document that guided all the municipal government actions and policies (GOBIERNO DE LA CIUDAD DE MÉXICO, 2016). In an interview he stated his vision for CDMX: "We want to transform Mexico City into an 'Alpha City', a city where there are transnational corporations, global companies, a well-defined niche of opportunity and a government that is more and more efficient."[50]

One of the features that Mexico City has differently from our other cases is that Mexico is part of OECD, and this is influencing the city in many aspects. It was identified that one of the reasons that CDMX has a good register of its activities is also because OECD has created the culture of collecting data and making them accessible. Therefore, Mexico City has received technical support from OECD and participated in its events and in October 2015, the city hosted the Sixth OECD Roundtable of Mayors and Ministers. Later that year, CDMX hosted another relevant event related to climate change, the Annual Chief Resilience Officer Summit of the 100 Resilient Cities initiative from Rockefeller Foundation, CDMX is part of this project since 2013.

Mayor Mancera was nominated to be part of the C40 Steering Committee and received, in the name of CDMX, many international awards related to environment issues: Cyclocity Award 2013 by ITDP; 2013 Sustainable Transport Award from ITDP in recognition for Metrobus Linea 4, street parking program, metro linea 12, and the expansion of Ecobici system; 2013 C40 & Siemens Climate Leadership Award in que category Air Quality for the implementation of PROAIRE; and the 2014 Audi Urban Future Award for the "Living Mobilities" project.

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[49] Programa General de Desarrollo del Distrito Federal

[50] <http://www.citymayors.com/mayors/mexico_city_mayor_mancera.html>

Mancera made the relationship with C40, that was distance since the Mexico City Pact, closer, it became one of the leading cities of C40. As part of its international strategy combined with its climate change action, Mexico City was voted to hosted the 6th Biannual C40 Summit in 2016. At the Summit, C40 presented the document "Deadline 2020" in which its affiliated cities committed to join efforts to meet the Paris Agreement goals of not crossing the 1.5ºC mark. Mexico City also signed, along with Paris, Athens, and Madrid the commitment to banned diesel vehicle from its city limits by 2025. During the Summit, Anne Hidalgo, mayor of Paris took the presidency of C40 and announced an initiative to address gender inequality, the Women4Climate. It was noticeable that during the Summit Mancera gained great attention, assuming a leadership position, much more prominent than the C40 Chair at the time, Eduardo Paes.

Also under Mancera administration, Mexico City participated in COP 21, attending the "Cities for Climate" Summit called by Paris mayor and C40 president, Anne Hidalgo, as result, more than 400 mayors signed the "Paris Declaration", reaffirming commitments to address climate change.

Therefore, as we can note, since 2006 the government of Mexico City has constantly deliberated in favor of its international agenda further and more specifically in favor of its climate international agenda. In 2012 CDMX begins to participate in the AL-Las project that helped promote the public debate regarding the internationalization of CDMX. From 2014 to 2016 a combined initiative among the CGAI and the Laboratorio para la Ciudad[51], financed by the European Union under the project of AL-ALs, hosted a series of public debates[52] to discuss the internationalization of CDMX, they resulted in the document "Mexico City in the World: towards a public policy of international action" ("La Ciudad de México en el Mundo: hacia una política pública de acción internacional"), which composed as a subsidy to build the future CDMX International Strategy. One of the its recommendations was to include international relations of CDMX in the new Constitution, which was done as we explain it in the following paragraphs.

Afterwards, the debate regarding the new CDMX Constitution had one of its leading advisors the former CDMX mayor and then the CGAI coordinated, Cuauhtémoc Cárdenas

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[51] Created in 2013, Laboratorio para la Ciudad is an innovative project to connect citizen and the municipal government to create innovative solutions for the life in a megacity. More information can be accessed at: https://labcd.mx/labforthecity/

[52] Many of them were recorded and are available online at: https://www.youtube.com/playlist?list=PL0ymw2_U3c6HLCyw3ftUExnRINVa-4W87 Acessed: March 12th 2018.

Solórzano. What more local and domestic than a city own's Constitution? Interesting, in Mexico City, the constitution was also part of its international policy, reaffirming its internationalization by organizing an international event to debate the new document. The two days meeting received the ECLAC support and guests from other Latin American global cities, such as São Paulo. Ultimately, the CDMX Constitution included the Article 20 "Ciudad Global" that supports the city's global agenda.

All in all, Mexico City has truly developed its international relations, growing its presence in important arenas and projecting itself as a global city, committed with climate change and with a more modern image than its own country. The internationalization strategy seemed to have worked as many international players and international organizations do identified Mexico City as this actor, although probably with some regards. Nevertheless, the way CDMX government projected itself is ambitious and intends to influence global dynamics, as we can note in an official document

> The internationalization of Mexico City, in turn, reflects the new demands of the globalized world in which we live. For this reason, its international action transcends traditional policies, which consisted of twinning agreements and ceremonial relations, towards joint formulation and implementation of specific cooperation projects with various international actors. Furthermore, through emerging city networks, Mexico City has accessed spaces of influence and decision-making within platforms that affect the global agenda of cities and countries around the world. […] Mexico City's internationalization strategy in a precise manner: a comprehensive, modern and social strategy, an example of how global governance can be a form of local management. (GOBIERNO DE LA CIUDAD DE MÉXICO - COORDINACIÓN GENERAL DE ASUNTOS INTERNACIONALES, 2012, p. 36).

5.4 Responses to climate change: law, mitigation and adaptation plans, governance structures

The first Climate Action Program was put into practice from 2008 to 2012 and obtained interesting results. The Mexico City CO2e emissions in 2006 were equivalent to 36.2 million of tons, as for the country, they accounted for 643 million of tons (RODRÍGUEZ, 2008, p.31). During the four years period of the plan, Mexico City was able to mitigated around 6 million tons of CO2e, so in 2012 the total CO2e emissions was 31 million tons, with the transport sector remainning as the city´s main emitter.

Accordingly, in 2010 the city established the "Climate Change Inter-Institutional Commission" to coordinate the work from the city´s ministries and follow the progress of actions

in reducing GHG emissions and adaption policies. This initiative demonstrates that there is a concern in evaluating and measuring the city´s Climate Change Program effectiveness. The commission has a high profile; the chair is the mayor and the secretariat of environmental is the technical secretary and it gathers 32 principal governmental offices.

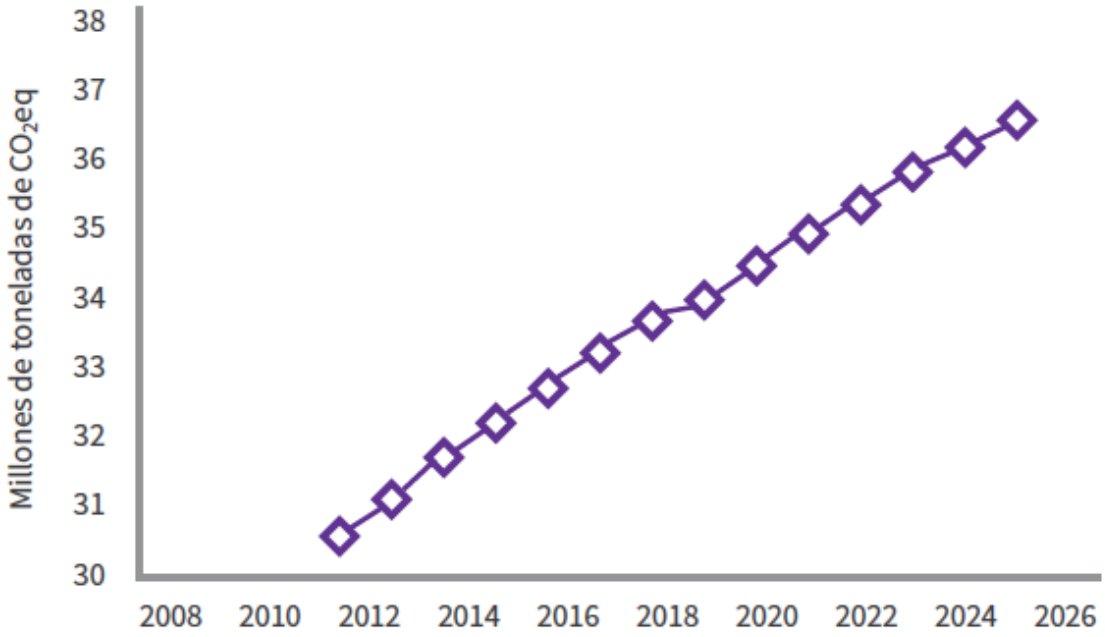
In the same direction, in 2011 it was approved a municipal law regulating climate change actions, the "Ley de Mitigación y Adaptación al Cambio Climático y Desarollo Sustentable para el Distrito Federal". The combination of the establishment of the law and of structures of governance can be an indication of the local perception towards climate change. Nevertheless, it creates institutional security that guarantees the continuation of the process to address climate change even with administration changes.

Then, when Mayor Miguel Angel Mancera took office in 2012, he continued to boost climate change actions. One of his policies was to set the Second Mexico City´s Climate Action Plan, which was designed based on the previous one, now accounting for the period 2014-2020. Based on the 2012 baseline of 31 million tons of CO2e emissions, the new plan aims to mitigate 8 million tons of CO2e up to 2020. The PACCM highlights that there is a possibility that additional indirect mitigation could aggregate 2 million tons CO2e in the total target, representing a decrease of almost 30% of emissions related to 2012 numbers (CENTRO MARIO MOLINA PARA ESTUDIOS ESTRATÉGICOS SOBRE ENERGIA Y MEDIO AMBIENTE, AC, 2014).

As a result, it can be observed a decreasing tendency in Mexico City´s CO2e emission in the period analyzed, with prospects for more reduction with the full implementation of the PACCM 2014-2020. Although this is a significant achievement, ahead we question the real impact of these numbers and if this is a consistent tendency.

In reference to Mexico City´s vulnerability and according to UNHabitat (2012), the vulnerability is very high. In the last years, the city registered more intense and frequent floods and landslides are already occurring, affecting the most economic and socially vulnerable population. Alongside with the Carbon Disclosure Project Mexico City information request (2015), 63% of the city´s population are considerable to be vulnerable to climate change.

FIGURA 7.3 LÍNEA BASE Y PROYECCIÓN DE EMISIONES DE CEI DEL DISTRITO FEDERAL



Source: (RODRÍGUEZ et al., 2014, p. 89)

The air pollution crisis that Mexico City faced during the 1980s and 1990s made inevitable for the city to address environment problems. The establishment of a municipal policy to control air population that backs to the program "Hoy no circula" to restrain private cars circulation and in 1996, with the establishment of the PROAIRE program to address air pollution, all of these initial attempts were a turning point in CDMX trajectory and opened the way for more robust policies regarding climate change.

In July 2007, the city government made a public consultation to capture the population perception of environmental issues and its future "Plan Verde" was in part based on the "Consulta Verde", specially the construction of one more metro line (linea 12) proposal. Then, in 2000 the city created its first subdivision within SEDEMA responsible to deal specifically with climate change, "Subdirección de Gestión Ambiental y Cambio Climatico".

Table 11 – Mexico City Climate Responses 2004-2017

Year	Mayor	Legal	Policy	Governance
2004	Andrés Manuel López Obrador (PRD)		Local Climate Action Strategy Mexico City	
2005				Global: C40
2006	Alejandro Encinas Rodríguez (PRD)		Climate Action Local Strategy	
2008	Marcelo Ebrard Casaubón (PRD)		2008-2012 CDMX Climate Action Program (PACCM)	
2010				Local: CDMX Inter-Institutional Commission on Climate Change
2011		Mitigation and adaptation to Climate Change and Sustainable Development for DF Law (6/16/2011)		
2013	Miguel Ángel Mancera (PRD)			Global: 100 Resilient Cities
2014			2014-2020 Local Climate Action Strategy (6/5/2014) 2014-2020 CDMX Climate Action Program (PACCM)	
2015			CDMX Vision on Climate Change to 2025	
2016			CDMX Resilience Strategy	

Source: own elaboration based on SEDEMA website[53]

[53] http://www.data.sedema.cdmx.gob.mx/cambioclimaticocdmx/cdmx.html Accessed: April 19th 2018

Legal Responses

Although our analysis starts at 2005, we have to highlight that Mexico City continuously presented since 2002 policies to address climate change, one example is the "Programa de Protección Ambiental del DF 2002-2006" which contains a specific session about the integration of the local and the global scale, with reference to climate change, besides the program of air protection "Proaire". Nevertheless, as already signalized, since 2000 the Environmental secretary had a specific institutional structure to deal exclusively with climate change, the "Subdirección de Gestión Ambiental y Cambio Climático", that in 2006 was turned into "Dirección de Cambio Climático y proyectos de mecanismo de desarrollo limpios" (RODRÍGUEZ et al., 2014, p.40).

All the following instruments derivates from the climate law established in 2011: the Inter-Institutional Commission on Climate Change, the GHG emissions inventory, the Climate Action Strategy, PACCM 2014-2020, the delegations programs, the risks atlas, the GHG emissions registry, the local carbon bonds system, the "Centro virtual de cambio climático de la Ciudad de México", and the Environmental Fund for Climate Change, an economic response to the establishment of a fund to capture and finance mitigation and adaptation actions.

The 2011 climate law is clear in delegating responsibilities, it states which institutions are accountable for what and that facilitates its implementation and its monitoring. For instance, it states that the Environment Secretary should follow the implementation of CDMX Climate Action Plan and publish its GHG inventories. The role of designing and coordinating the climate policies was left to the Inter-Institutional Commission on Climate Change. The Commission is also responsible for creating financial strategies nationally and internationally to complement the climate fund. The climate policy is well framed in the local context and within its capabilities, increasing its chances to be implemented.

Interesting, the law acknowledges the complexity of the metropolitan region of the Mexican Valley by previewing that the Commission may coordinate efforts with the Environmental Metropolitan Commission regarding surrounding cities.

Moreover, the law establishes an important instrument for monitoring CDMX's emissions and assuring transparency, that is the Registry of Emissions of Mexico City[54] "El Registro de Emisiones de la Ciudad de México (ASAMBLEA LEGISLATIVA DEL DISTRITO FEDERAL, 2011).

In a nutshell, the climate law provides Mexico City a well-designed plan to address climate change, by designating responsibilities and informing future actions based on a sustainable vision of development. In addition, Mexico City had at the time the political actors and factors to pursue its climate law, a adequate scenario that we did not found in any of our other cases.

Policy Responses

The first policy response directly addressing climate change published by the Mexico City government was the "Local Climate Action Strategy Federal District – ELAC in its Spanish acronym"[55] in July 2004 (GOBIERNO DE LA CIUDAD DE MÉXICO, 2004). The city already faced a serious problem regarding air contamination and had developed programs to address it, so when it published the first Climate Action Strategy, the idea was to assembly the ongoing pollution policies (particular the PROAIRE program – Programa para mejorar la calidad del aire de la zona metropolitana del Valle de Mexico, or Program to Improve Air Quality in the Valley of Mexico Metropolitan Area in English) to the new ones of GHG mitigation and to create opportunities to assess international capital via the Clean Development Mechanism (CDM), as established by the Kyoto Protocol. This reflects the perception of the city government about the importance to link the new climate strategy to policies already at play and to the quality of life improvement, providing a local framing.

Therefore, when Mexico City proposes its first climate strategy in 2004 it was not an unexpected policy, nor it was disconnected with what was ongoing in terms of local policies. The environmental secretary was already an important bureaucracy under the city government and it had already the expertise to deal with problems related to atmospherically issues, much because of the air pollution crises from the 1980s and 1990s, and the experience with PROAIRE.

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[54] El Registro de Emisiones de la Ciudad de México. The Registry can be consultant at: http://www.sedema.cdmx.gob.mx/programas/programa/registros-ambientales Accessed at June 9th 2018.
[55] Estrategia Local de Acción Climática del Distrito Federal

In order to put into practice the different policies proposed to mitigate and to adapt climate change, Mexico City government developed a criteria to hierarchize climate initiatives, giving priority to those that were connect to ongoing policies and that could provide the most social gains (GOBIERNO DE LA CIUDAD DE MÉXICO, 2004, p.111). This principle of categorization, that guide the action plans that follows, demonstrates the worry to local frame climate responses and to generate co-benefits, facilitating their implementation, just like our analytical framework suggests (RYAN, 2015).

The Strategy published in 2004 accounted the entire Valley of Mexico and it was a broad document that intended to provide guidelines for future actions. Then, in 2006 CDMX published a new Strategy financed by the World Bank (SECRETARÍA DEL MEDIO AMBIENTE DEL DISTRITO FEDERAL, 2006) that still approaches the Valley of Mexico, but had a more local perspective, presenting the data for the Mexico City limits under the mayor jurisdiction. From there, Mexico City started to change its international image and began a strategic allocation of resources to support its climate ambitious "[…] Marcelo Ebrard, became a **climate champion locally and internationally**, as did his Secretary of Environment, Martha Delgado. Meanwhile, a group of environment experts took high-level positions within the administration" (ROMERO-LANKAO et al., 2015, p. 189, emphasis added).
The choice to invest in qualified personnel that already had experience with climate policies was key to ensure its design and part of its implementation, as demonstrated in the following sections.

The Climate Strategies were more of a political response to climate change than a strictly policy one, since they do not present GHG reduction targets nor other quantitative goals but set a climate vision for the city. It is only with the first Climate Action Program (PACCM 2008-2012) in 2008 that we can see a specific climate policy proposal. The plan was built after an international assistance provided by the World Bank and after public consultations to civil society and other administrative instances of the city government, presenting therefore a local framing fostered by an international organization.

The 2008 Climate Action Program has a very obvious local framing by connecting it with the municipal environmental agenda and the Green Plan (Plan Verde), as well as with social and economic policies targeting adaptation measures. There is a clear vision to match the climate actions with the ones already ongoing and this demonstrates a transversally perception of how to address climate change and how to implement the proposals. Among the many local policies, we

can highlight the care to connect PACCM with the broad and strategic development plan for CDMX, the "Programa general de desarrollo del DF 2007-2012". Beyond the mitigation and adaptation policies proposed, CDMX also presents actions regarding education and communication, this is interesting in a way that may help creates more awareness in the population regarding the climate impacts and actions that needs to be taken.

As the literature demonstrates, the more a population is conscious of the climate challenge, the better the city government can respond to it in a sustainable and progressive way. Having the population support for a climate policy may ensure its continuity, when the contrary may limit its efforts across time and Mexico City seemed to have understood this by including education and communication into its PACCM, amplifying its political actors and factors.

PACCM 2008-2012 had two clear goals: 1) to reduce the emissions of 7 million CO2eq for the period 2008-2012, and; 2) to develop an adaptation plan that should be functioning by 2012. All projects proposed have a municipal secretary responsible for it, the provisional costs expected to implement them and the estimated GHG emissions reduction. Although all the measures planned to be taken by PACCM, it is stated at its commitments to all actions are conditionate by the provision of investments, that could come from the sale of carbon bonds from CDM projects, nonetheless the CDMX could allocate its own financial resource if needed. Among the instruments to operationalized the PACCM, international cooperation is presented as a way to do it by promoting studies, pilot projects and institutional development (p.42).

The Climate Action Strategy 2014-2020 proposed the mitigation goal to reduced 8 MtCO2eq until 2020, calculating the potential to mitigate 2 MtCO2eq additionally, representing a 30% reduction to the baseline (RODRÍGUEZ et al., 2014, p.12). For the adaptation goal, it was established to diminish the vulnerability of 5,6 millions of people living in vulnerable conditions. Following the Strategy, the PACCM 2014-2020 was released, presenting the goals and targets set by the strategy. As it was already the case of its previous phase, PACCM 2014-2020 is a policy locally framed, with local government capacity and political actors and factors supporting it.

In December 2016, Mexico City was the first city in Latin America to emit a Green Bond for U$50 million. "In order to issue the CDMX Green Bond, the city had to accomplish four basic things: 1) have defined sustainable programs and policies; 2) be able to prove transparency processes; 3) have healthy finances; 4) and develop an integrated work plan in coordination with

the local Ministry of the Environment and Finance, along with national institutions."[56] The revenues originated by the green bond can be applied to finance environment projects like sustainable transportation.

Concerning adaptation policies, CDMX Resilience Strategy launched in 2016 is a result of the city's affiliation to the 100 Resilient Cities Program from Rockefeller Foundation. The Strategy is based on five pillars, they are: foster regional coordination, promote water resilience, plan for urban and regional resilience, improve mobility through an integrated, safe and sustainable system and develop innovations and adaptive capacity. It is a well-designed plan, but it follows the same pattern that 100RC applied to all its affiliated, therefore some adjustments to the local reality could have been addressed in more detail, like the difficult to coordinate metropolitan actions, this factor compromises the local government capacity and the political actors and factors.

Conclusively, All CDMX climate plans presented a local framing, demonstrating the concern to link the climate policies with others already undergoing, particular with the PROAIRE policy, but also with the "Programa de Restauración Ecológica del Suelo de Conservación del DF" (GOBIERNO DE LA CIUDAD DE MÉXICO, 2004, p.20) and with "Programa de Verificación Vehicular" and "Hoy no circula". Regarding the government capacity, Mexico City demonstrated since its first climate strategy, by creating a special division under the environmental secretary to deal with climate issues, that it had the capacity to do it. Because of the air contamination crisis, the city government had the social conditions for the population to support climate policies and suffered little opposition. Therefore, Mexico City counted with local framing, local government capacity and political actors and factors sufficient to provide a favourable scenario for its climate responses implementation, indicating a serious climate commitment.

Governance Responses

The Inter-Institutional Commission on Climate Change is the institutional arrangement that coordinates the climate policy locally, it is chaired by the mayor or by the person designated

[56] Available at: < https://www.c40.org/blog_posts/mexico-city-mayor-miguel-angel-mancera-on-innovative-climate-action-finance-and-the-first-green-bond-issued-by-a-latin-american-city> Accessed: April 23th, 2017.

by SEDEMA and it is composed by almost all the municipal secretaries[57] as well as the legislative and judiciary power. However, formally on the law the International Relations Secretary is not among the institutions nominated by the law. According to the law, the Commission needs to present annually a report of its activities to the legislative power.

As a comprehensive governance arrangement and a high level one, the Inter-Institutional Commission have difficulty in coordinating its secretaries activities and between the SEDEMA division that deals with climate policies and those preparing the inventories, at least for the PACCM 2008-2012 (CENTRO MARIO MOLINA PARA ESTUDIOS ESTRATÉGICOS SOBRE ENERGIA Y MEDIO AMBIENTE, 2012, p. 214). This was in part mitigate, but coordination is still a challenge for Mexico City to fully implement its climate policies.

	CDMX Climate responses/Implementation dimensions	**Local Framing**	**Local Government Capacity**	**Political actors and factors**
Legal Response	Mitigation and adaptation to Climate Change and Sustainable Development for DF Law (6/16/2011)	+	+	+
Policy Responses	Local Climate Action Strategy Mexico City (2004)	+	+	+
	Climate Action Local Strategy (2006)	+	+	+
	2008-2012 CDMX Climate Action Program (PACCM, 2008)	+	+	+
	2014-2020 Local Climate Action Strategy (6/5/2014)	+	+	+

[57] Composition of the Commission: Secretaría de Gobierno; Secretaría del Medio Ambiente; Secretaría de Desarrollo Urbano y Vivienda; Secretaría de Desarrollo Económico; Secretaría de Obras y Servicios; Secretaría de Desarrollo Social; Secretaría de Salud; Secretaría de Finanzas; Secretaría de Transportes y Vialidad; Secretaría de Seguridad Pública; Secretaría de Turismo; Secretaría de Cultura; Oficialía Mayor; Secretaría de Protección Civil; Secretaría de Trabajo y Fomento al Empleo; Secretaría de Educación; Secretaría de Desarrollo Rural y Equidad de las Comunidades; Instituto de Ciencia y Tecnología; Instituto de Vivienda del Distrito Federal; Instituto de Asistencia e Integración Social del Distritito Federal; Instituto de Educación Media Superior del Distrito Federal; Instituto de la Juventud del Distrito Federal; Instituto de las Mujeres del Distrito Federal; Procuraduría Social del Distrito Federal; Procuraduría Ambiental y del Ordenamiento Territorial del Distrito Federal; Coordinación de Uso Eficiente de la Energía del Distrito Federal; Sistema de Aguas de la Ciudad de México; Sistema de Transporte Colectivo Metro; Servicio de Transportes Eléctricos; Metrobús; Red de Transporte de Pasajeros; Central de Abastos de la Ciudad de México; El Heroico Cuerpo de Bomberos; Asamblea Legislativa, a través de la Comisión de Preservación del Medio Ambiente y Protección Ecológica y Cambio Climático.

	2014-2020 CDMX Climate Action Program (PACCM, 2014)	+	+	+
	CDMX Resilience Strategy/ Adaptive, inclusive and equitable transformation (2016)	+	+-	+

Source: own elaboration based on SEDEMA website[58], on the primary source referred and Ryan (2015)

5.5 Crossing urban international relations and climate responses

Mexico City climate responses have a solid local frame, they are connected with other local policies, as demonstrated above, especially with the efforts to reduce air pollution via the PROAIRE program. Nonetheless, the international relations strategy of Mexico City interplays with its climate responses in many aspects and situations, as will be highlight in this section.

The PACCM 2008-2012 was presented as part of a project that began with an international technical assistance, with the World Bank as one of its key sponsors. In the PACCM 2008-2012, one of the five specific objectives of the program was to stablish the city and the city government as global leaders in national and international efforts to mitigate climate change (SECRETARÍA DEL MEDIO AMBIENTE DEL DISTRITO FEDERAL, 2008, p.40). PACCM 2014-2020 was also presented as a result of international cooperation. Worth noticing that both climate policies had an English version published and it was widely circulated at international events[59].

During the period analyzed, three major international events increased Mexico City international projection on climate global governance: the 2010 World Mayors Summit on Climate, the 2015 100RC's Resilience Summit, and the 2016 C40 Biannual Summit. All of these events received great attention from the international community and the media and operated as great opportunities for Mexico City to showcase its climate initiatives and achievements.

From all of our cases, Mexico City and Rio de Janeiro are the ones that presented an international strategy that is mainly based on the climate agenda. For Mexico City it was not only its goal to be a recognized global city, but it also needed to be combined with an environmental responsible and climate committed vision. In this sense, the international agenda and the domestic climate policies interplayed in multiple opportunities and have the potential to promote better quality living standards for the "capitalinos" (CDMX residents). One example that the international

[58] http://www.data.sedema.cdmx.gob.mx/cambioclimaticocdmx/cdmx.html Accessed: April 19th 2018
[59] The Mexico City delegation always carried a copy of PACCM to distribute during international events.

engagement of CDMX directly helped its citizens was after the 2017 earthquake, the 100 RC donated financial and technical resources to help the city overcome the tragedy [60]. The examples are multiple, but another one was the World Bank financing the obligatory studies to build the BRT (metrobus) in Insurgentes Avenue, demonstrating that in this case, the international had an impact in the implementation process (SECRETARÍA DEL MEDIO AMBIENTE DEL DISTRITO FEDERAL, 2006, p.103).

5.6 Speech X reality: responses implementations and its local and international repercussions

Accordingly to Mario Molina Center, an external evaluator, the implementation of PACCM 2008-2012 resulted in a total reduction of emission of 6 MtCO2eq, 86% of the total goal set by the action plan (CENTRO MARIO MOLINA, 2012, p.173). On the other hand, the CDMX government alleged that it reduced 7.7 MtCO2eq (LEÓN, 2012). Nevertheless, a significant decreased in emissions was noted.

Following, the Centro Mario Molina evaluation of PACCM 2018-2012 suggested the creation of a tool to monitor the implementation process in real time for the succeeding Climate Program and this was put into practice by the Mancera administration in cooperation with USAID. The online mechanism[61] can be reached by any person interested in knowing in which stage of the implementation process the PACCM is and it is an important instrument to hold power accountable and transparent, something we only observed in the Mexico case.

The GHG emissions reduction target was centered in the transportation sector, since it is the higher emitter, therefore many of the actions were taken in this sense. The BRT corridors and the "Corredores cero emisiones" were expanded and the metro line 12 was inaugurated as well as a new bicycle programs and bicycle lines. The two main air pollution control programs kept going, the "Hoy no circula" and the "Programa de verificación vehicular" (CENTRO MARIO MOLINA PARA ESTUDIOS ESTRATÉGICOS SOBRE ENERGIA Y MEDIO AMBIENTE, 2012, p. 26). Beyond those measures, there were some smaller and with less impact to GHG emissions reduction, but that also points in the direction of mitigating climate change and work in the way to influence

[60] http://www.100resilientcities.org/100rc-provide-funding-reslience-building-mexico-city-earthquake/

[61] Available at: http://148.243.232.100/PACCM/pub/ Accessed: July 7th 2018.

people about the importance of the matter. One of these small actions, and that its emissions were not calculated, but that shows that climate change is an important issue for the city and helps mobilized the population were the inclusion of twenty electric taxis into the feet and that circulate mostly in the historical city center.

Overall, the PACCM 2008-2012 put into practice 33 adaptation actions, divided in seven sectors: forest, agricultural, health, poverty and climate change, extreme hydrometeorological risk vulnerability, biodiversity and water. They were able to implement 88% of the adaptation actions (CENTRO MARIO MOLINA, 2012, p.47).

Environmental education and communication were also part of the main goals of PACCM 2008-2012 along with mitigation and adaptation. In this spectrum we can highlight the creation in 2010 of the Virtual Center for Climate Change (CVCCM), based at the National University of México (UNAM) that developed many interdisciplinary studies regarding climate change and the city. In addition, the World Bank financed several researches to support Mexico City actions, specially at the transportation sector.

From all the 119 actions proposed by PACCM 2008-2012, only 14 (12%) were not implemented. This is not a significant number when we consider the barriers to their implementation and the other cases here analyzed (see the São Paulo case, for example). Regarding mitigation, adaptation and education and communication actions, the level of implementation, respectively, were: 82%, 88%, and 72%. Although the number may sound very high for a local policy that is not central for a Latin American city, it is important to bear in mind that not all actions are quantified, so it is not possible to tackle their real impact. Therefore, stating that a policy was implemented does not means that it was able to reduce GHG emissions nor that it fostered adaptation, it only allows us to conclude how committed with its own goals a city is. To have a qualitative evaluation of the quality of the actions proposed it would be necessary to do a policy review for each sectorial policy, which is not the goal of this dissertation.

However, when actions were structured as CDM, the mitigation potential and the numbers of GHG emissions were more precise, since this is mandatory for a CDM project, as it was the case of the BRT Metrobús in México City. Mexico City emitted on the Mexican Stock Exchange its first Green Bond for U$50 million in 2016, being the first Latin America to do it. The revenues

originated by this mechanism need to be used to finance sustainable transportation, energy efficiency and comprehensive water management projects[62].

During March 2016, Mexico City faced a severe air pollution crisis, it was registered high levels of pollution, leading to a political conflict amid the mayor of CDMX, Mancera and the president Peña Nieto and the governor of Mexico State, Eruviel Ávila. Mancera argued that the crisis was aggravated by the surrounding territories that does not apply policies to control air pollution such as "Hoy no circula" leading to debate among the leaders. In an attempt to avoid the worsening in the air conditions, public transportation in CDMX were made free for a three months period. This situation evidence how difficult cooperation among different government levels can be, imposing limits to the implementation of the climate responses tracked here.

The Metrobus (the BRT system) provided many political and environmental gains to CDMX, reducing air pollution and GHG emissions and, amplifying the international projection of the city. It is one of the environmental projects that received the most international recognition, it was award with: the 2009 "Roy Family Award for Environmental Partnership" by the Harvard's Kennedy School of Government[63]. The project was considered innovative because it gathered many partners and sponsors, such as: World Resources Institute, EMBARQ - The World Resources Institute Center for Sustainable Transport, Center for Sustainable Transport in Mexico/CEIBA, Shell Foundation, Caterpillar Foundation, The World Bank, The William and Flora Hewlett Foundation, The Global Environment Facility.

If "Metrobús" was the most internationalized environment project, we can also highlight two particular moments in different administrations that put Mexico City on the international spotlight: the World Mayors Summit on Climate Change that lead to the Mexico City Pact in 2010 and the C40 Summit in 2016.

The climate plans of Mexico City referred to the national politics regarding the transportation, the energy sector and the water management, stating that its actions are framed in the broad national guidelines, avoiding to create conflict among the two jurisdictions. The first PACC 2008-2012 was careful to not surpass the national principles, but did not made the link

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[62]<https://www.c40.org/blog_posts/mexico-city-mayor-miguel-angel-mancera-on-innovative-climate-action-finance-and-the-first-green-bond-issued-by-a-latin-american-city>

[63] https://www.belfercenter.org/publication/harvard-kennedy-schools-belfer-center-announces-2009-roy-family-award-environmental Accessed: August 15th 2018.

suggesting coordination nor cooperation to implement the city climate policy, advocating that it was a forerunner and an autonomous effort.

In the Climate Action Program 2014-2020, the last one released and still ongoing, the city positioned itself as responsible for 5% of total national GHG emissions, meaning that it should receive federal attention. Furthermore, the plan implies that there is a convergence of the city's initiatives with the national ones, including in financial terms for the mitigation actions but without any specification. The plan also suggests that the city is capable of creating innovative actions that could spill over to the regional and national context.

Most relevant, the PACC 2014-2020 states that the city's mitigation efforts could contribute for Mexico to achieve its goals, advocating for a clear linkage between them, at least from the city's point of view. Finally, there is a clear effort in PACC 2014-2020 to connect the local initiatives with the national ones, that wasn't present in the previews PACCM, the plan states that it can be a positive result. Moreover, the affiliation to the OECD has impacted climate action at both national and city levels. In the case of CDMX, through the summits of its mayors, the city presented itself again as a global city committed to fight climate change and received technical support.

5.7 Chapter final remarks

Mexico City is the city with greatest experience in developing environmental policies among our case selection, most of this was a result of the air pollution crisis that the Mexico Valley faced during the 1980s and 1990s. In this scenario, the city had to emergently respond to atmospherically contamination, leading to institutional administrations development with capacity to process complex data and to coordinate policies that had different sectorial implications. Therefore, the role of transnational city networks influenced in the first period by provoking climate responses was less significant than in the other cases. That is not to say that they were not important, because in fact they were and they continued to be during the policy design process, in the implementation process and in the verification and reporting phase.

In this sense, the local framing of the PACCMs contributed to its implementation and to the GHG emissions reduction. Moreover, Mexico City gathered favourable conditions to implement its climate policies: local government capacity and political actors and factors. During

the period analyzed, both the municipal administrations, of mayor Ebrard and mayor Mancera, the political actors and factors were positive, both were sensible to the international and the climate agenda. In addition, they had greater political ambitious and though that these agendas could help them perceive their own political goals.

Although Mexico is a very conservative country in terms of moral values, Mexico City has been trying to detach from this perspective and in this sense, it approved several progressive initiatives, such as legalizing same sex marriage, abortion and therapeutically use of marijuana. In addition, we can expect a more active international and climate politics with the entry in force of its new Constitution in later 2018.

CHAPTER 6 BUENOS AIRES: HOW GREEN IS "LA CIUDAD VERDE"[64]?

"[...] Había huecos de tunas y la ribera hostil del Maldonado - menos agua que barro en la sequía - y zafadas veredas en que flameaba el corte y una frontera de silbatos de hierro. [...]"[65] Borges (Elegia de los portones)

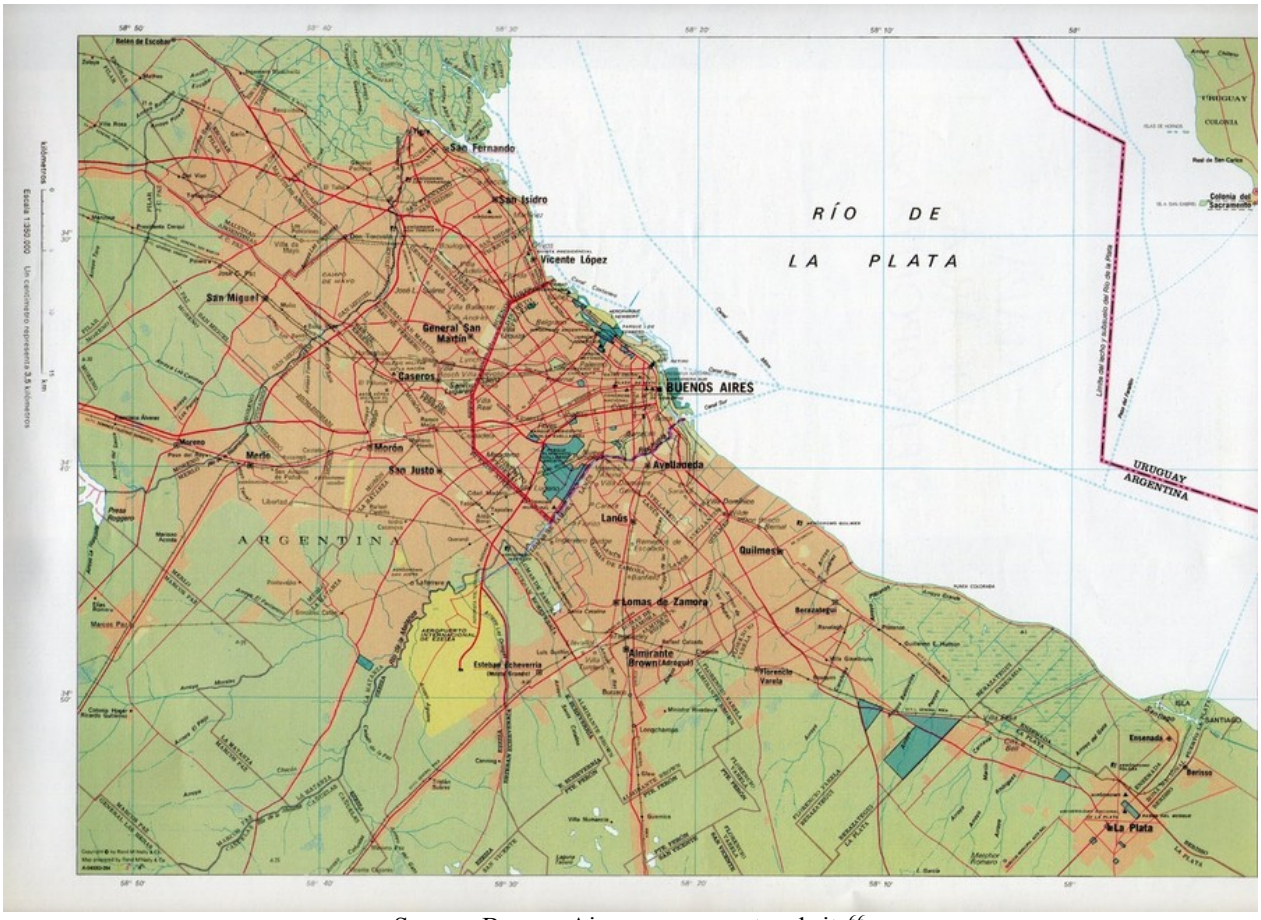
6.1 Introduction

This chapter address the case of Buenos Aires (also known as Ciudad Autónoma de Buenos Aires – CABA in its Spanish acronym) in responding to climate change combined with an active international agenda. First, it provides an overview of the city's context, followed by a presentation of Buenos Aires as a global city. After that, we explore the three dimensions of Buenos Aires climate responses from 2005 to 2017, demonstrating that the linkages among the climate responses and the international agenda are very tight. Finally, the chapter balanced the international and domestic climate commitments assumed by the Argentinean capital with its implementation outcomes to tackle how much of what was promised was really achieved. Closing with final notes on the case.

6.2 Talking about context: geographical, atmospherically, international, national and local

[64] The Buenos Aires slogan is "Ciudad Verde" that translates into "Green City".
[65] Free translation "There were hollows of tunas and the hostile riverside of Maldonado – Less water that mud in the drought – and free paths in which the cut and a border of iron whistles." Borges, elegia de los portones

Figure 5 – Bueno Aires municipality and metropolitan region map



Source: Buenos Aires government website[66]

Table 12 – Buenos Aires overview (most recently figures available)

CABA Indicators	**Municipal Population**	**Metropolitan Region Population**	**GDP *per capita* *(USD)***	**HDI**	**Gini Coefficient**	**GHG emissions (tCO2eq) *per capita***
	3,054,267 (2015)	14,819,137 (2010)	24,222	0.808 (2013)	0.51 (2010)	4.24 (2014)

Source: own elaboration based on GOBIERNO DE LA CIUDAD DE BUENOS AIRES, 2015, p. 31

The capital of Argentina is located on the estuary of the La Plata river, presenting a humid subtropical climate and 17.9ºC as the average temperature. During its urbanization process in late 1890s and early 1900s, many rivers were drained and today floods are constantly observed. Also,

[66] Available at: http://www.buenosaires.gob.ar/gobierno/area-metropolitana-de-buenos-aires Accessed: July 19th 2016

the urbanization process was a little more organized than most of Latin American cities, at least for the city's limits, its peripheries, configurating the metropolitan region presents a more chaotic development, gathering 40 municipalities. This disparity is exposed by the number of people living within Buenos Aires city limits, under the mayor jurisdiction, and those in the metropolitan region, the latter is almost five times more. This gap reflects the different living conditions in CABA and its surroundings, which also exposes the socio and economic inequalities of Argentina as a whole.

Regarding its climate situation, Buenos Aires is appointed by the UNHabitat vulnerability evaluation (2012) as being highly vulnerable to climate change. The city registered in its Carbonn Disclosure Project city information request (2015) that it is already facing consequences of climate change, such as hotter days, hotter summers, more frequent heat waves, more intense rainfalls and increased in the average of annual precipitation. The population living in the metropolitan region is the one most affected by inadequate public services, such as access to safe drinking water, sanitation and quality public transportation, therefore, they are the ones most vulnerable by severe climate events.

Nevertheless, in the Latin America context, Buenos Aires is popular – positively – considered as the most European city, differentiating itself from the rest of the region, except from Santiago de Chile, seemed as underdeveloped and chaotic. Thus, the city is connected with international flows of people and goods and its government has fostered an active international agenda, that since 2009 has also been linked with a sustainable perspective.

Historically, Buenos Aires was conditional subjected to the Federal Government, but since Argentina passed a Constitution reform in 1994, assigning more autonomy to its subnational actors, it then became "Ciudad Autónoma de Buenos Aires" and directly elected its first mayor in 1996. The increase in the city's autonomy created ground for a more assertive international relations politics, although the several economic crises faced by Argentina from 1990s to mid 2000s hold the city back, but since its economic recuperation we observed a continuous increment in its international engagement. It is noteworthy that during the years of Kirchners (2007-2015) governing the Federal power, Buenos Aires was leaded by the opposition and, particular during mayor Macri term, the city government found in international relations an agenda to reinforce its antagonism to the national government.

To better understand the climate responses from Buenos Aires, it is important to look into the institutional structures of the municipal government, the one responsible for international

relations is the General Secretary and International Relations ("Secretaria General y de Relaciones Internacionales"). Following, the department responsible for coordinating environmental matters in Buenos Aires is the Environment and Public Space Ministry ("Ministerio de Ambiente y Espacio Público") and under the ministry, is the Environmental Protection Agency ("Agencia de Protección Ambiental" – APrA), created in 2008, it is responsible to perform the GHG inventories and to develop and coordinate the climate plans. Directly related to the climate responses, APrA is the municipal department most important to secure climate policies implementation and because it was only established in 2008 we can observe a continuity in environmental initiatives from the city dating its foundation. Before that, the environmental ministry had others administrative structures and it is difficult to observe a coherent and continuous policy. Previously to it became what it is today, it was "Secretaria de Producción, Turismo y Medio Ambiente" and after that "Secretaria de Medio Ambiente y Planeamiento Urbano" and then "Ministerio de Medio Ambiente", demonstrating changes in perception about environmental policies. Although APrA is the department responsible for formulating, coordinating and implementing climate politics, it is important to stress the political role of the Environment and Public Space Ministry, once the political decisions originated there have impacts on APrA's work.

Table 13 – List of Buenos Aires mayors, environment and international secretaries 2005-2017

Year/Mayor/Environment Secretary/International Secretary	**Mayor (political party)**	**Environment and Public Space Ministry**	**General Secretary and International Relations**
August 7th 2000 – March 7th 2006	Aníbal Ibarra (Frepaso; Fuerza Porteña)	Eduardo Epszteyn (05/14/2002-03/07/2006)	Ruben Geynero
March 7th 2006 – December 10th 2007	Jorge Alberto Telerman (PJ)	Marcelo Vensentini (03/07/2006-04/19/2007); Juan Manuel Velazco (04/19/2007-12/10/2007)	Roberto Laperche (2007)
December 10th 2007 – December 9th 2015	Mauricio Macri (PRO)	Juan Pablo Piccardo (12/10/2007-12/10/2009); Diego Santilli (12/10/2009-12/5/2013); Edgardo Cenzón (12/5/2013-12/10/2015)	Fulvio Pompeo (2011-2015)

December 9th 2015 –	Horacio Rodríguez Larreta (PRO)	Eduardo Macchiavelli	Fernando Straface

Source: own elaboration based on Buenos Aires website and published documents used on this chapter

6.3 Buenos Aires as a Global City

Buenos Aires historically is a very international city and its participation in international relations has been growing significantly since Argentina redemocratization and the 1994 Constitutional reform. During the 1990s, the municipal government adopted the vision of a global city connected with global flows, inspired by the "Barcelona Model", just like Rio de Janeiro did years later. Many urban transformations signalized the goal to communicate that, even though the country was experiencing a severe economic and political crisis, Buenos Aires was presented as a modern and open city to the world. The revitalization of the Puerto Madero area, marked by the bridge designed by the architect of global cities, Santiago Calatrava, was a symbol of the city's transformations and its business card to the world economy.

Buenos Aires's international agenda systematization is coordinated by the General Secretary and International Relations, created in 2004, in substitution of the previews departments existed since 2000. At the beginning, the strategy was to establish sister cities agreements, then participation in cities networks, like UCLG and Mercociudades, gaining importance on the agenda. But until 2009 the international relations strategy of the city was based on a more traditional paradiplomacy perspective, one that focused on bilateral agreements but that were not as global as C40 demonstrated it could be. The international projection of Buenos Aires privileged cultural agendas under the Mercociudades initiatives and tried to attract international investments.

Although Buenos Aires joined ICLEI CCP campaign in 2002 and hosted ICLEI's office for Latin America, it only began to combined its international relations policy with the environment after joining C40 and releasing its Climate Action Plan at COP15 in 2009.

Buenos Aires joined C40 in 2009 and in 2015 the city hosted the C40 Latin American Mayors Forum, which had as a result the establishment of the Tripartite Cooperation Agreement amid Mexico City, Buenos Aires and São Paulo. The cooperation among them never quite launched, but at the time it was showcased as a demonstration of cooperation between the most important cities in Latin America. C40 was defined as Buenos Aires ticket to the international stage and the city based many of its international relations efforts on the network.

Recently, Buenos Aires have been increasing its international position in many global rankings, catching the attention of investors and tourists. In 2018, it was the only city in Latin America to be among the top 25 Global Cities ranked by ATKearney (ATKEARNEY, 2016), occupying the last position, true, but in 2008 it was in the position 33rd. In addition, it was also chosen in 2018 by The Economist[67] as the most livable city in Latin America, the indicators considered were: stability, culture and environment, education, health and infrastructure. The general secretary and international relations obvious celebrated the results and stated that these ranks help to boost Buenos Aires international image[68]. However, after that, Argentina announced that it is facing a serious economic crisis, therefore, we need to be cautions with these rankings results and observe what will unfold with the country's economy and how that can damage the increasing international projection of Buenos Aires.

6.4 Responses to climate change

Table 14 – Buenos Aires Climate Responses 2004-2017

Year	Mayor	Legal	Policy	Governance
2002	Aníbal Ibarra			Global: ICLEI (CCP)
2006	Jorge Alberto Telerman			
2009	Mauricio Macri		Buenos Aires Climate Change Action Plan 2010-2030 (PACC 2009)	Global: C40 Local: Climate Change Interministerial Team (decree 137/09)
2011		Climate Law n. 3,871 (09/01/2011)		
2015			PACC (2016-2020)	
2016	Horacio Rodríguez Larreta			Global: 100 RC

[67] The Economist Global Liveability Ranking is available at: < https://www.eiu.com/topic/liveability> Accessed: August 15th 2018

[68] <http://www.buenosaires.gob.ar/jefedegobierno/secretariageneral/noticias/ranking-economist-buenos-aires-es-la-mejor-ciudad> Accessed: August 15th 2018.

Source: own elaboration based on APrA website[69]

Legal Responses

Buenos Aires approved a municipal law for Adaptation and Mitigation of Climate Change in 2011, and regulated it in 2014 (decree n. 039/14). The law states that an Action Plan should comprehend a five-year period, the first one ranged from 2010 to 2015 and an annually report should be sent to be validated by the Legislature power. In addition to that, a Climate Change Action Plan having 2030 as a horizon was designed, setting the city´s climate vision for the next twenty years, with mitigation and adaptation targets to be reviewed every five years.

The Buenos Aires climate law evokes the CBDR (Common but Differentiated Responsibilities) principle (art.3), which is contradictory in terms with the international image that the city aimed to transmit, in opposition with the national government, accordingly to some interviews it was the result of intense legislative negotiations. The law calls for the construction of the climate action plan that should include adaptation and mitigation policies and that should be revised ever five years, publishing an annually report of its progress. Just like the CDMX climate law, the CABA climate law does not establishes numerical targets to reduce its GHG emissions, but provides general directions, creating the legal subside for the mitigation plan. APrA is designated as the municipal institution responsible for the climate law implementation.

Regarding governance responses provided by the climate law, two propositions stands out: the External Climate Change Advisory Board (Consejo Asesor Externo) and the Climate Change Interministerial Team (Equipo Ministerial). The first one is an advising committee that composed by academics and NGOs representatives that can offer insights regarding climate policies. Therefore, we are concentrating our analysis on the ministerial team, because it is the governance arrangements that have the responsibility to cooperate with APrA in the implementation process of the climate law and action plans and it was already in operation since it was convoked by the decree n. 137 in 2009, as demonstrated ahead.

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[69] < http://www.buenosaires.gob.ar/agenciaambiental/cambioclimaticoyenergiasustentable> Accessed: August 24th 2015.

The Interministerial Team is coordinated by APrA and accordingly with the law it gathers representative from the following municipal departments: environment and public space, culture, economic development, urban development, justice and social security, housing, social development, communication, and education. Later, with its regulation and establishment in 2014, it was decided that every municipal ministry that could contribute with climate efforts could be invited to take part in the Interministerial Team.

All in all, we find that the climate law falls short in engaging with other local policies, although it addresses the climate issue as one that should improve the quality of life of the most vulnerable population. Also, the law is not comprehensive regarding local government capacity, it appoints APrA as the administrative authority but does not indicate the funding source, and it was not clear if APrA had the human and financial resources to enforce the law at the time. In addition, we considered the political actors and factors as being positive, once we identified mayor Macri as its political entrepreneur and the local legislative power as a supporting actor of the law. Finally, the climate law is a broader document that signalize the willingness of Buenos Aires to act, so its articles are generic recommendations that were complemented by following decrees and regulations as well as by the action plans (PACCs), analyzed ahead.

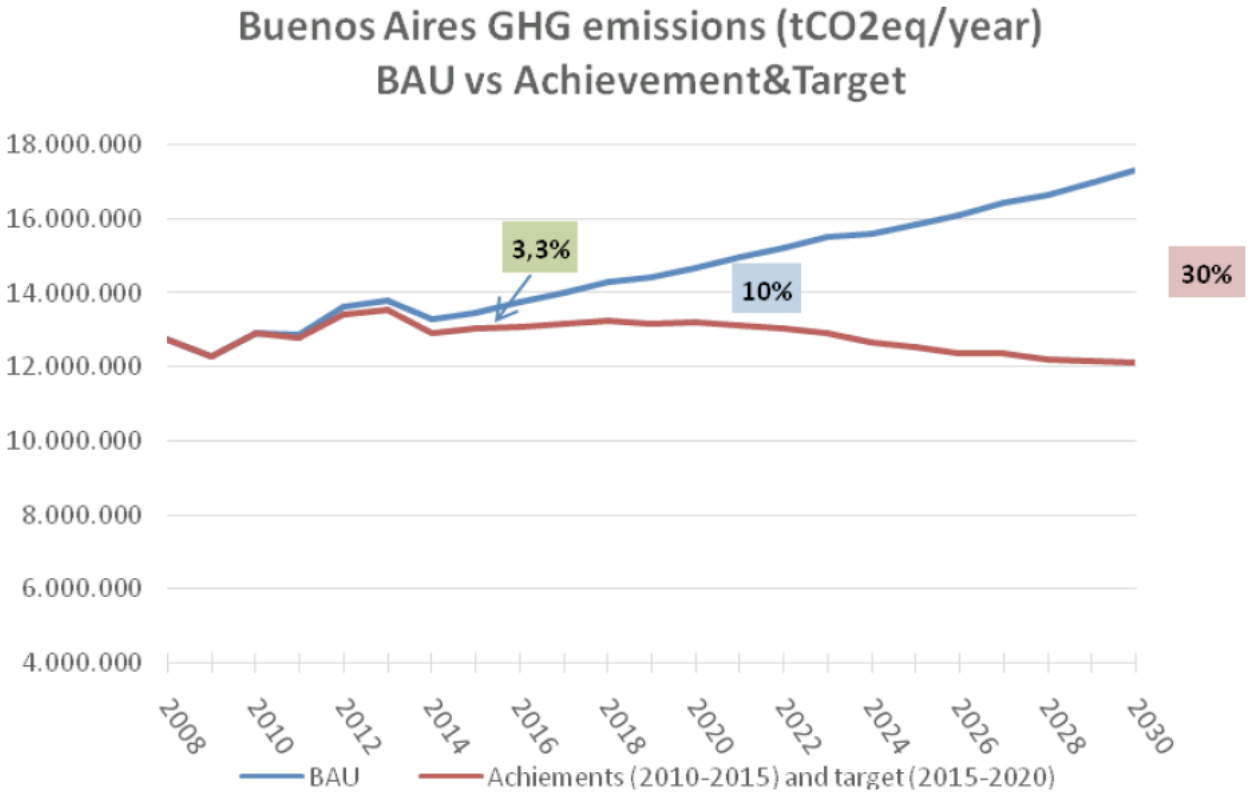
Policy Responses

The first Buenos Aires policy response was the 2009 Action Plan 2010-2030 (PACC). According to our interviewees, the plan was built in a hurry so mayor Macri could have something to present at COP15 and later APrA would have more time to work on the plan in order to make it more accurate. Because it had to be designed in a short period of time, they looked for references of how to do it and found in Mexico City Plan an inspiration, both cities exchanged many information during this process and, as was told by one of the interviews who worked on this task force, Mexico City was seen as the ideal model in Latin America. Additionally, the climate law established that the climate action plans should be revised every five years, thus in 2015 it was released the PACC 2016-2020 with updated targets and actions.

The first PACC had three pillars that guided the mitigations policies: 1) waste management; 2) energy efficiency and promotion of renewable energy initiatives, and 3) the sustainable mobility plan. The PACC 2010-2030 commits to reduce 32,7% of GHG emission,

having 2008 as the baseline year, until 2030, there is no specific targets for years before 2030 (GOBIERNO DE LA CIUDAD DE BUENOS AIRES, 2009). Differently from our other cases, the transportation sector is not the main GHG emitter, it is the second one, for the period 2000-2014 it was responsible for 28%, the energy sector ranked high with 58%, and the waste sector was left with 14%. For the phase 2010-2015 comprehended by PACC 2030, the GHG emissions reductions were 3.3%. This slowly decrease was attributed by the government to its mitigation actions (BUENOS AIRES ENVIRONMENTAL PROTECTION AGENCY, 2015, p.7).

For the second phase, PACC 2016-2020, after recalculating what was achieved in the first term, Buenos Aires committed to reduce 10% of its GHG emissions by 2020 and accumulating 30% up to 2030. The action plan for the new period proposed to give continuity to the three pillars established in the first one and also recommends to include the plantation of trees as an additional pillar. Ahead it can be observed what was achieved during the first phase related to the BAU scenario (with 2008 as the baseline year) and the goals for the second period:



Source: BUENOS AIRES ENVIRONMENTAL PROTECTION AGENCY, 2015, p.10

Although we can observe a 3.3% reduction in relation to a BAU scenario for the period 2010-2015, in the total GHG emissions there was an increase of 1.5% related to the 2008 baseline. Both standards do not point decisive to a clearly path, once the difference is minimal, it suggests a more stable trajectory. To put in context, for the period 2000-2014 there is an addition of 17% in total emissions, decreasing for 13% when we look for 2005-2014, which can suggest a decreasing trajectory, but more time is needed to confirm that (AGENCIA DE PROTECCIÓN AMBIENTAL, 2015, p.13).

The Buenos Aires plan of action for climate change is not an ambitious one, but it can be feasible and that was what the technicians at APrA had in mind when they designed the plan, that it would be fully implemented. And although we believe that the city could have been more determined in contributing to a higher share of GHG emissions reduction, we also understand that too ambitious goals can immobilized action, as it happened in the São Paulo case for instance, and lead to even increases in emissions.

In order to achieve the new goals established by the PACC 2016-2020, we can highlight the following actions proposed in the plan: inauguration of the South Mechanical Biological

Treatment Plant (MBT), two new recycling centers, 38km ampliation in the BRT system, 10km expansion of the subway and the beginning of the construction of a new line, increase to 300km of bicycle lanes, 100% of LED technology in street lightning, and the developed of the urban tree master plan. For the period 2015-2020, Buenos Aires committed to reduce 10% of GHG emissions regarding a BAU scenario and 30% until 2030 (as it was stated in the first PACC). Yet, the 30% target now appears conditioned to external factors, which make it more difficult to tackle its advances and reduces the level of climate commitment of Buenos Aires.

The two climate policies responses from Buenos Aires are coherent once they configurate the same strategy that so far was broken into two phases in order to analyze its progress and to recalculate its goals. This approach seemed cohesive and may help the implementation process once there are no constantly major shifts for the bureaucracies to adapt and to renegotiate its terms. At the same time, it can also hold innovations back if it is not open to new developments that could be used, although this can be mitigate with the five years periodicity revision.

Therefore, we concluded that both the first and the second phase of PACC had a positive local framing, linking climate policies with others local issues and demonstrating possible socio-economic and environment benefits to its citizens. Regarding local capacity, even though the process of improving personnel capacity is a continuous one, we observed that Buenos Aires appears to have the technical, human and scientific resources necessary to implement the PACCs. Both PACCs presents every policy action to be taken in order to meet the GHG reduction targets. The PACC 2010-2015 presented most of the actions with estimated costs, but for the second phase there were no indicative of how much it would be necessary to invest in each action nor the origin of that capital. Also, in the first PACC, the adaptation actions do include its costs, but none presents deadlines to be executed, the second PACC does not have many adaptation proposals and also lacks deadlines for each action, having only the global 2020 target as a time limit.

APrA has the administrative authority to coordinate the climate action plan implementation, although it does faces challenges in harmonizing all ministries actions, what our interviews demonstrated is that so far APrA has been successful in coordinating them and has expanded its resources, having inaugurated it's on sustainable office and hired more personnel, for example. For the first PACC, the political actors and factors were not all positive for its implementation, even though mayor Macri was recognized as a climate entrepreneur, he faced opposition from the national government and a few sectors in the municipal Legislative, that hold

some mobility projects back, for example. Differently, for the second phase, starting in 2016, the political actors and factors are positive, once now Macri occupies the Argentina presidency and Buenos Aires mayor is his former Chief of Executive Cabinet and both share the perspective that climate change is a strategic local agenda.

Governance Responses

The first step in the direction to build a climate action plan (policy response) was given in March 2009, the decree 137/09 created the Climate Change Interministerial Team and the External Advisory Board. The Team was designated to design the climate action plan to be presented in the same year at COP15 and the Advisory Board was responsible to provide technical and scientific information to support the plan, both were coordinated by APrA. Therefore, the governance response came previous to the policy response, which indicates an interesting arrangement and one that contributed latter to the implementation of the plan, once the ones that built it were also the ones that had to implemented it and monitored its activities. The Team met from March to November 2009 more than thirty times, gathering representatives from the following ministries: environment and public space; economic development; culture, urban development; justice and social security; health; and, education (GOBIERNO DE LA CIUDAD DE BUENOS AIRES, 2015).

Buenos Aires started together working with ICLEI more intensively when it joined the CCP campaign, but it is with its C40 affiliation that transnational networks are perceived as global governance mechanism capable of fostering climate responses. Although it is possible to find different data relating to when Buenos Aires became part of C40, we will work with the one provided by the city, and that is 2009. Within C40 Buenos Aires enjoyed its support for training its civil servants to perform GHG inventories using the GPC methodology and other cooperation initiatives. The C40 Latin America Forum was the high point of Buenos Aires engagement with the network and the opportunity for the city to expose its climate initiatives internationally, gaining international attention on the news.

In 2016, mayor Larreta signed Buenos Aires to be one of 100 Resilient Cities, the Rockefeller foundation initiative committed to developed a resilience strategy, which is still under construction. Nevertheless, this is an addition to the international projection of Buenos Aires as

well as it constitutes a governance response once it interconnects the city government to others also working in cooperation to foster resilience. And as it is part of the initiative, the Rockefeller Foundation designated a specialist to assist Buenos Aires to develop and implement its resilience strategy, adding more experience to the local government human resources.

6.5 Crossing urban international relations and climate responses

We can establish 2009 as the year that Buenos Aires officially entered in the global climate change dialogue and much of this is a result of the election of Mauricio Macri. Him, like many of the mayors investigated here, is an ambitious politician, but he is also someone that had some sensibility to climate change issues. These personal features combined with the necessity to overcome his national boundaries, because Argentina was governed by the opposition, made the search for the international an obvious one. In addition, the international insertion of the city had the advantage to project the image of the newly elected mayor, something that could help in his future election plans to run for president – as it happened and he was successful.

In order to enter the dialogue among those prominent cities that were being presented as the new climate leaders, Macri signed up Buenos Aires in C40 in 2009 and hurried up to construct a domestic climate response that could support the city's affiliation to the network. Hence, it can be argued that the first substantial climate response from Buenos Aires, the Climate Change Plan of Action 2030, released in 2009, was also an international response. That is because some elements suggest that it was constructed having the COP15 in mind, as well as the C40 membership. The Interministerial Team and the Advisory Board were created in March 2009 in order to design the plan that was later that year presented at Copenhagen by Macri during a COP side event promoted by C40 to showcase cities as the new climate leaders. That is not to say that the PACC was only prepared to enchant an international audience, but that this was the major push for the municipal government to act, exposing the intense linkage among cities climate response and international city networks.

Interesting, in the second PACC (2015-2020) the Compact of Mayors is mentioned as one of Buenos Aires commitments and moreover, it signalizes that all climate actions implemented were building blocks for a path leading Buenos Aires to climate leadership, "hasta el liderazco climatico" (GOBIERNO DE LA CIUDAD DE BUENOS AIRES, 2015).

Furthermore, the linkages between Buenos Aires and Argentina's international actions and preferences were contradictory in most part of the period we are studying. While Buenos Aires advocated for the need of strong climate actions by cities within the C40, Argentina's Federal Government deployed a rigid interpretation of the CBDR principle within the UNFCCC, arguing that only the developed countries should be responsible for mitigation actions and targets. Moreover, while the City of Buenos Aires pledged to reduce 30% of its GHG in a BAU scenario for 2030, Argentina refused to submit a quantifiable voluntary commitment for the Copenhagen Accord and pledged an unambitious INDC for 2030 (FRANCHINI, 2016b). Additionally, the argentine INDC makes no mention to Buenos Aires efforts on climate policy, following the example of precedent climate documents, like the national communications submitted by Argentina to the UNFCCC.

Being part of C40 means to be considered for international awards that works as positive agenda and place cities on the spotlight. In that sense, Buenos Aires won the 2013 C40 Siemens City Climate Leadership in Mobility, the 2014 Sustainable Transportation Award from ITDP.

In March 2015 Buenos Aires hosted the C40 Latin America Forum and during the event, many Latin American cities (such as Mexico City, São Paulo and Rio de Janeiro) signed the Compact of Mayors and the Clean Bus Declaration, placing Buenos Aires as a city that was able to coordinate the regional players in order to raise climate commitments. Following that year, Buenos Aires was nominated by C40 as one of the top ten cities fighting climate change.

Many projects that were planned in the PACC were totally or partially financed by international organizations. As examples, we can nominate the BRT that received the Clinton Foundation support, the study to assess climate risks was financed by the World Bank, the APrA personnel was trained by C40 and WRI, and so on. As also observed in our other cases, the international had a role not only in the first moment of pushing Buenos Aires to respond to climate change, but also during the implementation phase.

The COPs have been a consolidating a momentum for C40 to showcase its cities climate ambitious, at COP23 (Bonn), Buenos Aires assumed the committed to become carbon neutral by 2050, a pledge that is not specified in any domestic official document, not to say in its climate action plans. After assuming this internationally, the target was communicated to its

Interministerial Team for each ministry to calculate its contribution to hit that objective[70], demonstrating how an external promise can be transformed in a local guideline.

6.6 Speech X reality: responses implementations and its local and international repercussions

Table 15 – CABA GHG emissions 2001-2014

Year	GHG emissions (tCO2eq)	CABA Population	GHG emissions per capita (tCO2eq/inhab)
2001	10,619,165	2,995,397	3.55
2002	10,083,642	3,000,966	3.36
2003	10,705,140	3,006,179	3.56
2004	11,492,857	3,011,694	3.82
2005	11,440,872	3,018,102	3.79
2006	11,298,570	3,025,772	3.73
2007	12,551,729	3,034,161	4.14
2008	12,742,478	3,042,581	4.19
2009	12,296,278	3,050,728	4.03
2010	12,919,019	3,028,481	4.27
2011	12,782,057	3,033,639	4.21
2012	13,434,140	3,038,860	4.42
2013	13,531,293	3,044,076	4.45
2014	12,928,646	3,049,229	4.24

Source: Anuario Estadistico C.A.B.A. Dirección General de Estadisticas y Censos

The GHG emissions trajectory is not the only data that helps us to distinguish the international commitments that mayors embark from their in fact local actions, but it is certainly one useful indicator to begin analyzing climate responses implementation. In the case of Buenos Aires, we were positively surprised to have access to the table above that track GHG emissions and population growth from 2001 to 2014, providing an annually perspective of the climate situation in the Argentina's capital. Still, it is important to explain that the methodology to measure GHG emissions on the first PACC was the one by IPCC and for the inventory to build PACC 2016-2020, it was the GPC. This change required the recalculation of reduction targets for the second phase

[70] < http://www.buenosaires.gob.ar/noticias/se-reunio-nuevamente-el-equipo-interministerial-de-cambio-climatico> Acessed: March 25th 2018.

and the potential of every mitigation policy. Nevertheless, Buenos Aires did advance in the three priority areas of PACC 2010-2015, as exposed ahead.

The first phase of PACC, from 2010-2015, Buenos Aires government published that it had reduced an estimated amount of 450,000 tCO2eq. In the three pillars of PACC 2010-2015, the waste management was the most successful sector in mitigating GHG emissions, much of it was due to the reduction of waste disposition in landfills and installation in 2013 of the North Mechanical Biological Treatment Plan (MBT). Moreover, it could be observed in the city center (Microcentro) the installation of many green containers to collect recycle waste and stations ("Puntos Verdes") that also receives waste from the population to be sent for recycling facilities. In addition, the municipal government invested significantly in communications campaigns to raise awareness that it is important to reduce and recycle waste, the outdoors could be seen everywhere in Buenos Aires, all of them with the slogan "BA Ciudad Verde" (BUENOS AIRES ENVIRONMENTAL PROTECTION AGENCY, 2015).

In reference to the transportation system, Buenos Aires has a Plan of Sustainable Mobility that includes BRT (Bus Rapid Transit), sharing bicycle system and the amplification of the subway lines. Until the end of the first phase of PACC, the city registered 54Km of BRT corridors, 12 new subway stations and 160km of bicycle lanes. Also, in that matter, the municipal government increased the restrictions for parking and for private cars circulation in the city center (Microcentro) with the transformation of 76 blocs to be exclusively for pedestrians. Still regarding the energy sector, 55% of the public lightning was changed to LED technology until 2015, this transformation received the support from the ICLEI LEDS initiative and 100% of traffic lights were substitute for LED ones (GOBIERNO DE LA CIUDAD DE BUENOS AIRES, 2015).

Buenos Aires GHG emissions data was submitted to audition by the private consultant firm Prosustentia and passed by analysis from the members of the City´s Climate Change Advisory Council[71]. The process of submitting the data to an external audit firm is important to make inventories more credible, giving the fact that most cities do not have trained personnel to do this.

Although Buenos Aires is very vulnerable to climate change, adaptation actions do not appear in PACC with the level of priority it needed. Flooding and heat waves are becoming more frequent and intense, for example, the summer of 2013 registry the longest heat wave in the city´s

[7171] Data available at: http://www.compactofmayors.org/cities/buenos-aires/

history and in this year, the city also became responsible for the subway, which increased the fleet feel consumption and subsequently its total GHG emissions, to make things worse power outbreaks were registered due to elevated energy consumption from air-condition usage.

Still regarding adaptation actions, Buenos Aires created a Unified Coordination and Control Center (CCUC) to provide emergency response more rapidly, in combination with a meteorological network that provides in real time information about rain and storms. In addition, the city presented in the PACC one and two, a hydraulic plan to update the drainage system that is from 1940s and a source of many flooding, however it is still under construction. The resilience plan is a demand to be developed because Buenos Aires is part of 100 Resilient Cities and it is still being elaborate. The city has already comply with the first phase, that requires promoting a comprehensive workshop with the multiple local stakeholders to have a pre-diagnosis of the resilience situation and the next phases of writing a resilience plan and implementing it are ongoing (GOBIERNO DE LA CIUDAD DE BUENOS AIRES, 2017).

The policy implementation linkage also indicates a negative connection between the City and the Federal Government. As highlighted in the policy design analysis, cooperation was strongly limited by the lack of climate action at the national state level and the contradiction went further. The Federal Government denied some warranties for loans to the City, which would have been directed to transportation and adaptation measures. In addition, the Federal government systematically denied the projects presented by the city for international financing projects, as it was the case of an international loan for the city to expand its subway system, this particular case gained political discussion among people and the media.

It is important to highlight that in much of the period we have analyzed here (2007-2015), the federal government and the city government were ruled by rival political forces, whose seen each other as enemies and struggle for preeminence in argentine politics. This might be a key factor to understand the negative linkages in climate governance between these two actors. However, while the general elections of late 2015 resulted in the appointment of the President of Argentina (Mauricio Macri) and the Mayor of Buenos Aires (Rodriguez Larreta) that are part of the same political party, cooperation in climate responses did not improve significantly. Probably, more time is needed, since a cooperative relationship may not translate into concrete results immediately. Moreover, if Argentina continuous to face economic crises, climate change actions will lose

relevance in this scenario and we could observe some pushbacks in the national and in the local government.

The green plan has been widely promoted within the city, among its constituencies, but it has also reach international audiences, the slogan “ciudad verde” can be seen in almost every municipal building as well as in strategic tourist sights. Under this motto, it was created many “puntos verde” which are stations that collects waste for recycling and often times they give away reusable shopping bags marked with the saying “ciudad verde”. The social media of the municipal government also publishes constantly about the climate actions taken by the city and how people can help by acquiring more sustainable habits. This is very interesting as a strategy to create awareness among people and try to change behaviors, like opting for public transportation and separating waste for recycling. We notice similar communication strategy in Mexico City and in some extend in Rio de Janeiro during Paes administration, but not in São Paulo.

Finally, many of the achievements that Buenos Aires was able to reach with the implementation of its climate responses is related to the many roles played by APrA, as it is the leading actor in the design of the PACCs, in the development of the inventories and in the coordination of the climate policies implementation. And this is much because APrA is an autarchy and enjoys more funding and the possibility to hire very specialized personnel, being less bureaucratic in its process, facilitating the implementation of a complex policy like climate change is. This unique institutional setting for a municipal government was exclusively for the Buenos Aires case and should be explored by institutional public policies analysis once it may provide a positive experiment for other cities.

	CABA Climate responses/Implementation factors (Ryan, 2015)	**Local Framing**	**Local Government Capacity**	**Political actors and factors**
Legal Response	Climate law n. 3,871	+-	-	+
Policy Responses	PACC 2010-2015	+	+-	+-
	PACC 2016-2020	+	+-	+

6.7 Chapter final remarks

Buenos Aires entered the global climate change dialogue in 2009 and within eight months the city was able establish an Interministerial Team and an Advisor Board to design a climate action plan while it also became one of the global cities affiliated with C40. The climate action plan ascertaining the goal to reduce 30% of GHG emissions until 2030 served as the covered letter for mayor Macri to present at COP15 in Copenhagen, promoting his city as a climate committed one, as well as himself, demonstrating alignment with the global trend. Although all of this took place in less than a year, it seemed that Buenos Aires government was prepared for the following challenges, because it was able to negotiate and pass a climate law in 2011 and it began the PACC implementation process, that was partially successful. Buenos Aires was able to hold its GHG emissions while also offering co-benefits on the three pillars of its PACC: waste management, sustainable transportation and increase in energy efficiency.

However, the first period of PACC did not established periodic reduction targets, only the final one by 2030 and the emissions trajectory until this point indicate that it will be very difficult for Buenos Aires to reach its 30% reduction objective, especially if the economic and political crisis persisted in the following years. Nevertheless, the city government seemed to be committed with the PACC implementation and the APrA had a key role in supporting the agenda and moving it forward. The change in power from Macri to Larreta happened without any major shifts, and represented a continuity in the climate vision for the city. Therefore, we can expect to see the continuation of the climate actions, both domestically and internationally. In fact, mayor Larreta has demonstrated similar political ambition and willingness to make both climate change and international relations a priority for Buenos Aires, but we need to observe closely how that will unfolds.

CHAPTER 7 CROSSING IR WITH LOCAL CLIMATE RESPONSES IN LATIN AMERICA – WHAT ARE THE RESULTS?

7.1 Introduction

After the exposition of all of our four cases – São Paulo, Rio de Janeiro, Mexico City and Buenos Aires – the aim of this chapter is to compare the results of their climate responses combined with their international relations agendas in order to understand similarities and disparities of the phenomenon. Moreover, the chapter aims to assess the role that each city may have played in global climate governance from 2005 to 2017, questioning the idea that all of them are climate frontrunners and climate leaders.

7.2 Climate Responses

As already exposed in each chapter, all four cities provided some kind of response to climate change, most of them had similar approaches. The four cities approved climate change laws formalizing their commitment to address climate change, they also presented climate policies that varied from loose policies like São Paulo and Rio de Janeiro to the development of mitigation and adaptation plans like Mexico City and Buenos Aires. All of them created local governance arrangements to manage the climate initiatives among its other municipal departments and most of all, they all searched in international relations the arena to showcase their climate initiatives and the environment to establish partnerships. The fact that they are all part of ICLEI and C40 is significant and impacted in the design, implementation and governance of their climate responses. Although our cases presented similar features, if we had to choose only one to explain why and how they respond to climate change it would be their association with transnational climate networks, particular C40.

A common practice that we identified in our cases, is that sometimes they assumed climate commitments first at the international level and only after doing that they would discuss the pledges with their local institutions and actors, demonstrating an overvaluation of the international sphere, one that requires from our cities commitments and promises. That happened with Buenos Aires

climate action plan presented at Copenhagen, with the signatory of the Mexico City Pact by all of our cities that committed to report to Carbonn, with São Paulo Guidelines at the 2011 C40 Summit, the announcement of the creation of a resilience office by CDMX at 100 RC headquarters in New York, and so on. Many of these pledges assumed internationally had ground for their implementation, but others no. This is why we focused on the climate responses at the city level, because we presume that the municipal government needs at least to provide a feedback to its constituencies (once they are all democracies) while international promises may remain as promises.

Although SP was the first major Latin America city to approve a climate law in 2009, CDMX was the first one to published a climate strategy and these two different responses are connected to their political and legal systems. Brazil is a highly jurisdictional state that tends to foster public policy throughout laws and this may explain the process of creating a law before any plan or policy, even though Rio de Janeiro had chosen another path. Then, the idea that the law was more of a response to the international community and a strategy to foster São Paulo's global projection could also explains why a law was proposed. A law provides more possibilities for public exposition than a public policy and if the intention was to project São Paulo internationally, the choice for a law was a good one. In addition, what we also notice is that the law had little to almost zero political costs, so it did not face any major obstacles to its approval. The other element was the influence of ICLEI and its CCP campaign that promoted the creation of climate laws worldwide and almost with the same standard (BETSILL; BULKELEY, 2004), influencing São Paulo to go for a law.

On the other hand, Mexico City published a climate strategy, setting its mitigation and adaptation goals before sending a law proposal to its legislative power. The Climate Action Plan (PACCM) began operating three years before the approval of the climate law. What this indicates? It can indicate a less jurisdictional state when compared with the Brazilian, a conflictual legislative process, but also a serious commitment to foster mitigation and adaptation actions. That is not to say that CDMX was not targeting an international audience, but it was doing by a different approach, since its perception of the international community was different from Brazil and in some extent as from Argentina as well. The fact that Mexico is part of OECD may have influenced CDMX international strategy, once it had already participated in projects coordinated by OECD and the World Bank, institutions that are much more driven by results than by promises written in

the format of laws and decrees. The process in Buenos Aires was centered in the mayor's willingness to have some local climate action to showcase at COP15, initially being an explicitly international relations politics. But that does not mean that Buenos Aires did not built a substantial plan nor that it did not implemented them, but it states clear the international intentions of the mayor.

In this dissertation, we did not recognize GHG inventories as climate responses because we believe they serve as substrate to support any climate response and producing an inventory does not configure as a commitment to address climate change. However, they are crucial to a responsible climate response, without an accurate and precise inventory no city can respond to climate chance properly. Therefore, when São Paulo delay the production of its inventory it sends a negative sign regarding its climate committed. In the same way, when Mexico City and Buenos Aires produce inventories regularly and make them not only public, but also submit them to external evaluation, it denotes a step forward in their climate commitment.

Still regarding the São Paulo climate law, it is very broad and does not states the responsibilities to each institution, making it harder to follow its implementation process and to hold the ones responsible accountable. Rio de Janeiro and Buenos Aires climate law are also very broad and does not specifies responsibilities. As opposite, the climate law from Mexico City leaves no space for doubts of which institution is responsible for each element of it, facilitating the observation of the implementation process and improving its accountability.

Worth noticing that by the Brazilian legal traditions, a public policy is established via the creation of a legal instrument. Therefore, what we observed for São Paulo and Rio de Janeiro is that their climate law contends GHG emission reduction targets, making their biding, even before a study was conducted to know if they were feasible. What this generates are sound climate laws, that on paper are ambitious and works as good international credential for cities wanting to project themselves internationally as climate committed leaders. Nevertheless, what we observe years later after the approval of these climate laws is that those GHG emissions target were not met. Mexico City and Buenos Aires on the other hand, approved broaden climate laws, creating the institutional conditions to the design of climate action plans based on inventories and local features, facilitating a more favorable situation for its implementation once they were well-planned and not a strictly result of the willingness to showcase "something" in order to not be left out of the international debate.

The air pollution crises that Mexico City faced since the 1980s had a significant impact on CDMX climate responses, and we did not observe this on the other cases as critical as there. Although São Paulo also presented high levels of contamination at the time, the policies to address air contamination were concentrated at the state level, via CETESB. Because Mexico City had to deal with air contamination, when the demand to respond to climate change came, they already had a scientific community – i.e. Mario Molina Center, UNAM atmospheric studies – researching atmospheric problems and an institutional structure at the Environmental Secretary to deal with it. Therefore, progressing from air pollution to GHG emissions was not as difficult as it was for other cities, like Rio de Janeiro and Buenos Aires.

Therefore, when São Paulo was willing to respond to climate change, creating its climate law, it did not had the resources necessary to act. The Environmental Secretary did not have – and still does not – a specific department to address climate change, resulting in the lack of financial, human and material resources to put the climate policy into practice. This means that the city did not have the capacity to perform its own GHG inventories and have to publish an open call to contract private actors to do it, and this kind of processes in Brazil are usually time-consuming and require specific financial provisions, that also may take longer than expected and can be cut without previous notice. Obviously, this resulted in only two GHG inventories in São Paulo, missing the five-year time in between every inventory and limiting the capacity to respond properly to climate change. For Buenos Aires, the APrA and for Rio de Janeiro, the IPP and the COPPEE/UFRJ institute on the Federal University were key in order to produce all the studies and to provide scientific information to support local climate policies.

While there is the preoccupation in CDMX to connect the climate plans, since its first Climate Strategy, to other local policies and specially with its "Programa general de desarrollo del DF", and in Rio de Janeiro to its strategy planning and in Buenos Aires to its government plan, the same does not occurs in São Paulo. The SP climate law is not connected with the city vision nor with its "Plano diretor". At CDMX, Rio and CABA we observed the intention to local frame the climate responses while in SP they seemed completely disconnected from the other city initiatives and administrative departments, excepted from the International Relations strategy. For the production of CDMX first climate program, the PACCM 2008-2012, the city promoted public civil society consultations and organized a workshop to debate them, secretaries beyond the Environment were also consulted during the process, which may have facilitated the

implementation process, since they were mobilized and were aware of the climate actions and their goals. Demonstrating in our analytical framework the concern to have a local framing but also political factors and actors aligned.

From all four cases, Rio de Janeiro was the one that dedicated more emphasis to adaptation responses, this could be explained by its high vulnerability to climate risks, but also to opportunities like the one offered by 100 Resilient Cities. The other cases were focused largely in reducing GHG emissions and promoting their mitigation initiatives while Rio de Janeiro focused in the resilience aspect of climate responses.

The local framing was also political maneuver by Rio de Janeiro. While in São Paulo, at least during Haddad administration, mobility policies that could have been framed as climate ones, but were not. In Rio de Janeiro, under Paes administration, all sectorial policies possible were framed as climate ones, aligning the policies choices to its environmentally friendly discourse. Interesting, both São Paulo and Rio de Janeiro climate programs were launched just before or during an international event, suggesting that those climate responses were targeting an international audience and were less focused in truly implementing change. In the case of Rio de Janeiro, the Low Carbon City Development Program, that here we considered as a climate policy from Rio, was designed in partnership with the World Bank and released during Rio+20. An additional indicator that the program released by Rio can be characterized as an international relations response is that it was only published in English, when few people in the municipal administration and the overall population of Rio understand the idiom. Furthermore, it was never implemented.

When compared to Mexico City Climate Action Plans (PACCM 2008-2012 and 2014-2020) and to Buenos Aires PACC 2009 and PACC 2016, the São Paulo "Guidelines" and Rio de Janeiro climate plans sound more like a letter of intentions, once they lack clear indicators to evaluate mitigation and adaptation goals, human and financial resources provisions and a monitoring system. This expose the level of climate commitment of each city, once without an objective plan and program any policy is hardly implemented.

For all of our cases, the coordination role of the climate policy is left to a commission that gathers many municipal secretaries and some external actors. For CDMX, the legislative power is also represented in its commission, as well as the judiciary power, but differently from São Paulo, the International Relations secretary is not formally present.

Mexico City in its first climate strategy highlights the possibilities of the MRV projects, this was also present in Rio de Janeiro and Buenos Aires, but with the decline of the MRV market, they lost importance. São Paulo also seemed it was relying on those mechanisms when it proposed its GHG targets reduction, having in mind the projects from the waste management sector, however, because of double counting, it could not account for the city's emissions reduction.

It is interesting to highlight that almost all the material published by the cities regarding climate change were not only issued in their official language (Portuguese or Spanish), but they were also available in English. This configurates as another evidence that the climate responses were configurated more as an international policy than any other local policy, since traditionally, the local policies are not translated into other languages. Therefore, we can say they were not only providing a response to local community but they were also – or mostly – targeting the international community, an audience that cannot read their native language.

Table 16 – São Paulo, Rio de Janeiro, Mexico City and Buenos Aires Climate Responses

Cases/Responses	Legal Response	Policy Response	Governance Response
São Paulo	Law 14,933 (June 5th 2009) – Climate Change Law established São Paulo Climate change policy	Climate Change Policy (PMMC); Guidelines for the action plan of the city of São Paulo for mitigation and adaptation to climate change (2011)	Local: Climate Change and Sustainable Ecoeconomy Municipal Committee (created in 2005, operationalized in 2009); Global: ICLEI and C40
Rio de Janeiro	Decree n. 27,595 (Feb 14th 2007) Protocol of Intentions to mitigate global warming effects; Climate Law 5,248 (1/27/2011)	Plan of action to reduce emissions of greenhouse gases in the city of Rio de Janeiro; Low Carbon City Development Program (June 19th, Rio+20); Resilience Strategy of the City of Rio de Janeiro (2016); Climate Change Adaptation Strategy for the City of Rio de Janeiro (2016)	Local: Carioca Climate Change and Sustainable Development Forum (Decree n. 31.415); Global: ICLEI, C40, 100RC

México City	Mitigation and adaptation to Climate Change and Sustainable Development for DF Law (6/16/2011)	Local Climate Strategy 2004; 1º Climate Action Program PACCM 2008-2012; 2014-2020 Local Climate Action Strategy (2014); 2º PACCM 2014-2020; CDMX Vision on Climate Change to 2025 (2015); CDMX Resilience Strategy (2016)	Local: CDMX Inter-Institutional Commission on Climate Change; Global: ICLEI, C40, 100RC
Buenos Aires	Climate Law n. 3,871 (09/01/2011)	Climate Change Action Plan 2010-2030 (PACC 2009); Climate Change Action Plan 2016-2020 (PACC 2015)	Local: Climate Change Interministerial Team Global: ICLEI, C40, 100RC

Source: own elaboration based on documents cited along the case study chapters

7.3 Climate Commitment or lost in implementation?

After looking into the cities' climate responses and their implementation we analyze their climate commitments. After all, how committed were São Paulo, Rio de Janeiro, Mexico City and Buenos Aires in mitigating and adapting to climate change from 2005 to 2017? If they were able to implement climate policies, did those policies had the potential to foster changes towards decarbonization and a sustainable city? And if they failed in the implementation process what affected this result and what this indicate regarding the level of their commitments?

As established in chapter II, we understand that a city is really climate committed when it is able to reduce GHG emissions and when it demonstrates willingness to implement its climate policies, balanced by Ryan's framework regarding local framing, local government capacity and political actors and factors. Because we are looking into a time frame that encompass more than one administration within the same city we balanced our analysis to meet that as well. Therefore, in the case of São Paulo, the city was not able to comply with its climate law GHG reduction targets and although it demonstrated some willingness to implement climate actions under Kassab's administration, the city failed to do so and was followed by administrations that had even lower sensibility to the matter. Therefore, we conclude that São Paulo was not climate committed for the

period analyzed, even though it projected itself internationally as a climate leader for approving the first local climate law in Latin America.

The case of Rio is very particular. The city based all of its international relations politics in the vision of an environmentally friendly city, the one that hosted Rio 92 and Rio+20. Furthermore, the city began to deploy climate initiatives that included the technical training of its civil servants to perform climate actions, including GHG inventories. Moreover, under Paes administration the city had a very active role in global climate governance, as the mayor assumed the C40 Chair position from 2014-2016. In the local context of climate actions, the city government had the preoccupation to institutionalized several administrative positions dealing with climate change, as it was the case of the resilience office, and to officialized all plans for the following years. However, the city's GHG emission had a massive increase and many of the plans were not put into practice, like the Low Carbon Project that planned the establishing of a monitoring system. Furthermore, the government that took office in 2017 interrupted practically every environmental actions of the city, including the climate ones. Therefore, we do not consider Rio de Janeiro as a climate committed city, although it had demonstrated external signs that it was. This is why our analytical framework is based on the city level of implementation and because it is so important to tackle a citie's climate responses. If one would only observe the international promises of Rio de Janeiro it may have been misleading to think that the city was a climate champion and a true leader in global climate governance, when it was not.

For São Paulo, even in the years of a more positive perspective on climate issues, during Eduardo Jorge mandate as the environmental Secretary, the International Relations strategy perceived the climate agenda as one more possibility to expand its global presence. While whereas the city of Rio de Janeiro closely linked its international projection with an environmental perspective. For Rio, the climate agenda was not only one more opportunity to project itself abroad, it was the decisive one and the one that guided all the others.

The case of Mexico City is here as the most positive one. The city designed and implemented its climate change plans – the PACCM 2020 is still ongoing but already signalized positive results – successfully, it was able to reduce GHG emissions (and its results were confirmed by the Mario Molina Center) and implemented almost every action planned. During Ebrard and Mancera administration CDMX progressively increased its international projection and most important, it did it by promoting an image of a city that was able to overcome its air pollution

problems and emerged as a climate leader. Therefore, we do recognize CDMX as climate committed city and the conditions set by the city government suggests that this position will endure, including if we consider that the new elected mayor, Claudia Sheinbaum, to take office on December 2018, is the former CDMX Environment Secretary, and the one responsible to design many of CDMX early climate responses.

Buenos Aires is here regarded as an intermediated case, between non-committed (São Paulo and Rio de Janeiro) and committed (Mexico City). After producing its first climate action plan stimulated by the mayor's participation at COP 15, the city developed technical capacity and mobilized political actors to implement its climate policies proposals. Under Macri's administration, Buenos Aires deployed environmental policies combined with an active international relations agenda that reinforced its opposition to the national government. It was able to comply with its first PACC goals and reduced GHG emissions, although it is not clear if this trajectory will continue in order to reach its 30% reduction target until 2030. After Macri assumed as Argentina's president, his former ministry was elected for the municipal government. Mayor Larreta gave continuity to the climate and the international politics of his predecessor, now counting with the support of the federal government to implement policies that requires cooperation among powers to succeed. Therefore, we considered Buenos Aires as being a partially climate committed city.

Among all of our cases, the positive and the negative ones, it was referred that implementing climate policies in such complex megacities is a great challenge. The obstacles that all interviewees listed were: institutional coordination and cooperation among the municipal secretaries, metropolitan governance and political leaders not sensible to climate change and therefore not willing to push the agenda ahead.

As highlighted, institutional coordination among different secretaries within the municipal administration appear to be a challenge in implementing climate actions in all of our cases. The transversally character of climate change may lead to the lack of coordination that in the worst-case scenario, like the São Paulo indicated, may lead to inaction.

The literature has presented different explanations to why cities fail to implement efficient climate policies. As we demonstrated in this study, we suggest it is a result of multiple factors, but most of them are related to local features and context, in order to try to offer a more tangible answer, we choose to work with Ryan (2015) framework, emphasizing these three dimensions: a) local

framing; b) local government capacity; and c) political actors and factors. We did so due to the features of our Latin American cases, as explained in chapter 2.

Many variables can affect a policy implementation, but we can highlight the most common mentioned by the literature. According to an OECD report on cities and climate change, the following can negative affect climate implementation by cities: 1) institutional blockage within local administrations; insufficient capacity and expertise; 3) lack of appropriate funding; 4) lack of devolved authority or appropriate responsibility; 5) lack of support from central governments (CORFEE-MORLOT et al., 2009, p.42). We found all of these acting on our cases, as they are also related to the three dimensions on Ryan's framework.

Nevertheless, we can learn from other studies focused in Latin America that also highlights the insufficiency of institutional development (local government capacity), Romero-Lankao et al. (2015) researching Mexico City, Buenos and Santiago (Chile) came to the conclusion that "These examples of disconnect between planning and consistent execution highlight failures in institutional response capacity in our study cities." (ROMERO-LANKAO et al., 2015, p. 189).

Finally, even for the climate committed cities, how far can a city networks go in fostering decarbonization in its cities? Some studies stress that there is gap in those efforts, "The C40 claims that its member cities will lead the change that is necessary to address climate change (C40, 2016). Our findings suggest that C40 and its member cities currently promote measures and approaches that support incremental or even reformistic change, but very rarely transformational." (HEIKKINEN; YLÄ-ANTTILA; JUHOLA, 2018, p.9). Therefore, although transnational networks can have a positive effective in cities climate agenda, as our cases demonstrates, they have obvious limitations and some black holes that need to be further investigated, as suggested by an observation to the Johannesburg adaptation plan:

> It is likely that the cities and the C40 aim to show themselves in a positive light and thus, the strategies promise more than will actually be implemented (Van der Heijden, 2017). […] To give just one example, the Johannesburg adaptation action plan, which received a nomination in a competition organised by C40, contains a disclaimer stating that all views expressed in the plan are those of the authors (consultants hired by the city) and may not reflect the views of the city. This raises some doubts about how eager the city will be in implementing the strategy, and also questions the role that networks play in the implementation, if any. (HEIKKINEN; YLÄ-ANTTILA; JUHOLA, 2018).

Being climate change such a complex issue and one that requires very specific knowledge, it is interesting to note that Mexico City, Rio de Janeiro and Buenos Aires associated themselves

with local universities and research institutes in order to have a better assessment of the climate change research agenda and to improve the accuracy of its politics, including the production of its inventories. In Mexico City it meant the extension of the partnership with UNAM, with the establishment of the Climate Change Virtual Center of Mexico City[72] that began to produce systematic information regarding GHG emissions and climate vulnerability and risks. In Rio de Janeiro, the partnership with COPPE/UFRJ guarantee the quality and the periodicity of the inventories and also contributed with improvements in policy design. Rio also had the technical support of the IPP, that cooperated with NASA and the UCCRN (Urban Climate Change Research Network, based at Columbia University). Buenos Aires invited local specialists to contribute with technical knowledge in the Consejo Asesor Externo and also provided training to its APrA personnel to be able to perform inventories. The only city that we did not find a systematic partnership, more than invitations to talk, with the academic community was São Paulo, even though the city hosts the best University in Brazil (USP), gathering high profile researchers. We can suggest that this may have negatively affected the São Paulo outcomes, or at least limited its possibilities.

Finally, being part of transnational cities networks like C40 made possible for these cities to acquire resources that they would not otherwise and this alone may justify their affiliation, as noted "The opportunities that networks provide – for accessing resources, sharing knowledge, exhibiting political leadership, for example – that are critical in providing the incentives for municipalities to join and in sustaining networks over time." (BULKELEY; BETSILL, 2013, p.143).

The challenge of cities networks to have durable and transformative impact in its cities realities is linked to each city local features involving financial, social, political and governance challenges, as demonstrated:

> Municipal networks offer a range of opportunities through which learning and knowledge exchange takes place, from the development of best practice case studies to commissioned research, informal peer-to-peer exchange and capacity-building. Many of these opportunities are grounded on the personal exchanges and collaborations fostered by network events. Yet, for municipal staff and other local stakeholders involved, issues of training, employment patterns and other work activities impose limitations on their ability to incorporate the lessons learned in their day-to-day work (Howlett and Joshi-Koop, 2011). (LUQUE-AYALA; MARVIN; BULKELEY, 2018, p. 28)

[72] < http://www.cvcccm-atmosfera.unam.mx/somos.php> Accessed: August 30th 2015.

7.4 Are Latin American global cities climate leaders?

All of our four cases presented themselves as climate leaders to a greater or lesser extent. They project this idea together with their international relations policies, the climate agenda opened the possibility for them to increase their international profile by associating with global players, constituting powerful transnational networks, like C40. However, that does not mean they are "climate leaders". As already explained, we connect the possibilities of a city to support a leadership position only if it is truly committed, implementing its climate plans and following a decreasing GHG emissions trajectory.

With that in mind, we can already exclude the possibilities of São Paulo and Rio de Janeiro to be considered as climate leaders, although their governments continue to propagate that discourse. In this logic, Mexico City can be considered a climate leader once it was identified as being climate committed. Because our analysis is limited to the period we are analyzing and the perception of leadership is temporarily experienced (as defended in chapter 2), we can suggest that Mexico City under Ebrard administration played a leadership role in the occasion of the released of the Mexico City Pact in 2010 and then repeated it during C40 Summit in 2016, under mayor Mancera government. Buenos Aires, although have demonstrated to be partially committed with its climate actions, did not experienced a moment of leadership acclamation and it is uncertain if the city will play that part. Therefore, we signalized that being a city global climate leader is a perennial situation and limited to a city network perspective.

In Latin America, particularly in Brazil, México and Argentina, cities were pioneers in responding to the challenges posed by climate change at the local level. That is evident when Mexico City, São Paulo and Buenos Aires approved climate laws and climate action plans before their national government did. However, the fact that they were the first government institutions to do that does not mean that they suddenly become climate leaders and central players in global climate governance, as some discourses affirmed. It only implies that they entered the dialogues and have the potential to project themselves internationally, but any extrapolation from there is more of a discursive instrument than a recognition based on empirical evidence.

Finally, if we locate Latin American cities within the second phase of urban climate change response, suggested by Bulkeley and Betsill (2013), we can understand their actions as

more international than local. This means that the grand majority of climate responses provided by Mexico City, São Paulo, and Buenos Aires may be explained by a spectrum of motives, having international engagement a central role. In sum, the climate politics of these cities are probably more international relations politics than climate politics, and this conclusion can be done by observing their implementations and impacts.

While the international relations politics was essential in fostering climate responses and assuring their continuity in Mexico City, São Paulo and Rio de Janeiro, we notice that for the Buenos Aires case this feature is acquiring more projection recently. It was, obviously, present since the beginning, but Buenos Aires did not explored it so intensively as the other cities did, this may be a result of the lack of tradition of its international department, but also a result of the less internationalization of its own country. The active foreign policy of Brazil and Mexico when compared with Argentina may have influenced in its cities international relations, creating more or less opportunities for international engagement. During Macri's years as mayor, it was clear the intention to present Buenos Aires detached from the Federal government internationally and domestically, while on the other cases, the opposition was not so confrontational. The initiative to create a climate action plan to be personally presented at COP 15 by Macri had more of a confrontational position in relation to its national government than our other cases. The idea was to present a Buenos Aires different from Argentina, a city that was engaged in global commitments while its federal government was reluctant to assume any mitigation efforts. A city connected to the developed countries, the richest cities and modern trends, while Argentina continuous to sustain an anachronic view of global governance based on the battle between the developed and the developing world (VIOLA; FRANCHINI; RIBEIRO, 2013).

Regarding leadership it needs to be stressed, locally and internationally, that it refers to a meaning that changes across time. What it meant to be a city leader in the beginning of the movement is no longer the valid when the process advances. Therefore, in order to remain relevant in the international dynamics, cities need to adapt and evolve together with the perception of the major players and our research found that only some of our cases realized that. São Paulo stayed trapped in its discourse of being the first major city in Latin America to approve a climate law without making any significant progress in mitigating or adapting to climate change and although this was enough until sometime around 2012, it was no longer acceptable after the beginning of the reporting platforms. And this perception regarding leaderships matches with the period of

expansion in the number of cities members to C40, making it more difficult to tackle everyone's progress.

Furthermore, there is no process of "naming and shaming", nor any punishment – at least until this point – for those cities that do not enforce their climate commitments. We did not find any instruction dealing with the possibility of a city to be expelled from C40, which reflects the non-confrontational dynamics of international organization. Nonetheless, as time goes by since its launch in 2005, the discrepancies among C40 cities becomes more evident and the reporting platforms evidence that. There is a transparency tool that provides directly information about the progress of the climate commitments, exposing the ones that are ahead in this process and the ones that are stagnated or are falling behind, it just requires a close observation to figure it out which cities are moving forward and which are stagnated. This is why we argue for case studies research instead of large n analyses that deals with aggregate data, in order to observe the nuances that not every city is part of this climate movement it is needed to investigate them more closely.

Consequently, the reporting platforms – particular the CDP and the Carbonn – made evident the disparities among the cities claiming to be doing something to address climate change. Inside the charter of networks, claimed by ICLEI and C40, there is an idea of horizontal relationship among its members, but the reality is that only a few of the cities part of ICLEI and C40 can really claim to be "leaders" in this process, generating an inescapable hierarchization among its members and its processes.

It can be read in C40 website "Cities get the job done", but as our study shows, this affirmation needs to be qualified, maybe some cities are getting the job done, but definitely not all cities. And this needs to be clarify, in order to break with this idea and to push the cities forward. It is understandable that as a network, C40 needs to promote itself as a unified bloc, but what we are arguing here is that this creates illusions that may lead to inaction and not foster transformative change in those cities.

To have an idea of the status of C40 cities, in June 2018, the network had 96 cities affiliated, and had registered on its website that only 54 had presented GHG inventories and 34 have completed all phases (commitment, inventory, target and plan) of the Compact of Mayors. Recently, the C40 webpage that had all the affiliated cities listed published a new category: "temporarily inactive", with the following cities enumerated: Bangkok, Cairo, Caracas, Changwon, Delhi NCT, Heidelberg, Moscow, Mumbai, and Nairobi. Because this was checked only during

the final writing process, we were not able to find answers to what "temporarily inactive" means, why these cities are now listed in this category nor if this was a request made by the cities or a consequence for their actions and which criteria were established to determine which cities falls into this category[73].

The Mexico City Pact was signed by all of our cities and it established a reporting platform supported by ICLEI, the Carbonn. It is around that period that we observed the beginning of change in the dynamics of global climate governance, a shift from discursive commitments to reporting results and this means exposing the state of climate affairs, unavoidable leading to a comparison among cities that made possible to ranked those more committed and those that were relying their international projection in their discourses. In that sense, it brings Mexico City a step forward once the city was the leader in this movement when mayor Ebrard and its environment secretary, Martha Delgado, proposed the reporting agenda for the World Mayors Summit on Climate Change, because CDMX had already the expertise and was starting to see results from PACCM that could be showcase to the global community via Carbonn. Meanwhile, the situation was quite different for São Paulo, Rio de Janeiro and Buenos Aires. Nevertheless, they all embarked in the proposal and signed the Mexico City Pact committing to report their climate actions publicly.

Many of the mayors leading our case studies, had the ambition to ascend to higher political levels and this was true for other C40 cities as well and the network provided a good platform to showcase their political ability and their names nationally and internationally. Macri, Ebrard, Mancera, Paes, Kassab at some point demonstrated interest in running for their country's presidency. Finally, only Macri run and became Argentina's President. Haddad is now running for Brazil's presidency, but we still do not have the final results, yet his candidacy is a result of the impediment of former president Lula to run, so we do not grasp his candidacy in the same way as Macri. This is interesting in a way that this personal ambitious may have helped fostering climate responses and their implementation, as one of our interviewees said: "This ambitious was good because made them to act. The President at COPs did not have this ambitious" (Martha Delgado, 2016, 1h2min).

Observing this reality some (PJEVOVIC, 2017) may argue that climate responses from cities are a mere demonstration of self-interest, a platform that ambitious mayors – and it seems

[73] https://www.c40.org/cities Accessed on: June 18th 2018.

that they all are – seek in order to promote themselves nationally and internationally. What our study demonstrate is that yes, this dimension is present in our cases, the mayors that offered more climate responses during their administrations – Ebrard, Mancera, Kassab, Paes and Macri – certainly were interested in promoting their public persona, nevertheless, this is only one part of the picture. Because they generated responses that range from legal instruments, to public policies passing by local and global governance arrangements, they overcome the mere symbology and they did produce actual results. The outcomes generated by cities climate responses may not be the desirable by some, nor the ones needed to mitigate climate change globally or even to protect the most vulnerable population to climate hazards, but that does not mean that some change have not been achieved.

This perspective is even more crucial for Latin America, where historically public policies advanced in a very slow pace. For many cities, including the ones studied here, it would be very difficult to see the development of an inventory without external pressure and considering that their national governments were not pushing for this, it was the transnational city networks that introduced this agenda into the municipal government. We consider that a positive result and one that was possible because of the international relations policies of those cities, facilitated by their global feature.

The improvement in the technical qualification of these cities human resources along the period analyzed is considerable and is a positive result that cannot be ignored, with the exception of São Paulo, all of our other cities were favored with technical training provided by C40, ICLEI, the World Bank, WRI, the Rockefeller Foundation and others. This is a gain that delivers conditions for the minimum maintenance of a climate policy throughout time and administrations. The recent period of the Rio de Janeiro illustrates this very well: although the political decision of the executive to downgrade the climate agenda, it is much harder to be done because there are personnel committed with its work and well trained to perform it. Conclusively, we would point that the creation of institutions, represented by legal instruments and bureaucratic instances, combined with the training of civil servants, is probably one of the main contributions of city networks to foster sustainable climate change responses in cities that still are in an insufficient level of development, like the global cities of Latin America.

Needless to say that these results can only be reached by an analytical framework that is committed to downscale the analysis to the local level and combined that with the global

dimension. However, this approach certainly challenges the traditional methodological assumptions, as previously debated here, but it improves the necessary dialogues with the empirical reality. This decision, consciously made here have implications for the research design and its limits. Nevertheless, we reaffirm our choice because we believe our conclusions can contribute to the academic debate as well as to the policy development.

Acknowledging that global climate governance is not strictly a Nation-State domain and incorporating different types and levels of actors, in a polycentric perspective, we tried to tackle the role that our cities played in it. Although our cities are recognized as global ones and had active international relations agendas, their introduction into the climate governance is provided by their affiliations to transnational city networks, but mostly, to C40. Obviously, none of those cities had the power to change the course of any international negotiations but they did to some extent actively participated in the dialogue and provided some relevant contributions.

FINAL REMARKS – CITIES LEADING THE WAY?

The way we frame the question influences the kind of answers we may find. Framing climate change and cities through a global governance perspective will be translated into a reading of institutions and norms and political choices. This is a problem that the scientist faces when doing research that tries to understand the way the world works but also faces at the same time the problem of not being able to encompass a great number of variables and actors. Acknowledging the complexity of a real phenomenon results in the necessity to choose an analytical framework that can only process one part of reality. Consequently, the results are only partially and provisory and so are our conclusions.

Therefore, we present here some major findings of this research. The first one that needs to be stressed is that the cases chosen to be analyzed fall into the second phase of urban climate change response, suggested by Bulkeley and Betsill (2013). That is characterized by the diversification of cities and actions, implying "new modes of governance" (p.141). The amplification of actors responding to climate change reached cities from the South, which brought attention to other agendas. This means that the climate responses we are investigating have different features from the ones that the traditional literature has looked at and therefore request a different analytical perspective to read it. Therefore, with the aim of properly addressing the problem, this dissertation worked with the literature produced so far but also made the effort to propose a framework to read climate responses from Latin America cities (chapter 2).

The second wave that Bulkeley and Betsill (2013) describe as a spread of climate responses from the global south with a focus more on adaptation than mitigation actions applies only partially to the cases analyzed here. And one of the explanations for this is that the climate responses from Latin American cities from 2005 to 2017 were designed and influenced by transnational organizations such as C40 and ICLEI that have a northern perspective and focus on GHG emissions reduction. Thus, mitigation is still the main topic.

The cases of São Paulo, Rio de Janeiro, Buenos Aires and to some extent Mexico City contest the claim made by part of the International Relations academic literature and by some politicians that cities are leaders in the global climate governance. We questioned the meaning of leadership in this context and crossed it with the climate commitment in order to test two elements:

firstly, how the meaning of leadership changed along the periods under analysis and secondly how cities that fell short in addressing mitigation and adaptation policies do not have the material bases to proclaim themselves as climate leaders.

As time passes and the climate responses from cities starts to accumulate and present results – being either positive ones, neutral or negative –, the challenges begin to grow in complexity and intensity. In that matter, one can argue that the climate responses offered by cities – and especially in the cases explored in this dissertation – were "low hanging fruits" and that moving beyond this point will demand a more audacious vision as well as better planning and more funding. Furthermore, the choices made during a first period of climate responses could jeopardize future initiatives.

Our cases demonstrated, that in their first climate responses, cities from the "South" did not had the evaluation that adaptation policies should be prioritized in relation to mitigation ones. This is because at the beginning, their climate policies – at least for our cases – did not target the local level nor its population but were designed to impress the international arena. In order to be listened to by global players, they had to speak the dominant language at the time, which was mitigation. This is not to say that with the evolution of the agenda they did not changed their perspectives, but it is important to see how this process happened so as to understand their results and meanings.

The framework proposed simultaneously looks at climate responses and at the international politics of cities. This is because our empirical observations pointed to the intersections between these two domains. For our cases, the linkages between international and climate politics seemed to be more intense than suggested by the literature. This had significant implications in terms of climate politics implementation and therefore of the cities' climate commitment and role in global climate governance.

Our studies suggest that in Latin American cities, climate responses may actually be considered international responses. This means that the vast majority of climate responses given by Mexico City, São Paulo, Rio de janeiro and Buenos Aires can be explained by a spectrum of motives, international engagement having a central role. In sum, the climate politics of these cities are probably more international relations politics than climate ones, and this conclusion can be reached by observing their establishment, implementations and their impacts.

Furthermore, all four cases suffer from their higher levels of inequalities that limits the potential of their public policies, including climate and international ones. This is even more true when we analyze the disparities between the people living within the city limits, under the mayor's jurisdiction, and the ones living in its surrounding, in the metropolitan region. In São Paulo, Mexico City and Buenos Aires this is shown in the difficulties of its population to access the city and its services and in Rio de Janeiro this reality is even more obvious based on the postcard views of the favelas.

Nevertheless, does the higher level of inequality diminish a city's global character? Although some would say it does, we find it very difficult to agree with this because their international features are already so imbricated into their structure and the way of doing politics that this disadvantage is even sometimes used sometimes as a way to project themselves internationally. None of our cities could isolate themselves from the world economy and international fluxes of people, goods, knowledge and GHG emissions. Therefore, the international system is also their stage. However, does this mean that they are powerful global players or global leaders? Not directly, but it can be argued that they do perform as such in some arenas during some time. At the same time, we cannot ignore the inequalities in our cities and we also cannot overlook when they performed as global players in the global climate governance.

Research implications

The intention of developing the analytical framework applied in this dissertation was to ease the reading of such a complex phenomenon, therefore many elements that we consider important to fully understand climate responses from cities in Latin American had to be left out. Nevertheless, this does not stop us from pointing to some prospects for future research. For reasons linked to access to data, we choose to work with municipal political administration, namely the city limits under the mayor jurisdiction. However, we believe that future studies should try to make the effort of including the metropolitan areas. We could also amplify the scope in order to included other local actors that also build climate responses, such as organized civil society groups, neighborhood associations and so on. But obviously, that all these incremental additions pose

challenges in terms of methodology and of access to data as well as to resources (financial, but also time-related).

The categories of climate responses listed here as legal, policy and governance, can be expanded as the process accumulate over time and more data is generated. For instance, we could think about climate responses in categories that would investigate: the financial mechanisms, the communications strategies (such as the one developed by CDMX to inform and create consciousness within its population about climate change).

Still, the three categories of climate responses presented here were developed in order to provide a better understanding of the reality we were observing; therefore, they are not extensive, but they reflect the reality of Latin American cities for the period analyzed. Nonetheless, we could amplify it to incorporate new mechanisms that were not tackled by us, once new dynamics appear or we exted it to other regions and cases. For instance, we did not incorporate financial responses here, although we do think they are extremely important in the efforts to mitigate climate change and foster resilience, because there were not enough financial mechanisms for us to analyze. The Mexico City Green Bond, released in 2016, would certainly fit into that category of response. In the same way, we could also think of institutional responses, that would correspond to the creation of new institutions to deal specifically with climate politics. This is to illustrate that we are aware of other possible urban responses to climate change, but here we tried to make a choice that reflected the cases we were observing in order to provide a more accurate analysis.

Regarding the research agenda, new possibilities open as the quantity and the quality of data increases and improves, enabling new research designs. Two examples of technological advances that can contribute to that are Google's newly launched platforms: the Google Dataset Search and the Environmental Insights Explorer. The last one will make it possible for users to have access to GHG emissions from every city in the world and to downscale data to the point of having information regarding a specific building selected on the map. This is revolutionary from a city's perspective and it is the result of a partnership between Google and the Global Covenant of Mayors for Climate and Energy, also demonstrating how city networks are progressively directing their initiatives to reporting mechanisms and platforms. The production of inventories was excessively expensive for many cities and this held back their mitigations policies back because of lacking data. This also makes information more transparent and accessible to the general public, fostering participation and accountability. It will still take some time for Google to feed the

database and some cooperation between the company and cities is needed. To illustrate this, Google Environmental Insights Explorer had data from only five cities when it was lauched, and Buenos Aires was the only Latin American city that was included, but we can expect a fast increase in the number of cities registered. Aside from all the benefits to research and public policy that these – but also other possible future – innovations bring, we reinforce this dissertation argument that a full assessment of cities climate commitments, especially in Latin America, requires looking into their local and national contexts and into the process of policy design, implementation and outcomes at the local level.

Forecast for the near future/developing trends

The phenomena this dissertation dived in is a social, political and non-linear process. That being said, the fact that we recognized that during the 2005-2017 period Mexico City was more successful in responding to climate change, demonstrating a significant climate commitment, does not means that this is a static position. In the same way, it also does not mean that São Paulo is deemed to be an irresponsible city in terms of climate. Nevertheless, the political and social structures do need to challenge these loci in order to change their paths and by pointing this here, we aim to provide reflections on the process in order to help improve their way forward to a decarbonizing future.

At this point, we can suggest that Mexico City and Buenos Aires are on a promising climate path, both local governments have increased their capacity to deal with climate change and presents political actors and factors which are favorable to the implementation of mitigation and adaptation policies. Mexico City just elected the former Environment Secretary as its new mayor, Claudia Sheinbaum Pardo, and the new CDMX Constitution will enter into force, amplifying its autonomy and reinforcing its global feature. Buenos Aires had also built a significant local government capacity to respond to the challenges posed by climate change and has promising political actors and factors with Larreta as mayor and Macri as Argentina's president. The city has increased its international projection and seems to be connected with global technological trends, signing agreements with tech companies such as Google to foster its climate action. Yet, the economic scenario for Argentina in general is negative as the country is hit by another crisis that will likely have negative impacts on Buenos Aires' initiatives. Therefore, we need to observe

closely how the situation will unfold in the coming years to monitor Buenos Aires' promising trajectory in climate governance.

The Brazilian cases are less promising than their regional counterparts. São Paulo does not present any indication that its local government's capacity has changed since 2009 in terms of improving human resources nor financial and scientific assets. At the same time, we did not capture a culture of environmental awareness within its constituencies or among its politicians. The Rio de Janeiro is certainly an interesting case. The city emitted signs that it was moving towards being a more climate committed city by improving its government's capacity by training its personnel, creating special departments to deal with resilience, projecting itself internationally with a sound climate committed discourse and mobilizing its constituencies and local powers around the idea that climate change was an urgent agenda for the city. However, its inability to reduce GHG emissions combine with a significant change in the executive power and the economic, institutional, political and moral crises faced by the city and by the State of Rio indicate serious setbacks for the climate agenda. Finally, the Brazilian cases represent the limits of the climate action in cities that lack fundamental institutional and governmental capacity, as well as a society which is mobilized around climate issues.

Finally, historically, Latin America has been marked by corruption and it is no different for our cities. In fact, some of our mayors have been accused of wrongdoings and are under investigation. With the entry of many companies in this new "smart city" market, developing new tools to help improve the efficiency of cities in many sectors, including environmental ones, we should be careful regarding their relationship with municipal administrations. The prospects of modernizing Latin America's municipal administrations is an important one, due to the old-fashioned ways of managing the cities in the region. Nevertheless, History demonstrated the necessity to be cautious in this regard.

CONCLUSÃO

A maneira como estruturamos a questão indica o tipo de respostas que podemos encontrar. Enquadrar a mudança climática e as cidades por meio da perspectiva da governança global significa que ela será traduzida em uma leitura sobre instituições e normas e escolhas políticas. Esse é um problema que o cientista enfrenta ao fazer pesquisas enquanto tenta entender o funcionamento do mundo, mas enfrentam ao mesmo tempo o problema de não poder englobar um grande número de variáveis e atores. Reconhecer a complexidade de um fenômeno real resulta na necessidade de escolher um arcabouço analítico que apenas abranja uma parte da realidade, conseqüentemente, os resultados são apenas parcialmente e provisórios, assim como nossas conclusões.

Portanto, apresentamos aqui algumas das principais descobertas desta pesquisa. O que primeiro precisa ser enfatizado é que os casos escolhidos para serem analisados se enquadram na segunda fase da resposta às mudanças climáticas urbanas, sugerida por Bulkeley e Betsill (2013). Essa fase se caracteriza pela diversificação de cidades e de ações, implicando em "novos modos de governança" (p.141). A ampliação dos atores que responderam à mudança climática atingiu cidades do Sul, que chamaram a atenção para outras agendas. Isso significa que as respostas do clima que estamos investigando têm características diferentes daquelas que a literatura tradicional tem buscado, o que requer uma perspectiva diferente para lê-lo. Portanto, com o objetivo de abordar adequadamente o problema, esta dissertação trabalhou com a literatura produzida até então, mas também fez um esforço para propor uma estrutura analítica para a leitura das respostas climáticas da América Latina (capítulo II).

A segunda onda que Bulkeley e Betsill (2013) descrevem como uma disseminação das respostas climáticas do sul global com um foco mais na adaptação do que nas ações de mitigação aplica-se apenas parcialmente aos casos aqui analisados. E uma das explicações para isso é que as respostas climáticas das cidades latino-americanas de 2005 a 2017 foram projetadas e influenciadas por organizações transnacionais como C40 e ICLEI que tem uma perspectiva do Norte e um foco sobre as emissões de GEE, portanto a adaptação ainda tem sido o principal tópico.

São Paulo, Rio de Janeiro, Buenos Aires e, até certo ponto, a Cidade do México contestam a alegação feita por parte da literatura acadêmica de RI e por alguns políticos de que as cidades são líderes na governança global da mudança climática. Questionamos o significado de liderança neste

contexto e cruzamos com o de compromisso climático para testar como o significado da liderança mudou ao longo das análises do período e como as cidades que não cumpriram as políticas de mitigação e adaptação não têm as bases materiais para se proclamarem como líderes climáticos.

À medida que o tempo passa e as respostas climáticas das cidades começam a se acumular e apresentar alguns resultados – sejam elas positivas, neutras ou negativas – os desafios começam a crescer em complexidade e intensidade. Nesse sentido, pode-se argumentar que as respostas climáticas oferecidas pelas cidades – e especialmente nos casos explorados nesta tese – foram "low hanging fruits" e que ir além desse ponto exigirá uma visão mais audaciosa, além de melhor planejamento e mais financiamento. Além disso, as escolhas feitas em um primeiro período de respostas climáticas poderiam colocar em risco futuras iniciativas.

Nossos casos mostraram que as cidades do "Sul" não tinham no início das respostas climáticas a avaliação de que as políticas de adaptação deveriam ser priorizadas em comparação com as mitigadoras e isso porque, no início, suas políticas climáticas – pelo menos para nossos casos – não estavam mirando o nível local nem sua população, eles foram projetados para impressionar a arena internacional e para serem ouvidos por atores globais eles tiveram que falar a língua dominante naquele ponto, e isso significava mitigação. Isso não quer dizer que com a evolução da agenda eles não mudaram suas perspectivas, mas é importante ver como esse processo aconteceu para entender seus resultados e significados.

O desenho analítico proposto olha ao mesmo tempo para as respostas climáticas e política internacional das cidades, isto é porque as nossas observações empíricas apontaram para as interseções entre esses dois domínios. Para nossos casos, os vínculos entre a política internacional e a política climática parecem ser mais intensos do que o sugerido pela literatura, que teve implicações significativas na implementação de políticas climáticas e, portanto, no compromisso climático das cidades e seu papel na governança climática global.

Nossos estudos sugerem que, para as cidades latino-americanas, as respostas climáticas podem, na verdade, ser consideradas como respostas internacionais. Isso significa que a grande maioria das respostas climáticas fornecidas pela Cidade do México, São Paulo, Rio de Janeiro e Buenos Aires pode ser explicada por um espectro de motivos, tendo o envolvimento internacional um papel central. Em suma, as políticas climáticas dessas cidades são provavelmente mais políticas de relações internacionais do que climáticas, e essa conclusão pode ser feita observando seu estabelecimento, implementações e seus impactos.

Em consequência, todos os quatro casos sofrem com os altos níveis de desigualdade, o que limita as potencialidades de suas políticas públicas, inclusive climáticas e internacionais. Isso é ainda mais verdadeiro quando analisamos as disparidades entre as pessoas que vivem nos limites da cidade, sob a jurisdição do prefeito, e as que vivem em seu entorno, na região metropolitana. Em São Paulo, Cidade do México e Buenos Aires isso é exposto por dificuldades de sua população para acessar a cidade e seus serviços e no Rio de Janeiro essa realidade é ainda mais óbvia a partir das visões de cartão postal das favelas.

No entanto, o nível mais alto de desigualdade diminui o caráter global de uma cidade? Embora alguns digam que sim, achamos muito difícil concordar com isso porque suas características internacionais já estão tão imbricadas em sua estrutura e na forma de fazer política que essa desvantagem é usada até às vezes como uma maneira de se projetar internacionalmente. Nenhuma de nossas cidades poderia se isolar da economia mundial e dos fluxos internacionais de pessoas, bens, conhecimento e emissões de GEE. Portanto, o sistema internacional também é seu palco. No entanto, isso significa que eles são jogadores globais poderosos ou lideranças globais? Não diretamente, mas pode-se argumentar que eles atuam como tal em algumas arenas durante algum tempo. Ao mesmo tempo, não podemos ignorar as desigualdades de nossas cidades e também não podemos ignorar quando elas atuaram como atores globais na governança climática global.

Implicações para agenda de pesquisa

A intenção em desenvolver o arcabouço analítico aplicado nesta dissertação foi facilitar a leitura de tal fenômeno complexo, pois muitos elementos que consideramos importantes para compreender plenamente as respostas climáticas das cidades latino-americanas tiveram que ser deixados de fora. No entanto, isso não nos impede de apontar algumas perspectivas para futuras pesquisas. Embora optemos por trabalhar com a administração política municipal, os limites da cidade sob a jurisdição do prefeito, por causa do acesso a dados, acreditamos que estudos futuros devem tentar fazer o esforço para incluir as áreas metropolitanas. Poderíamos também ampliar o escopo para incluir outros atores locais que também construam respostas climáticas, tais como

grupos da sociedade civil organizada, associações de vizinhos e assim por diante. Mas é óbvio que todas essas adições incrementais postam desafios metodológicos e de acesso a dados, bem como recursos (financeiros, mas também tempo).

As categorias de respostas climáticas listadas aqui como legal, política e governança podem ser expandidas à medida que o processo se acumula ao longo do tempo e mais dados são gerados. Por exemplo, poderíamos pensar sobre as respostas do clima em categorias que investigariam: os mecanismos financeiros, as estratégias de comunicação (como o CDMX, para informar e criar consciência em sua própria população sobre a mudança climática).

Ainda assim, as três categorias de respostas climáticas apresentadas aqui foram desenvolvidas a fim de proporcionar uma melhor compreensão da realidade que estávamos observando; portanto, não são extensas e refletem a realidade das cidades latino-americanas no período analisado. No entanto, poderíamos ampliá-lo para incorporar novos mecanismos que não foram abordados por nós, uma vez que novas dinâmicas aparecem ou extrapolamos para outras regiões e casos. Por exemplo, nós não incorporamos respostas financeiras aqui, embora pensemos que elas são extremamente importantes nos esforços para mitigar a mudança climática e promover a resiliência, porque não havia mecanismos financeiros suficientes para analisarmos. O Green Bond da Cidade do México, lançado em 2016, certamente se encaixaria nessa categoria de resposta. Da mesma forma, poderíamos pensar também em respostas institucionais, que corresponderiam à criação de novas instituições para lidar especificamente com as políticas climáticas. Isso é para ilustrar que estamos cientes de outras possíveis respostas urbanas às mudanças climáticas, mas aqui tentamos fazer uma escolha que reflita os casos que estávamos observando a fim de fornecer uma análise mais precisa.

Em relação à agenda de pesquisa, conforme a quantidade e a qualidade dos dados aumentam e melhoram, novas possibilidades se abrem, possibilitando novos desenhos de pesquisa. Dois exemplos de avanços tecnológicos que podem contribuir para isso são as recém-lançadas plataformas do Google: o Google Dataset Search e o Environmental Insights Explorer. O último possibilitará o acesso às emissões de GEE de todas as cidades do mundo e reduzirá os dados ao ponto de ter as informações de um prédio específico selecionado no mapa. Isso é revolucionário do ponto de vista da cidade e é o resultado de uma parceria entre o Google e o Pacto Global de Prefeitos pelo Clima e Energia, demonstrando também como as redes de cidades progressivamente direcionaram suas iniciativas para mecanismos e plataformas de denúncia. A produção de estoques

era algo muito caro para muitas cidades, que retinham suas políticas de mitigação por falta de dados. Isso também torna a informação mais transparente e acessível ao público em geral, fomentando a participação e a responsabilização. Ainda levará algum tempo para o Google alimentar o banco de dados e é necessária alguma cooperação entre eles e cidades, para ilustrar, no lançamento, o Google Environmental Insights Explorer tinha dados de apenas cinco cidades e Buenos Aires era o representante da América Latina. até agora, mas podemos esperar um rápido aumento no número de cidades registradas. Além de todos os benefícios para pesquisa e políticas públicas que essas - mas também outras possíveis inovações futuras - trazem, reforçamos este argumento de que uma avaliação completa dos compromissos climáticos das cidades, especialmente na América Latina, requer olhar em seus contextos locais e nacionais e no processo de elaboração de políticas, implementação e resultados no nível local.

Prognósticos para o futuro próximo / tendências

Os fenômenos em que esta tese mergulhou são processos sociais, políticos e não lineares. Dito isto, o fato de reconhecermos que, para o período 2005-2017, a Cidade do México teve mais êxito em responder às mudanças climáticas, demonstrando que um compromisso climático significativo não significa que essa seja uma posição estática. Da mesma forma, também não significa que São Paulo seja considerada uma cidade irresponsável pelo clima. No entanto, as estruturas políticas e sociais precisam desafiar esses locais para mudar seus caminhos e, apontando isso aqui, pretendemos fornecer reflexões sobre o processo, a fim de ajudar a melhorar seu caminho para um futuro descarbonizante.

Neste ponto, podemos sugerir que a Cidade do México e Buenos Aires estão em um promissor caminho climático, ambas as cidades melhoraram a capacidade do governo local para lidar com a mudança climática e apresentam atores políticos e fatores favoráveis à implementação de políticas de mitigação e adaptação. A Cidade do México acaba de eleger a ex-Secretária de Meio Ambiente como sua nova prefeita, Claudia Sheinbaum Pardo, e a nova Constituição do CDMX entrará em vigor, ampliando sua autonomia e reforçando sua característica global. Buenos Aires também construiu uma capacidade significativa do governo local para responder aos desafios colocados pelas mudanças climáticas e ter atores e fatores políticos promissores, com Larreta como prefeito e Macri como presidente da Argentina. A cidade aumentou sua projeção internacional e

parece estar conectada com as tendências tecnológicas globais, assinando acordos com empresas de tecnologia como o Google para promover sua ação climática. No entanto, o cenário econômico para a Argentina em geral é incerto, pois o país é atingido por outra crise que poderia ter impactos negativos nas iniciativas de Buenos Aires, portanto, precisamos observar de perto como a situação se desenrolará nos próximos anos para monitorar Buenos Aires. trajetória na governança climática.

Os casos brasileiros são menos promissores do que os congéneres regionais, e São Paulo não apresenta nenhum indicativo de que a capacidade do governo local tenha mudado desde 2009 em termos de melhoria de recursos humanos, nem de ativos financeiros e científicos. Ao mesmo tempo, não capturamos uma cultura de consciência ambiental em seus grupos constituintes nem em seus políticos. O Rio de Janeiro é certamente um caso interessante uma vez que a cidade emitiu sinais de que estava caminhando para uma cidade mais comprometida com o clima, melhorando sua capacidade de governo treinando seu pessoal, criando departamentos especiais para lidar com a resiliência, projetando-se internacionalmente com um clima saudável. discursar e mobilizar seus constituintes e poderes locais de que a mudança climática era uma agenda urgente para a cidade. No entanto, sua incapacidade de reduzir as emissões de GEE se combina com uma mudança significativa no poder executivo e as crises econômicas, institucionais, políticas e morais enfrentadas pela cidade e pelo Estado do Rio indicam sérios reveses para a agenda climática. Por fim, os casos brasileiros representam os limites da ação climática em cidades carentes de capacidade institucional e governamental fundamental e de uma sociedade mobilizada em relação ao clima.

Finalmente, historicamente, a América Latina tem sido marcada pela corrupção e não é diferente para nossas cidades. De fato, alguns de nossos prefeitos foram acusados de fazer algo errado e estão sob investigação. Com a entrada de muitas empresas nesse novo mercado de "cidade inteligente", desenvolvendo novas ferramentas para ajudar a melhorar a eficiência da cidade em muitos setores, inclusive ambientais, devemos ser cautelosos com seu relacionamento com as administrações municipais. As perspectivas de modernizar as administrações municipais da América Latina são, a princípio, importantes, devido às suas formas antiquadas de administrar a cidade. No entanto, a História expôs a necessidade de ser cauteloso a esse respeito.

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