

“Building adaptive capacity in the megacity of São Paulo, Brazil: urgencies, possibilities and challenges”

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Abstract

Megacities, which are the main arena for contemporary transformations, have an important role in promoting a wider and sensible debate about new paradigms to build adaptive capacity to respond to climate change for three reasons: (1) lifestyles associated with urbanization are the drivers of climate change (IPCC, 2007, 2014); (2) cities are more susceptible to risks and severe impacts related to this phenomenon; (3) as the effort to centralize the international governance of climate change has failed to coalesce, the governance of climate change has shifted to smaller jurisdictions such as municipalities (Bulkeley, Broto, 2013). The megacity of São Paulo, Brazil, home more than 11 million people (15% live in precarious settlements) is a good example to consider when reflecting on this role, its opportunities and challenges. In this paper we present some results of an empirical study in São Paulo that seeks to understand how stakeholders of science, policy and civil society perceive climate risks in the local sphere, and how they think about the city's capacity for protection and adaptation. Based on a set of qualitative methods (workshop, documentary research, observation and interviews), in this paper we seek to shed light on the relationships between city capacities and the contextual factors that influence the municipal action associated with climate change.

Keywords: megacities, climate change, adaptive capacity, contextual factors, São Paulo

Introduction

At the beginning of this 21th century, most social, political and technological changes have been take place in cities, which have to deal with the most drastic impacts of environmental change, urban problems and increasing vulnerabilities to climate change. Megacities, cities with 10 million inhabitants or more¹, have an important role in promoting a wider, level headed debate about new paradigms in order to build adaptive capacity to respond to climate change. There are some important reasons for this: (1) lifestyles associated with urbanization are the drivers of climate change (IPCC, 2007, 2014); (2) cities are more susceptible to risks and severe impacts related to this phenomenon; (3) as the effort to centralize the international governance of climate change has failed to coalesce, the governance of climate change has shifted to smaller jurisdictions such as municipalities (Bulkeley, Broto, 2013).

Within the megacity of São Paulo, home more than 11 million people, the importance of issue of climate change threats and responses has been rising in both on societal

¹ In 2014, there are 28 mega-cities worldwide, home to 453 million people or about 12 percent of the world's urban dwellers. Of today's 28 mega-cities, sixteen are located in Asia, four in Latin America, three each in Africa and Europe, and two in Northern America. By 2030, the world is projected to have 41 mega-cities with 10 million inhabitants or more (United Nations, 2014).

and governmental agendas as a recent series of severe climate driven events (flooding and, particularly, the recent drought) have mobilized public opinion and research.

The climate projections for São Paulo in this century, despite uncertainties, give a warning that indicates relevant changes in the distribution, intensity and geographic frequency of risks related to meteorological conditions (Ambrizzi et al., 2012; Nobre et al., 2010).

Aware of these potential future scenarios and climate threats, São Paulo is part of the C40 Cities Climate Leadership Group (C40) – a network of the world's megacities committed to addressing climate change. It is also one of the few Brazilian municipalities to have had a Municipal Policy on Climate Change since 2009 (Back, 2012; Cortese, 2013; Furriela, 2011), although the goals have not yet been achieved (Di Giulio and Vasconcellos, 2014).

Like other cities in the South hemisphere, which are characterized by intense, chaotic growth, and environmental and social degradation (Rolnik, Klink, 2011; Singer, 1973; Santos, 1994; Carlos, 2008), one of the biggest challenges for this Brazilian megacity is linking public policies related to climate change to housing policy, sanitation, urban planning, water management and to the review of possibilities of urban mobility in order to reach a better solution for current urban problems. However, the process of rethinking the city and proposing solutions to urban problems that would be further exacerbated by climate issues might be structured through taking account the high heterogeneity in terms of different access to resources, levels of poverty and abilities to interact with climate change.

Based on the idea that different capacities and context factors affect the ability of different systems to respond to climate threats, our research seeks to investigate how the megacity of São Paulo has been mobilized to deal with climate change.

Our analysis is based on the idea that São Paulo has its own specificities (comparing with other megacities), and might create its own local arrangements to deal with urban and climate issues, considering the current water crises; the lack of an urban planning for middle and long term; the lack of investments in renewable energy, social housing policies and technologies; and the confronts related to the market capitalism with its perverse consequences. In addition, São Paulo has lived a transition in the last 50 years: from an industrial city to a city of services, with all the impacts that this process brings to a megacity. This megacity also exhibits all the main elements of an urban environment, such as irregular settlements on slopes or banks of rivers and reservoirs, scarcity of sanitation, traffic congestion and pollution – all of which impacts seriously on quality of life. More than 15% of the population live in precarious settlements (CEM/Cebrap, FUNDAP, 2013).

Our first assumption is that São Paulo has created its own arrangements to deal at the same time with urban and climate issues. The design and implementation of climatic

adaptation actions have been adopted by the city of São Paulo government by streamlining them into existing policy. This means that, while there are specific interventions in urban socio-technical systems (mobility, housing, green infrastructure) that are designed to respond to the imperatives of mitigating and adapting to climate change in the city, they have not been openly described as “climate change actions”. This strategy, which elsewhere is called ‘adaptation by stealth’ (Kalafatis and Lemos, in review) are implemented under the guise of other frameworks such as “smart development”, “green infrastructure”, “sustainable development.”

Our second assumption is that the local society respond to these actions, with more or less support, according to their own values, perceptions, experiences, political interests, and social mobilization. Their responses are also influence by the media (and how the actions have been released by the journalists and social media), politicians parties, and comparisons with what is happening in other megacities (New York, Tokyo, Paris, for example).

Three questions emerge from these assumptions: 1) Could the option for the strategy to design and implement actions under the guise of other frameworks (and not as “climate change actions”) be related to the idea that, in general, climate issues are not a daily concern public in São Paulo or in Brazil? 2) Could this option be related to the belief on technological innovation as solution for climate risks and threats, which would imply high costs, and as a consequence less public support (in this case, society would be much more concerned in investing in other urgent needs)? 3) Would a socioenvironmental agenda, which is more focused on social inequalities, urbans problems and well-being than environmental issues, work better with a very heterogeneous society, like São Paulo?

Some elements collected through a set of qualitative methods (workshop, documentary research, observation and interviews) that have been used in our research shed light on our arguments.

Some issues to reflect

- Workshop aimed to exchange information on climate science, risks and adaptation

In order to investigate how the megacity of São Paulo has been mobilized to deal with climate risks and threats, how stakeholders of science, policy and civil society perceive climate risks in the local sphere, and how they think about the city’s capacity for protection and adaptation, we proposed a workshop² aiming to exchange information

² The workshop was organized by researchers from University of São Paulo (BR) and University of Michigan (USA), with support from São Paulo Research Foundation (Fapesp – Grant 2014/50313-8).

on climate science, risks and adaptation between scientists, practitioners, and journalists.

Over one and a half days, the participants of the workshop were divided into five panels (megacity, water resources, extreme weather events, urban forests and mobility) and encouraged to debate the challenges and opportunities for climatic adaptation and how different resources and deficits feedback on each other both positively and negatively to build the resilience and sustainability of São Paulo.

The participants of the workshop, in general, agreed that dealing with climate threats and reducing vulnerabilities requires structural and non-structural measures, including local government actions and changes in social practices. Accountability, co-responsibility, precautionary position, dialogue between academics and practitioners, as well as collective decision-making processes are key issues to be addressed in order to solve the complex equation: “climate + environmental change + urban dynamics + sustainability = ?” (Di Giulio and Vasconcellos, 2014).

The workshop helped to clarify some relevant aspects of climatic adaptation in São Paulo. One of these is the design and implementation of actions by streamlining them into existing policy. A clear example is the urban mobility policies that have been implemented in recent months, giving priority to public transport and bicycles. This public policy that “promotes mobility to people not to vehicles”, as an architect from Company Traffic Engineering (CET) explained during the workshop, demonstrates how the climate dimension has been internalized in the Municipal Plan of Urban Mobility, without binding these actions to the ‘climate change slogan’. A recent poll about urban mobility in São Paulo pointed out that most of the 700 interviewees were supportive of these mobility actions (Rede Nossa São Paulo, Oct 2014).

- Recent approval of the new city plan

The recent approval of the new city plan and urban design (July, 2014) could be an indicator that, over the next 16 years, the megacity of São Paulo will strive and seek for changes in its urban culture and sociability, and seeks to include climate and environmental issues in the future actions.

The new city plan includes, for example, payment for environmental services, building of new public parks (green areas), and investments in public transport (with more and better-structured bus and bicycle lanes). The main goal of this city plan “is bringing employment and housing closer, rebalancing the city” (Prefeitura de São Paulo, 2015).

The United Nations recently recognized the new city plan of São Paulo as an example for the rest of the globe. This initiative also received the Mobiprize, from University of Michigan (USA) – a prize for projects with participative platforms for advancing sustainable solutions for urban mobility.

- Climate risk perceptions

The narratives from interviews with representatives of two Brazilian NGOs (that act in the megacity of São Paulo), as well as observation of seminars on climate change and impacts at the local level (2014-2015) have highlighted that, in general, climate issues are not a daily concern public in São Paulo or in Brazil – or at least not at the moment, as would be expected, considering their relevance. Even when people comment on and perceive climate change, it seems that they do not associate it with their daily practices. In terms of adaptation, pressure on decision makers and behavioral changes have been highlighted as important steps in dealing with climate issues by stakeholders of science and civil society. However, both of these actions will take a long time.

A recent public opinion poll (Datafolha, May 2014 with 825 participants) about environmental perceptions in São Paulo highlighted that the main environmental problems in the megacity for the majority of interviewees was pollution (41%), followed by waste (16%), sanitation (14%), rivers (8%), deforestation (4%), and finally climate (2%) – no response for global warming.

When asked about global warming, most of the interviewees (96%) had heard about it, and 20% considered themselves well informed on this issue – 54% more or less informed, 21% poorly informed. The poll suggested that 88% of the interviewees recognized that the effects of global warming are having a serious impact on the planet, 85% on Brazilians, and 81% on their own lives. One in each five (74%) consider that industries (including power plants and car factories) have lots of responsibility for global warming; 65% consider that people in general are responsible for this phenomenon.

All interviewees had pointed out that they have information that the lack of rain has made lower the volume of the water tank used to supply the city. The pool indicated that, in May 2014, 35% of the interviewees had been affected for water cutoffs at home in the last 30 days. Most of them believe that governments, consumers and industries are responsible for the risk of water cutoffs. According to the responses, 73% of the interviewees believe that State government has a lot of responsibility for this risk, 70% for the Federal government, and 68% for Municipal Government.

Another recent public opinion poll focused on what Brazilian people think about climate change, including 2,100 interviews in 143 Brazilian cities (Datafolha, Observatório do Clima, Greenpeace, 2015), pointed out that 88% of the interviewees had heard about climate change; 28% considered themselves well informed; 43% more or less informed, 17% poorly informed. According to the responses, 85% are concerned about the impacts of climate change to their lives; 95% believe that climate change affects Brazil. Most of them (90%) pointed out some relationship between climate change and the current water and energy crises. The poll also pointed out that 48% of

the interviewees believe that federal government is doing less than it should for climate change.

- Water crises

The current water crisis in São Paulo State, with serious repercussions in the megacity of São Paulo, has gained attention from the politicians, the media and the society in general. Brazilian scientists recognize a climate anomaly for the lack of rain; however, highlight that the poor governance is responsible for the ensuing predicament (Escobar, 2015; Academia Brasileira de Ciências and Academia de Ciências do Estado de São Paulo, 2014).

The São Paulo water crisis has left the megacity “teetering on the brink”, as an article of the British newspaper released. “Though domestic use accounts for only a fraction of the water consumed in the state of São Paulo – where extensive agriculture and industry places intense pressure on available resources – for paulistanos, as the city’s residents are called, learning to use water wisely is suddenly the most pressing need of all” (The Guardian, Feb 2015).

Residents of São Paulo had to learn to live with less water and arrange to store the water at home. There are also incentives to use less water, fines for those who use too much and the possible installation of more water-efficient taps (The Independent, Feb 2015).

Discussion

It seems that São Paulo has started to test different social and technological approaches in response to climate change, which include interventions in urban socio-technical systems (mobility, housing, green infrastructure), and a set of possibilities with the recent approval of the new city plan. No actions, however, have been openly described as “climate change actions”, and this could be a “conscious strategy”.

If we think about what is happening in other cities, in the South and in the North hemispheres, in terms of climate change actions, research has highlighted that there are a wide variety of context-based motivations behind such experiments, including: (i) cities pursuing innovative climate change policies because such work helps them fulfil their own internal goals or reduce perceived risks (Bassett and Shandas, 2010; Anguelovski and Carmin, 2011); (ii) taking the initiative to act on climate change is a way for some cities to positively differentiate themselves as leaders while enhancing their profile and asserting their ability to exert political pressure on larger scales of governance (Anguelovski and Carmin, 2011; Eisenhauer et al., in review); (iii) cities pursue climate change work as a means to realize other existing goals such as “green” initiatives or sustainability, social justice, reducing potential expenses, supporting

economic development or attracting investment and economic migration (Barclay et al., 2013).

São Paulo has a set of urgent needs to be solved – climate risks and threats are one of them, and certainly exacerbate the urban problems. The strategy to deal at the same time with urban and climate issues – without use the ‘climate change slogan’ – could bring positive impacts for the next years. As the mayor of São Paulo mentioned in an interview for the Brazilian newspaper Valor Econômico (Dec, 2014): “The society advances when embraces projects that are not be consensual, but hegemonic. We need to talk with the advanced sectors of the middle class, who do not condone with the extreme inequality, and can help a lot to promote the welfare for the poor people. They (middle class) want a modern society, but in a different way from the old paradigm. The environmental agenda sometimes hides a certain embarrassment of not putting the finger in the still opened wounds in Brazil. But a socio-environmental agenda is able to covenant middle class sectors [who are linked to the globe], who travel and see what has happened in the world. I am trying to explore this idea in São Paulo, because if it works, it helps the city to envision a different future” (free translation from Portuguese to English)³.

If we think about the people’s responses and perceptions, studies have shown that perceptions of risks linked to climate change reflect the way in which people process what their senses observe (the so-called physical signals) and the information they receive (such as the news conveyed by the media, public bodies and corporations; information shared between neighbors and family members; and access to the results of studies). In addition, perceptions also reflect how people’s judgments are formed, including their experiences, the contextual variables, values, trust in the organizations and institutions involved, and uncertainties (Renn, 2008; Hannigan, 2006; Douglas et al., 2003).

Studies have also shown that individuals’ perceptions are constructed through a process of association and emotion, based on the information they have, the attention they pay to the subject and their confidence in the data provided (Weber, 2010).

³ The original argument: “A sociedade avança quando abraça projetos que não precisam ser consensuais, mas hegemônicos. Precisamos dialogar com setores avançados da classe média que não compactuam com a desigualdade extrema e podem ajudar muito a promover bem-estar dos de baixo. Querem uma sociedade moderna, mas por um caminho diferente do velho paradigma. A agenda ambiental às vezes esconde um certo acanhamento de não querer colocar o dedo nas feridas que o Brasil tem abertas ainda. Mas uma agenda socioambiental tem como pactuar classes médias antenadas, que viajam e olham o que acontece no mundo. Estou tentando explorar isso em São Paulo porque se der essa liga, vai ajudar a cidade a vislumbrar um futuro diferente” (<http://www.capital.sp.gov.br/portal/noticia/5089>, 30/06/2015).

The interpretation and selection of what is considered relevant as an environmental problem/risk is a social process, in which different elements are present, such as social communication (media), science, aspects of morality and politics (Beck, 1995,1998, 2009, 2010). Judgments on risks are political, moral, esthetical and are constructed through cultural frameworks (Douglas 2003; Douglas e Wildavsky, 1982). Risks are carried on by traditional and ethical values which have a direct and indirect role in affecting individual perceptions, and add an emotional bias to the conflicting information that we receive (Kasperson e Kasperson, 2005; Giddens, 2009; Douglas et al., 2003; Boholm, 2008; Boyne, 2003; Renn, 2007, 2008; Beck, 2006, 1999, 1998, 1996, 1995; Hannigan, 2006; Pidgeon et al., 2003; Leach et al, 2005). The possible lack of urgency and responsibility on climate issues is also a problem of communication, as climate change effects are psychologically remote, and seen as distant (in terms of time and space). Individual perceptions on climate risks and impacts are contextual and quite diverse (Wardekker, 2004), and are directly related to uncertainties and ambiguities on this phenomenon (its causes, effects, risks and threats) (Naustdalslid, 2011, Renn, 2008; Beck, 2009, 2010).

The current water crisis in São Paulo, although has been understood as a result of a combination of climate anomaly for the lack of rain and poor water governance, could be also understood as an impact of climate-driven extreme events. In this case, the biggest question that emerges is if the water crisis is (and how) influencing the municipal action associated with climate change, and individual perceptions and responses to climate change.

In this debate about the ideal city (between myth and reality), São Paulo has started to prove that the capacity to respond to climate (and environmental) change at the local level is related to some key issues of urban governance, including social, environmental, and economic issues.

The local governments are able to influence behaviors and habits that are responsible for large greenhouse gas emissions, and have an important role in mitigation measures through public policies, regulations and planning in strategic sectors. However (and this is biggest challenge not only for São Paulo, but for other megacities), we argue that the local governments might provide political and institutional structures to help the cities to adapt to climate change impacts, based on the idea that what we (as society) need right now is a transformational adaptation – not only measures to adapt to climate change, but also measures for a collective change in the ways of live. As Kates et al. (2012, p. 7156) recognize, “although many transformative adaptations are technological, they are also behavioral, affecting how individuals and society make decisions and allocate resources to cope with climate change. They may alternatively include fundamental changes in institutional arrangements, priorities, and norms”.

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