

Second Klimapolis workshop

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Climate adaptation in large Brazilian cities: barriers and opportunities



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Summary:

- 1. CiAdapta Project**
- 2. Theoretical framework**
- 3. Methodological aspects**
- 4. Results: climate projections, examples of adaptation interventions, factors that affect urban adaptation**
- 5. The case of São Paulo**



CiAdapta Project

Interdisciplinary Research Team

8 Brazilian Universities + UM



Six large Brazilian cities

- Economy based on services
- Experiencing extreme events
- Different stages of development, local geographical, ecosystem aspects, levels of vulnerability to climatic risks
- Concentrate resources and problems that plague urban systems

Map: Diego R. Braga



Our goals:

- ✓ government responses to climate change
- ✓ factors that affect the cities' adaptive capacity

Characteristics of these 6 large Brazilian cities

Elaborated by Ana Bedram-Martins

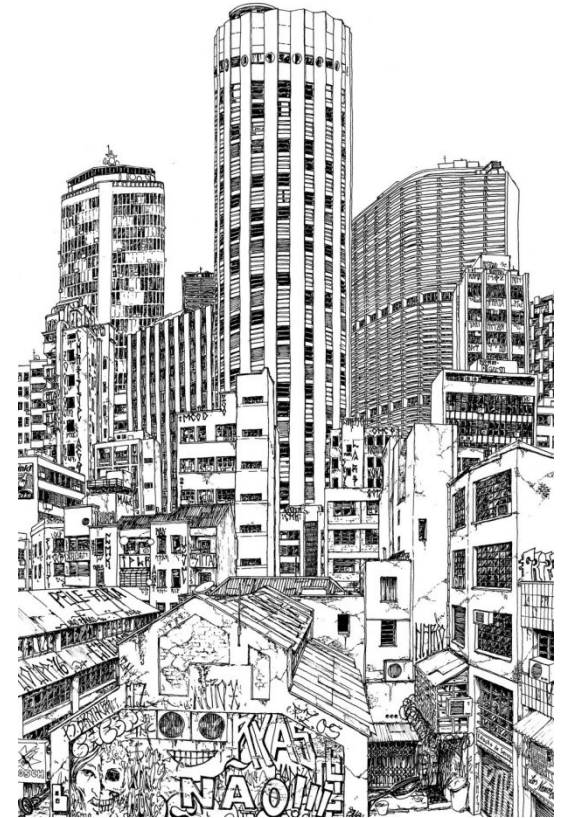
Municipality	Territorial area ^a (Km ²)	Total Population ^a	Population Density ^a (hab/km ²)	GDP ^a (U\$)	HDI ^a	Forestation of public areas ^a	IVSC ^c
Natal	167,264	803.739	4805,24	6.390,73	0,763	44,7 %	High vulnerability
Manaus	11.401,092	1.802.014	158,06	8.668,33	0,737	23,9 %	High vulnerability
Porto Alegre	496,682	1.409.351	2.837,53	12.266,69	0,805	82,7 %	Low vulnerability
Vitoria	96,536	327.801	3.338,30	17.219,37	0,845	65,4 %	Medium vulnerability
Curitiba	435,036	1.751.907	4.027,04	11.868,17	0,823	76,1 %	Low vulnerability
São Paulo	1.521,11	11.253.503	7.398,26	14.456,86	0,805	74,8 %	Medium vulnerability

Note: ^aIBGE (2010); ^bDollar variation on June 04th 2018 (1U\$ = 3,76 R\$) ^cDarela-Filho et al. 2016

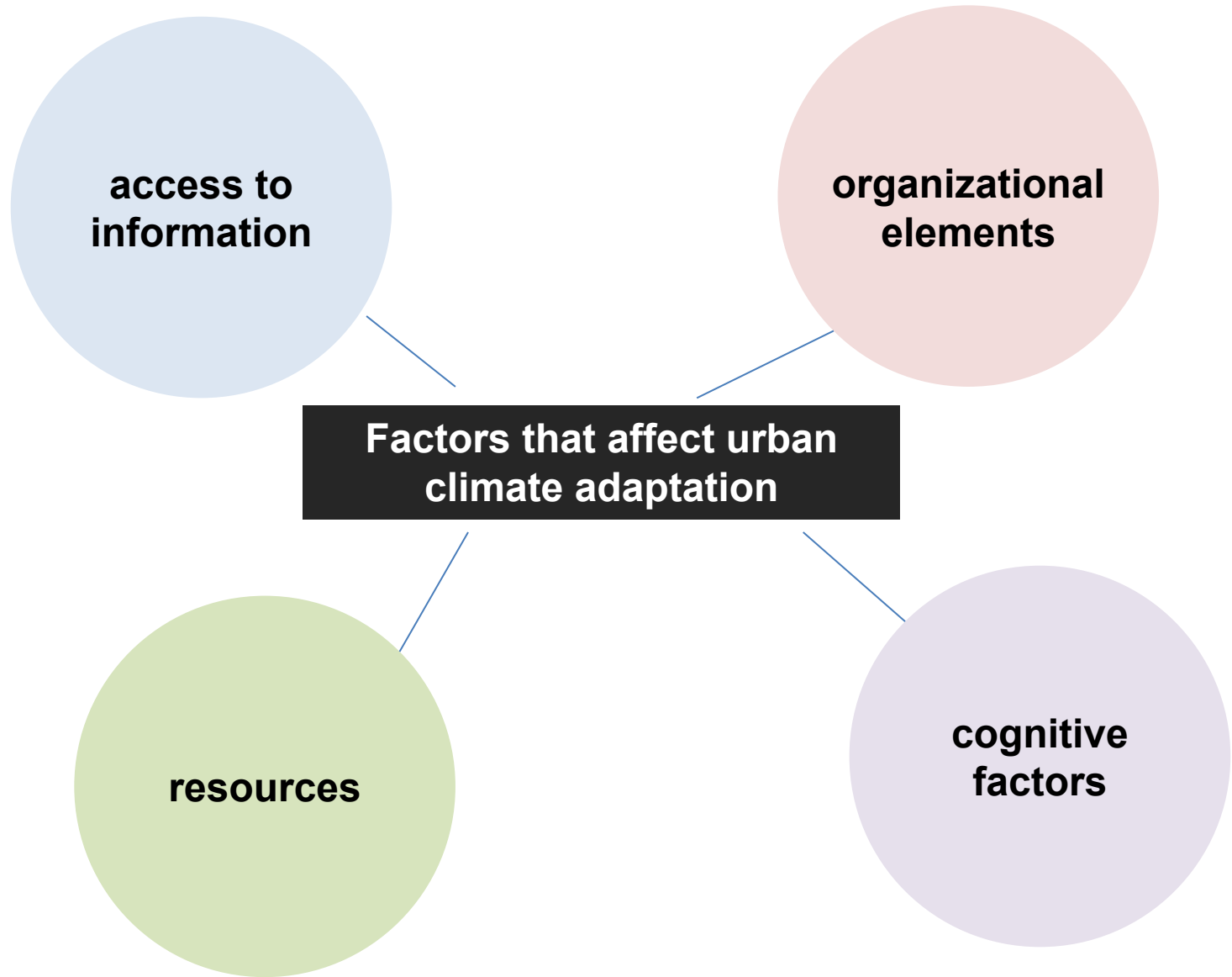
Theoretical framework

➤ Cities - climate change – urban adaptation

- ✓ Local governments play a crucial role in climate change governance
- ✓ Large cities:
 - leadership roles in scientific research
 - boundary organizations that connect academics to policy
 - transnational interactions
 - institutional, technological and financial capacity
- ✓ Adaptation is part of a socio-environmental-political process
 - economic resources
 - technology
 - information and skills
 - infrastructure
 - social capital
 - trust
 - institutions
 - governance and management



(Bulkeley 2010; Ryan 2015; Setzer et al. 2015; Kirchhoff et al. 2015; Eriksen et al. 2015; Graham and Mitchell 2016; Runhaar et al. 2018)



➤ **Responding to climate change is a dynamic political process**

Problem Stream

issue is a real problem when policy makers believe that something must be done

Policy stream

To be defined as a problem a set of alternatives are required (technical viability, community acceptance, and tolerable costs)

Political stream

coalitions of interests and political negotiations are important for the policy flow

Kingdon's model (1984)

Window of opportunity

- climate change is recognized as an urgent global and local problem
- alternatives to tackle it are available
- there are friendly political conditions to incorporate this problem in the decision agenda

Urban Climate Governance:

- **political will and commitment**
- **presence of policy entrepreneurs**
- **interactions for planning and implementing climate actions**

Opportunities - urban climate adaptation

Capacities

Generic capacity:
associated with
fundamental human
development goals

Specific capacity:
necessary to overcome
climate stressors

Mainstreaming adaptation

integrating climate
change into the
existing planning,
processes, programs –
in all attitudes,
practices

“no-regrets policy”

interventions which
align climatic
responses with
urban sustainable
measures

Interdisciplinary mix-method approach

- state-of-the-art climate information (IPCC reports, climate change datasets)
- interviews with 40 practitioners from different municipal departments
- interactive workshops with practitioners
- document and institutional analysis
- participant observation in selected interactions



Results: Project climate change over the six cities studied

Climate Change Event	Cities	Trend	Confidence Level*	Main Reference
Near Surface Air Temperature	SPO, VIT, POA, CUR, NAT, MAN	increase	high	IPCC (2013)
Annual Precipitation	CUR, POA	increase	low	IPCC (2013)
	NAT, MAN	decrease	low	IPCC (2013)
Consecutive Dry Days	SPO, VIT, NAT, MAN	increase	low	IPCC (2012)
Very Wet Days	CUR, POA	increase	medium	Sillmann et al. (2013)
Cold Nights and Days	SPO, VIT, POA, CUR, NAT, MAN	decrease	medium	Sillmann et al. (2013)
Hot Nights and Days	SPO, VIT, POA, CUR, NAT, MAN	increase	medium	Sillmann et al. (2013)

Results: Interventions related to climate adaptation

- examples connected to the mainstreaming approach and the no-regrets measures



Photos: Marcos Akira Watanabe

- practices involve specific measures to manage climate risks
risk mapping, contingency plans, warning systems, and urban drainage

Results: Factors that affect climate adaptation

Cognitive factors

- practitioners are interested in climatic issues, and aware of the importance of climate
- close connection between development and adaptation

Access to information

- networks, local agencies, media, national agencies and research institutions
- problems with the flow of climate information

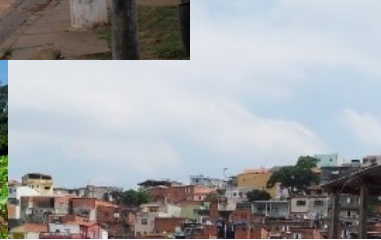
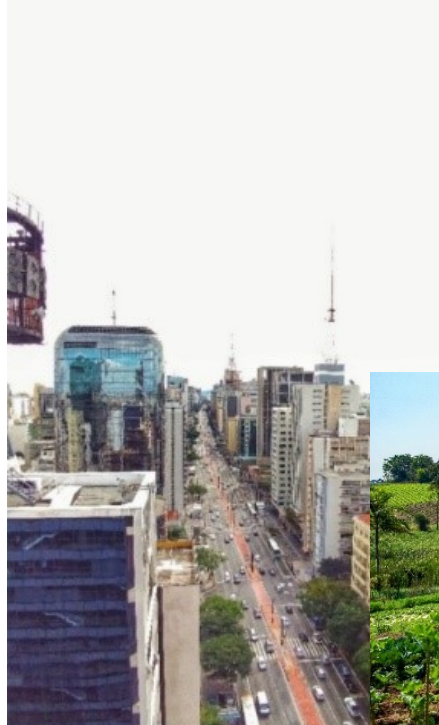
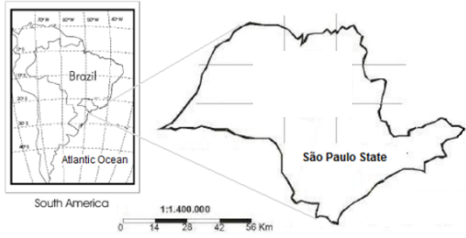
Organizational elements

- regulatory framework - municipal climate change policies in operation (2 cities)
- disconnections between sectorial policies
- lack of definition of responsibilities, competencies, and priorities in terms of investments and strategic actions
- constraints on public finances
- difficulties in giving continuity to projects
- process of dismantlement of the civil service
- insufficient of friendly political conditions

Our main point

set of conditions are sensitive to urban climate responses... mostly important: the interplay between climate change, urban planning dynamics, and political issues

São Paulo



Climate efforts

- GHG emissions inventories
- city's green procurement policy (2007)
- Vehicular Pollution Control Plan (2007)
- solar heating systems in new buildings of a certain scale (2007)
- 100 Green Parks Program to expand green areas (2008)
- taxi fleet with cleaner fuel and motor technologies, including electric, ethanol, flex fuel vehicles (2012)
- Municipal Solid Waste Integrated Management Plan (2012)
- Municipal Mobility Plan (2015)



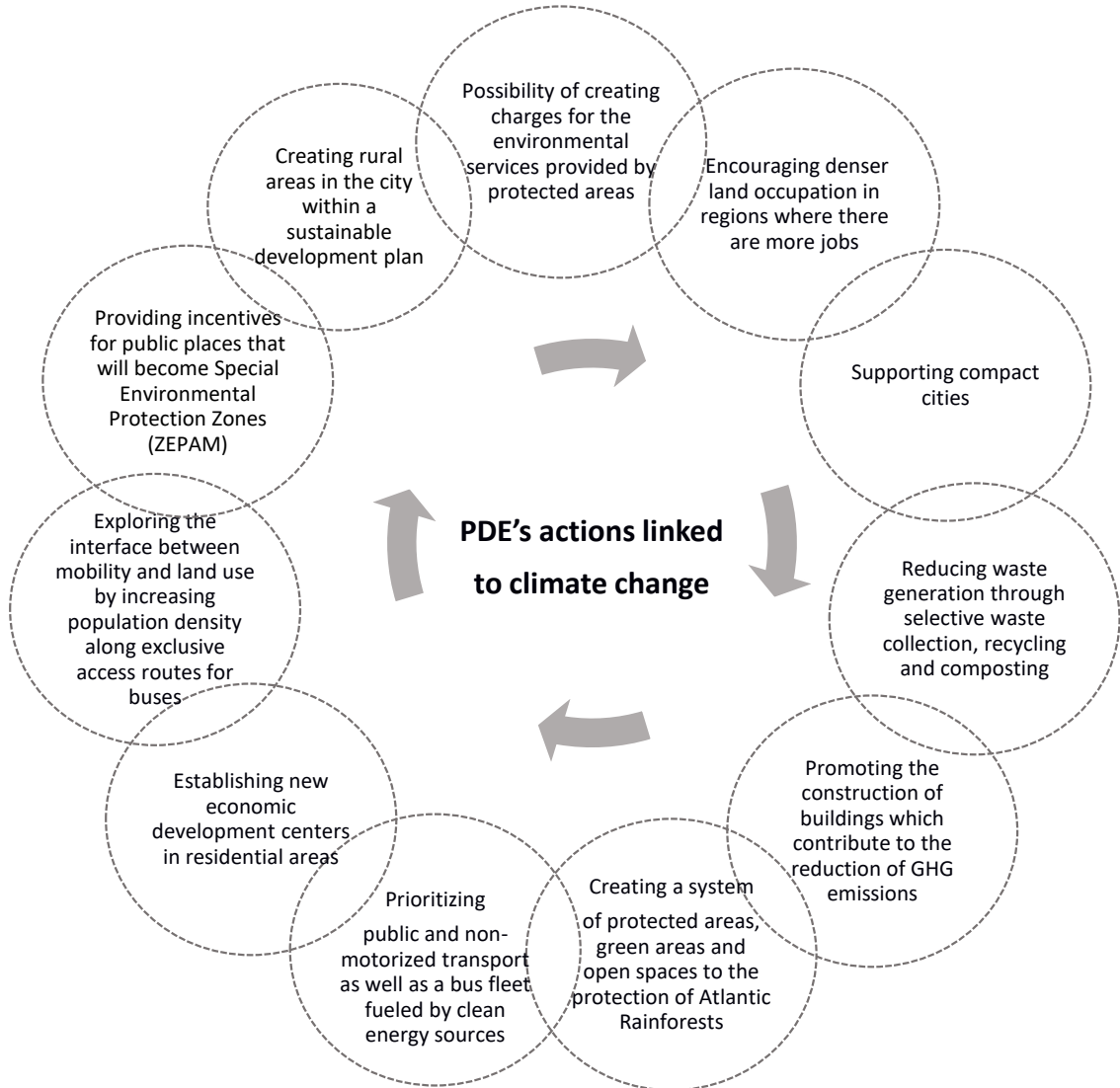
But, the Municipal Climate Law is not achieving its goal...

... One important reason: different stakeholders, diverse interests

New possibilities for innovative urban policies – Master Plan (2014)

as an example for the rest of the globe (United Nations)

it gained the University of Michigan’s Mobiprize - projects with participative platforms that advance sustainable solutions for urban mobility



Four years after...

PDE has been far from being successfully implemented

Reasons?

- lack of political will, and conflicting values and priorities
- way planning is carried out in Brazil, characterized by technocratic and bureaucratic activity
- disconnections among sectorial policies
- lack of definition of responsibilities, competencies, and priorities in terms of investments and strategic actions
- lack of autonomy to regulate specific sectors and economic agents
- constraints of public financial resources



Gap between will and action



- ✓ Adoption of the “no-regrets policy”
- ✓ Giving support to local practitioners and policy entrepreneurs
- ✓ Improving the cooperation between public administration and local academics and researchers
- ✓ Engagement of civil society, economic actors and private sector groups

Thank you!

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