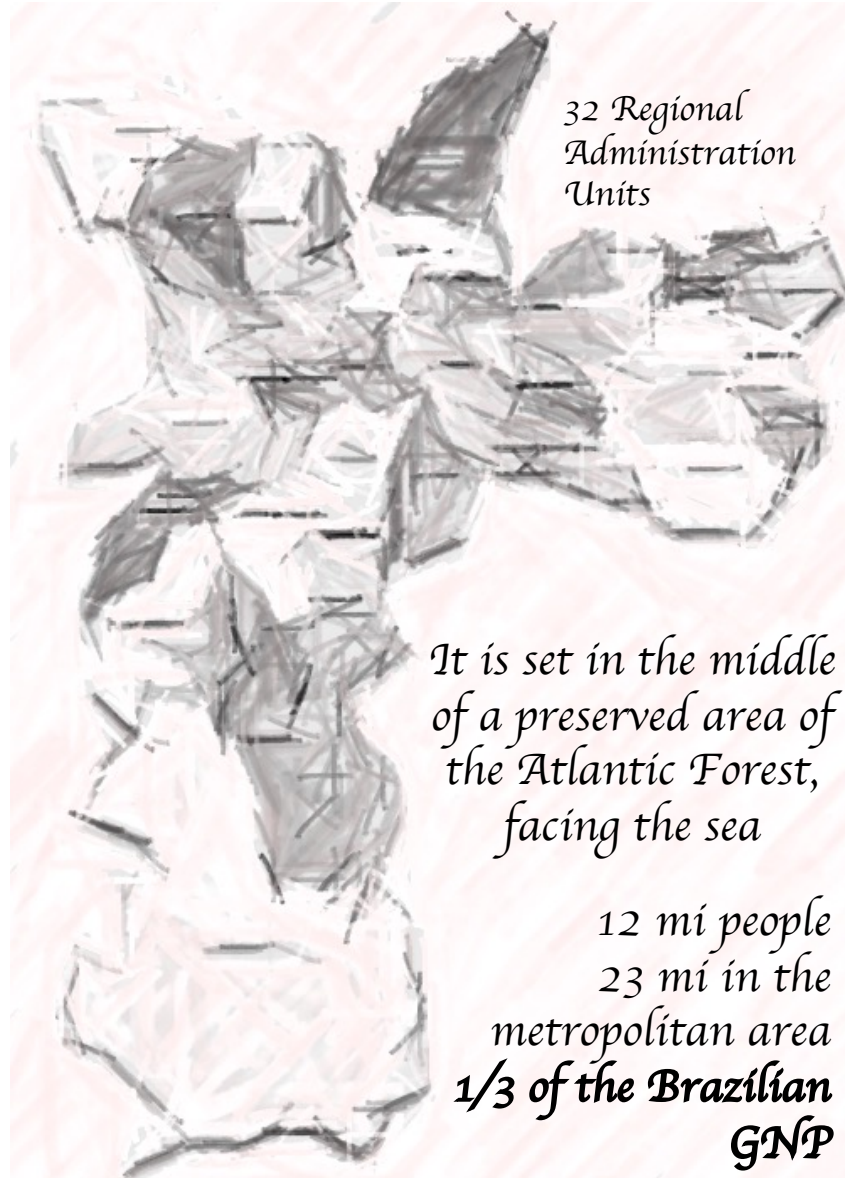


USP GLOBAL CITIES



Initial focus: SÃO PAULO

The Dog's Head



VISION

São Paulo belonging to the elite of the Global Cities (among the first 10), at the same time with an extraordinary increase in the quality of life and well-being of its inhabitants

THE FIRST 50 GLOBAL CIEITES

City rank

2017	2016	2015	2014	2012	2012-2017 Δ	City
1	2	1	1	1	0	New York
2	1	2	2	2	0	London
3	3	3	3	3	0	Paris
4	4	4	4	4	0	Tokyo
5	5	5	5	5	0	Hong Kong
6	8	8	9	11	5	Singapore
7	7	7	7	7	0	Chicago
8	6	6	6	6	-2	Los Angeles
9	9	9	8	14	5	Beijing
10	10	10	10	10	0	Washington, D.C.
11	12	12	11	9	-2	Brussels
12	11	11	12	8	-4	Seoul
13	13	16	15	18	5	Madrid
29	29	29	28	23	-6	Frankfurt
30	30	30	31	29	6	Miami
31	34	32	34	33	2	São Paulo
32	31	30	31	25	-7	Zurich
33	35	36	32	28	-5	Rome
34	39	35	35	34	0	Mexico City
35	37	39	48	—	—	Vancouver
36	33	38	37	31	-5	Munich
37	36	40	39	35	-2	Geneva
38	40	37	36	39	1	Atlanta
39	32	33	33	27	-12	Stockholm
40	38	34	38	38	-2	Houston
41	41	43	42	43	2	Bangkok
42	42	45	43	42	0	Copenhagen
43	45	42	44	41	-2	Milan
44	44	41	41	45	1	Mumbai
45	46	51	47	—	—	Prague
46	48	48	45	44	-2	Dublin
47	43	44	40	40	-7	Taipei
48	51	49	50	—	—	Dallas
49	49	47	53	49	0	Kuala Lumpur
50	47	46	—	—	—	Philadelphia

Global Cities methodology

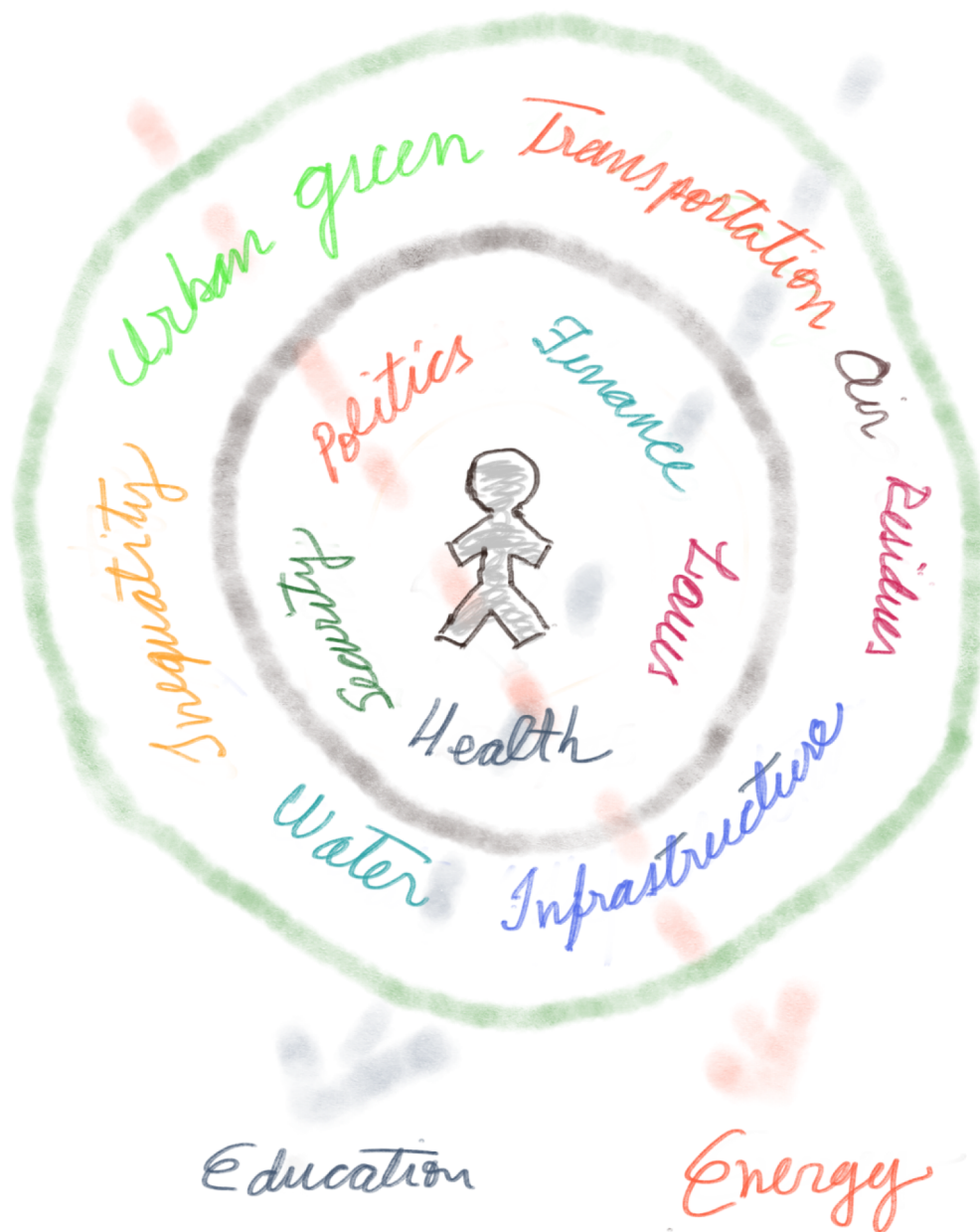
Global Cities Index—current performance

- Measures 27 metrics across five dimensions
 - Business activity (30%):** capital flow, market dynamics, and major companies present
 - Human capital (30%):** education levels

Global Cities 2017:
Leaders in a World of
Disruptive Innovation

USP Global Cities targets

Integrators: *Climate Change and Sustainable Development*



São Paulo

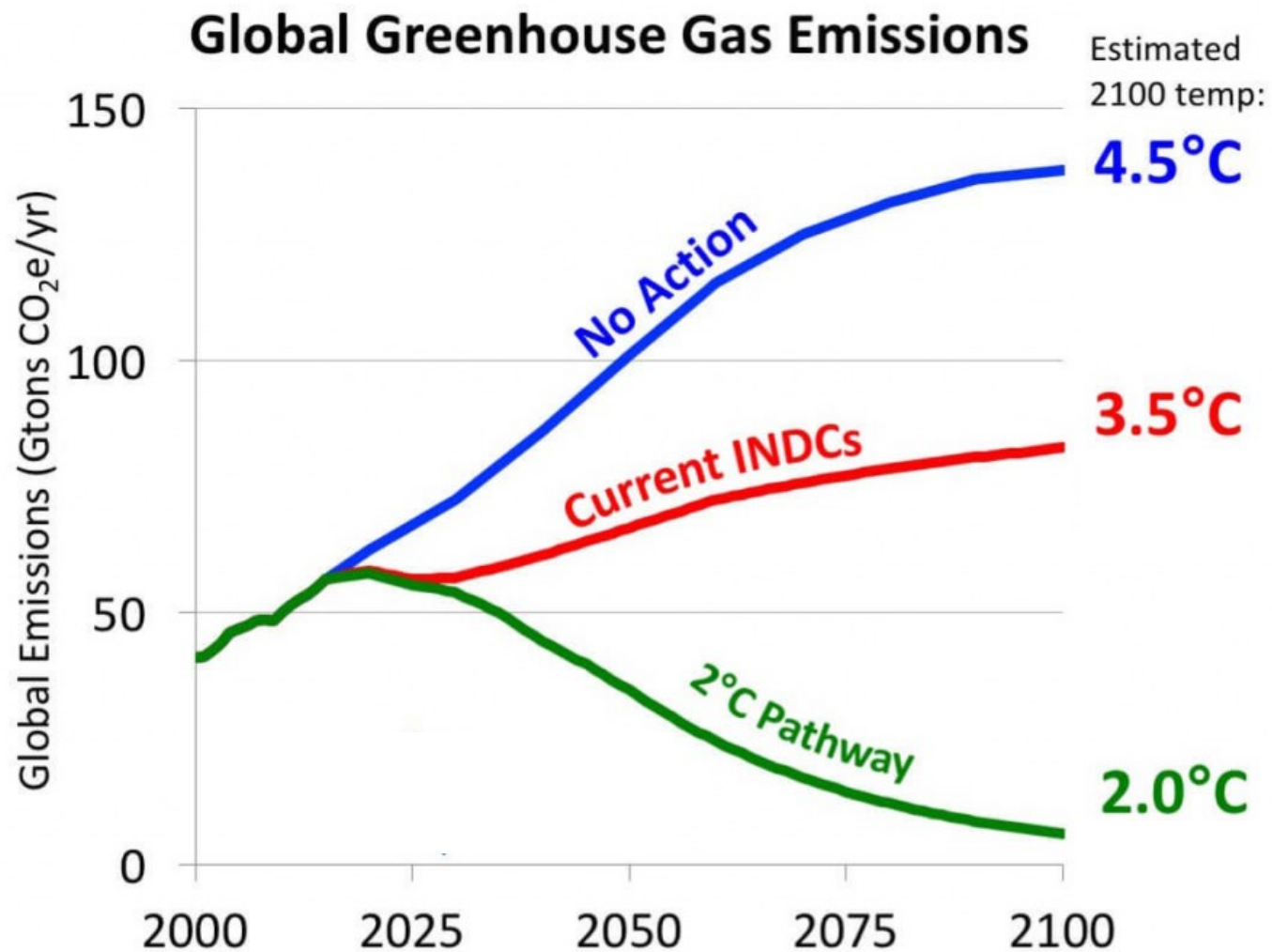


CITIES AND CLIMATE

Marcos Buckeridge
Institute of Advanced Studies

USP- GLOBAL CITIES
Working for the well-being in the cities

CLIMATE CHANGE

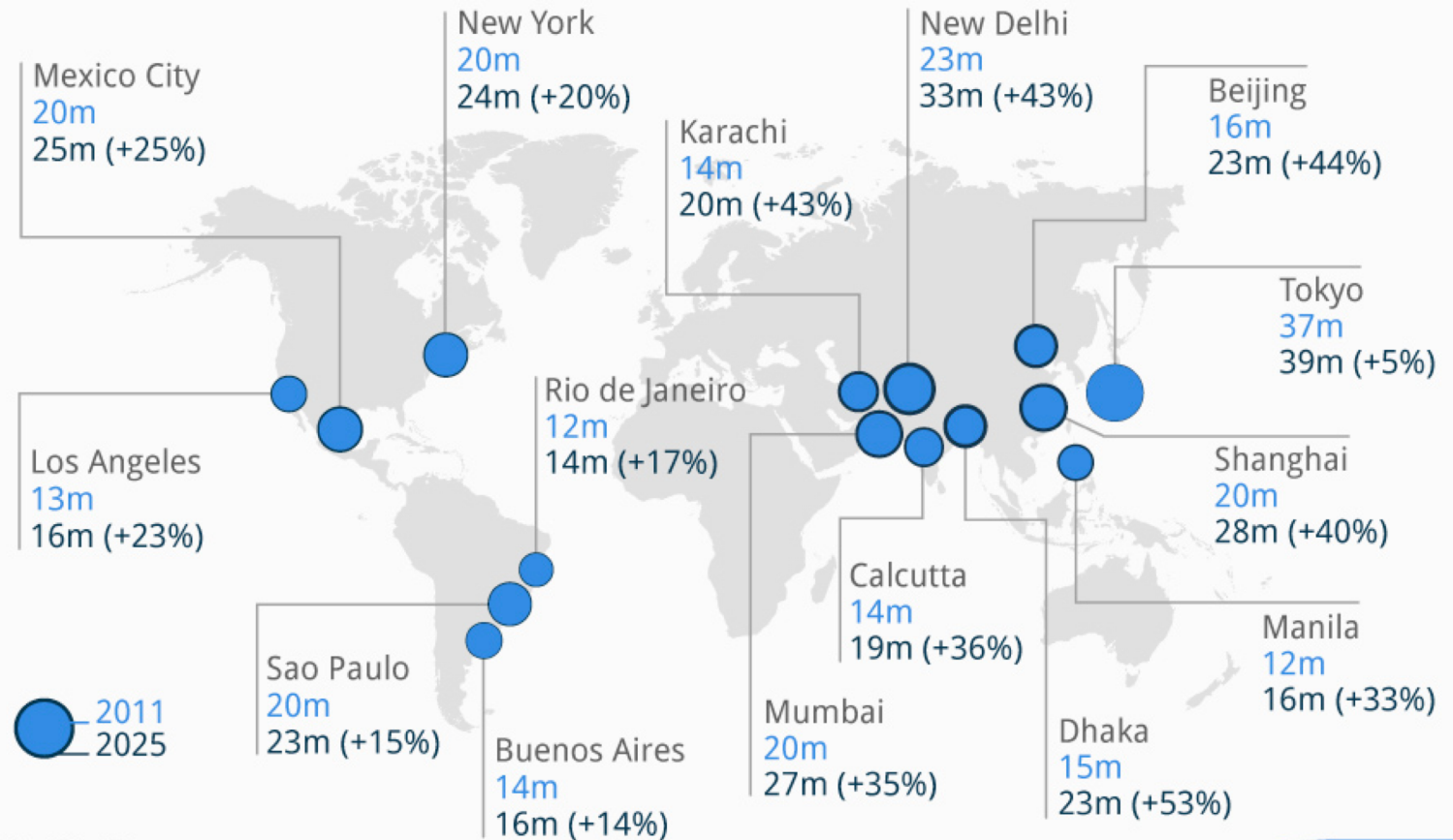


13 October 2015, www.ClimateScoreboard.org

MEGACITIES AROUND THE WORLD – 2011 to 2025

The World's Megacities Are Set for Major Growth

Population growth of the world's top 15 megacities (millions, 2011-2025)



@StatistaCharts

* including metropolitan areas
Source: UN Population Division, World Economic Forum

statista

IMPACTS OF CLIMATE CHANGE ON CITIES

Climate Change - Everyone's Business Implications for Cities

Cities on the front line of a changing climate

Urban centres account for more than half of the world's population, most of its economic activity and the majority of energy-related emissions. The role of cities in reducing emissions and protecting their inhabitants is therefore central to effective climate policies.

Key Findings from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) For more information please visit cisl.cam.ac.uk/ipcc



Cities account for 37-49% of global GHG emissions



Urban infrastructure accounts for over 70% of global energy use



Over 64% of the world population to live in cities by 2050, significantly increasing energy use for infrastructure



New infrastructure and land-use policies could reduce GHG emissions by 20-50% by 2050

IMPACTS

Climate change is expected to affect numerous aspects

Sea-Level Rise

Two-thirds of cities with populations above 5 million are located in the Low Elevation Coastal Zone. Rising sea levels and storm surge flooding

Food Insecurity

All aspects of food security are potentially affected by climate change, including access to food, food utilisation and price stability. Climate

Extreme Weather Events

Changes in extreme rainfall could cause the amount of sewage released to the environment from combined sewage overflow spills and flooding to

Increased Temperatures

The mean temperature rise in some cities could be over 4°C by 2100, with peak seasonal temperatures even higher. More hot days will exacerbate urban

Freshwater Availability

Risks to freshwater resources, such as drought, can cause shortages of drinking water, electricity outages, water-related diseases through use of

SEA LEVEL RISE

Many cities have to reconstruct shores in order to cope with the problem. Millions of dollars will have to be spent

FOOD INSECURITY

Due to the climate change in agriculture, many face shortages of food and a decrease in quality

EXTREME WEATHER EVENTS

Stronger storms, runoffs, flooding leading to the spent of millions of dollars

INCREASED TEMPERATURES

Higher temperatures lead to increased mortality of and younger increase of virus based diseases

FRESH WATER AVAILABILITY

One of the most disastrous effects of Climate Change. Turns life impossible, leading to a crash of most of the cities life and businesses

Energy Supply

Reductions in greenhouse gas (GHG) emissions can be achieved by the use of low-carbon technologies including renewables, nuclear, and carbon capture and storage. Switching from coal to gas can be a bridging solution.

Transport

Emissions can be reduced by avoiding journeys, shifting to low-carbon transport systems, enhancing vehicle and engine efficiency, and reducing the carbon intensity of fuels by substituting oil-based products with natural gas, bio-methane or biofuels, or with electricity or hydrogen produced from low GHG sources.

Buildings

Retrofitting existing buildings can reduce heating energy requirements by 50-75% in single-family housing and 50-90% in multi-family housing at costs of about US Dollar 100 to 400 per square metre. In contrast, substantial new construction in fast-growing regions presents a great mitigation opportunity as emissions can be virtually eliminated for new builds.

Energy Demand

Increasing the efficiency of buildings, appliances and distribution networks will reduce energy demand. Changes in the awareness and behaviour of residents can also reduce demand. Projections suggest demand may be reduced by up to 20% in the short term and 50% by 2050.

Low Carbon

Options to shape the trajectory of urban regeneration (compact, mixed-use development that shortens journeys, promotes transit/walking/cycling, and adaptive reuse of buildings) and rehabilitation and/or conversion to energy-efficient building designs.

advancing sustainable urbanisation and low carbon development, especially in fast-growing parts of the world requires political will and institutional capacity.

COSTS AND ECONOMICAL ISSUES RELATED TO THE IMPACT OF CLIMATE CHANGE ON CITIES

NATURE CLIMATE CHANGE DOI: 10.1038/NCLIMATE2944

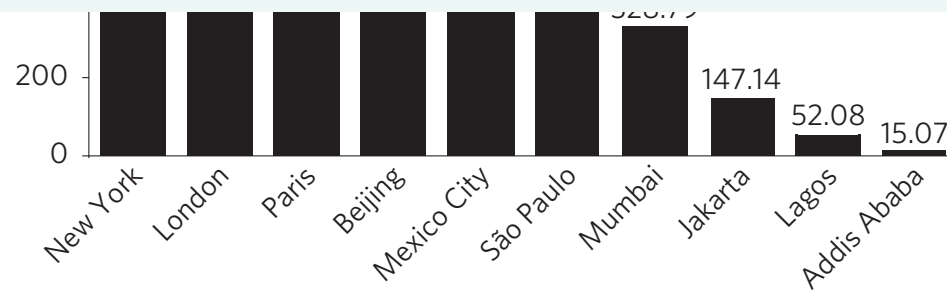
NATURE CLIMATE CHANGE DOI: 10.1038/NCLIMATE2944

LETTERS

1,624

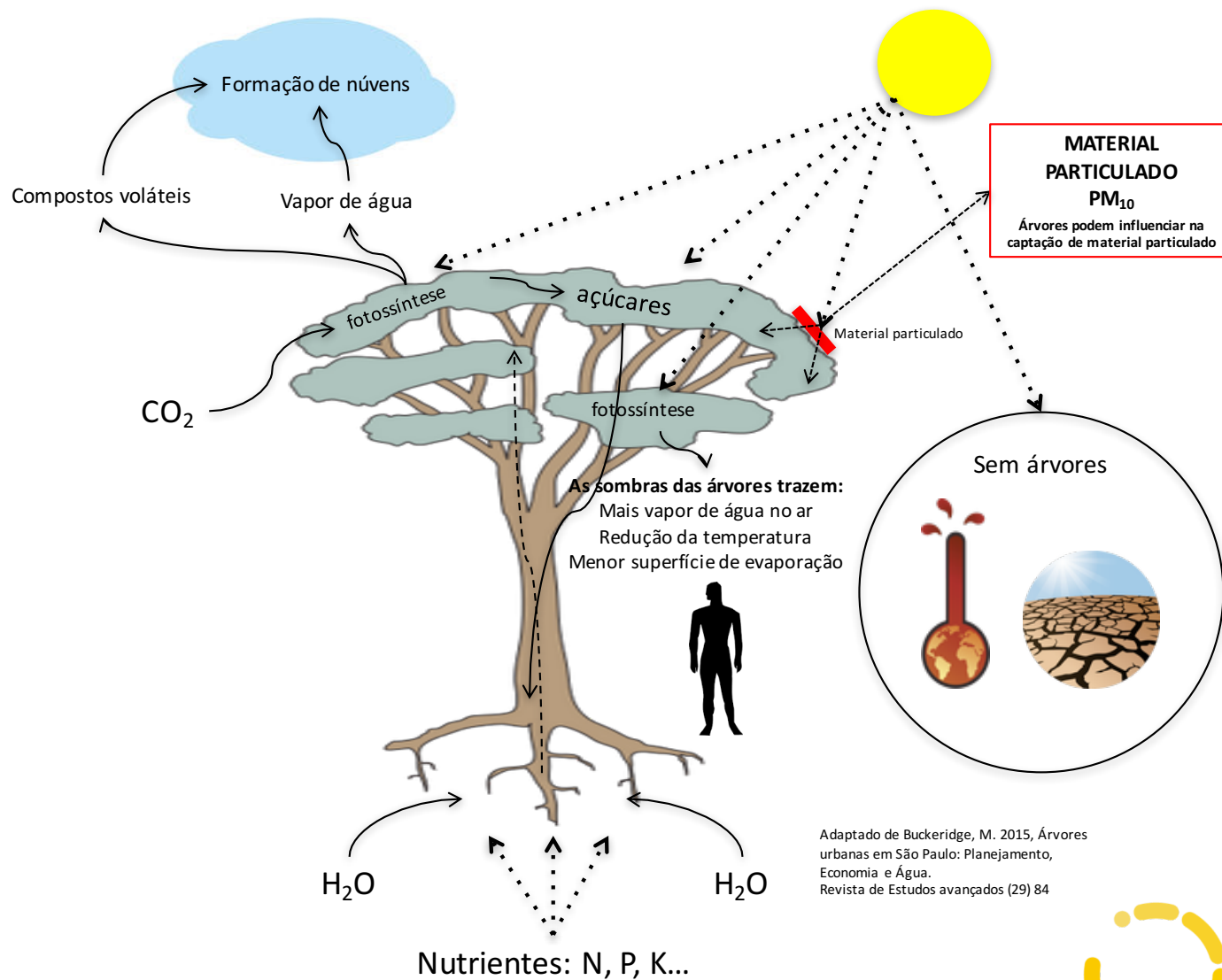
Table 1 | Growth in the adaptation economy between 2008/09 and 2014/15.

City	Spend (£million)		Annual growth (%)					Spend (£million)		2008/09-2014/15 average annual growth (%)
	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2014/15		
New York	1,275.50	3.15	3.41	3.71	4.27	5.62	4.53	1,624.39	4.11	
London	786.31	3.07	3.38	3.54	4.20	5.30	4.14	991.32	3.94	
Paris	712.03	3.09	3.34	3.69	6.68	2.89	4.51	902.25	4.03	
Beijing	665.97	3.00	3.34	3.60	5.53	5.38	4.50	853.36	4.22	
Mexico City	493.53	3.11	3.37	3.64	4.21	3.06	5.37	617.01	3.79	
São Paulo	485.23	3.08	3.36	3.72	5.63	3.54	8.53	614.71	4.02	
Mumbai	264.36	3.12	3.36	3.69	2.62	3.56	5.90	328.79	3.70	
Jakarta	114.93	3.28	3.34	3.73	5.06	3.81	6.02	147.14	4.20	
Lagos	44.42	2.88	3.50	3.70	-5.76	5.44	6.85	52.08	2.69	
Addis Ababa	15.18	2.83	3.84	4.07	-25.78	9.74	9.68	15.07	-0.12	

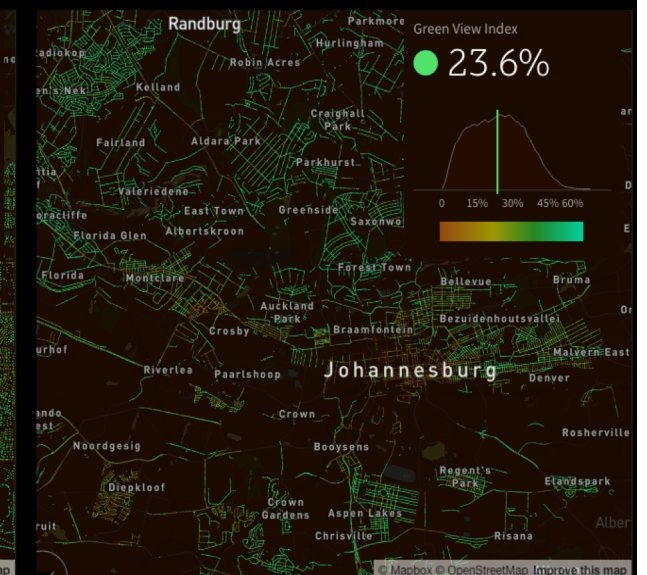
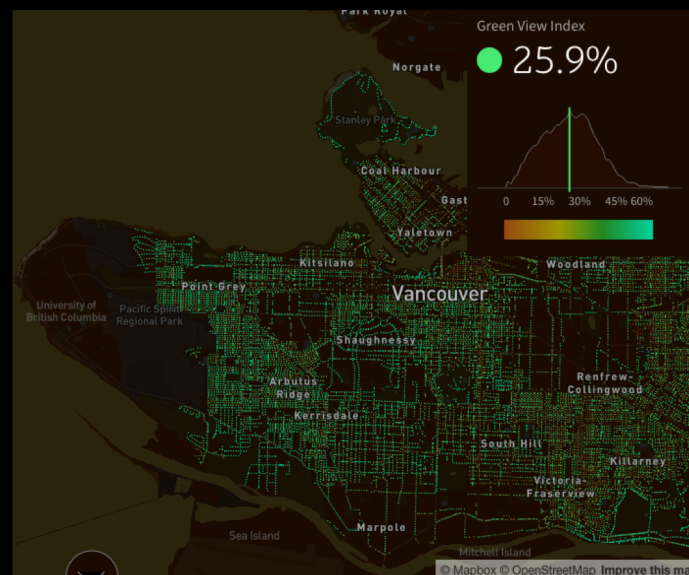
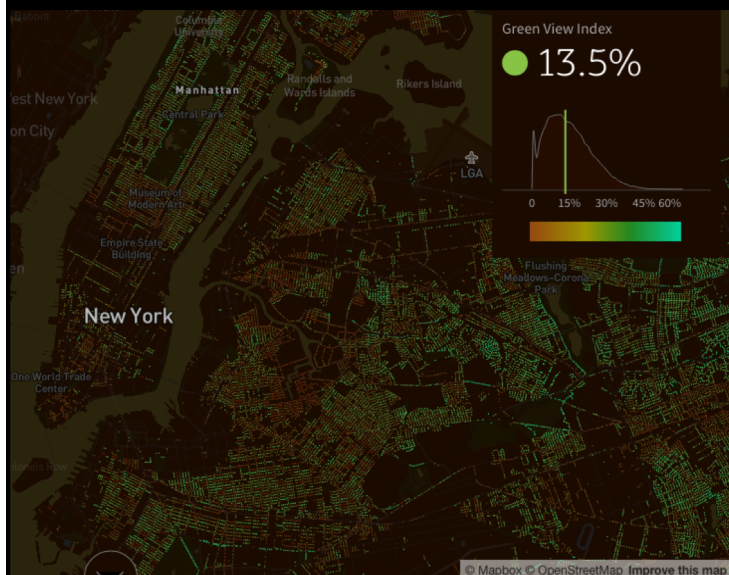
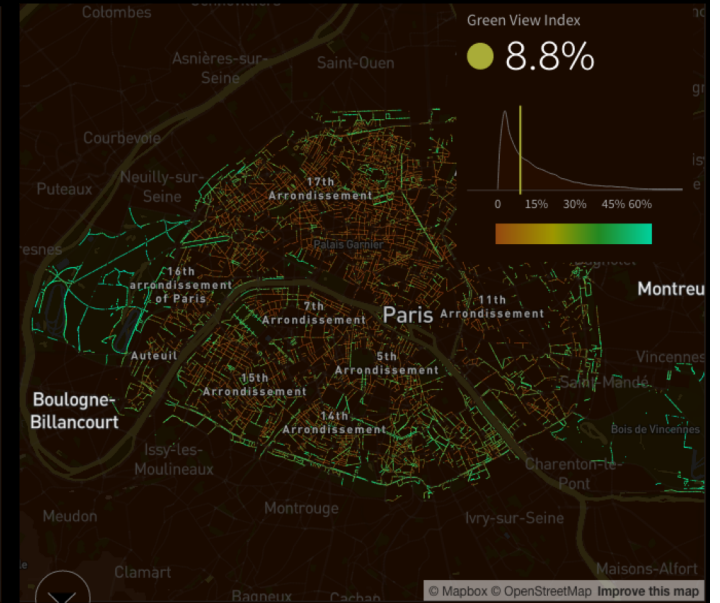
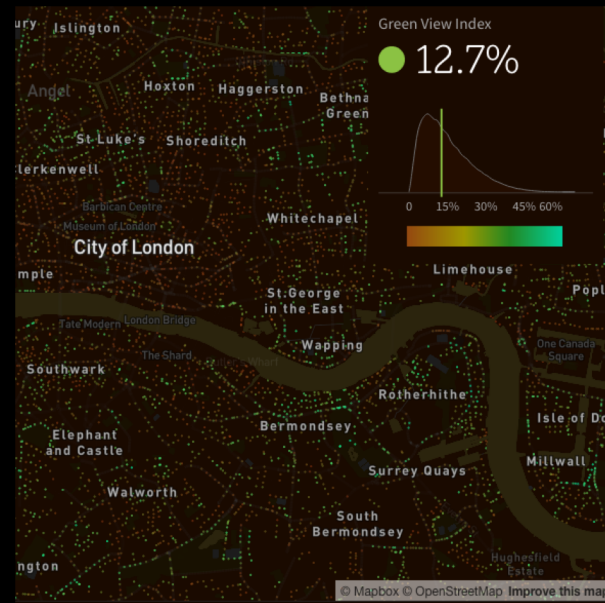
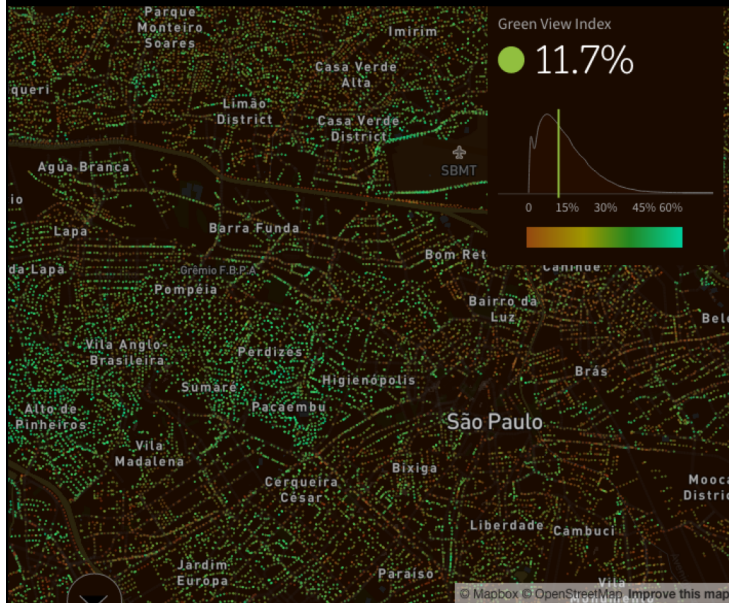


USP-CG

The Urban Green

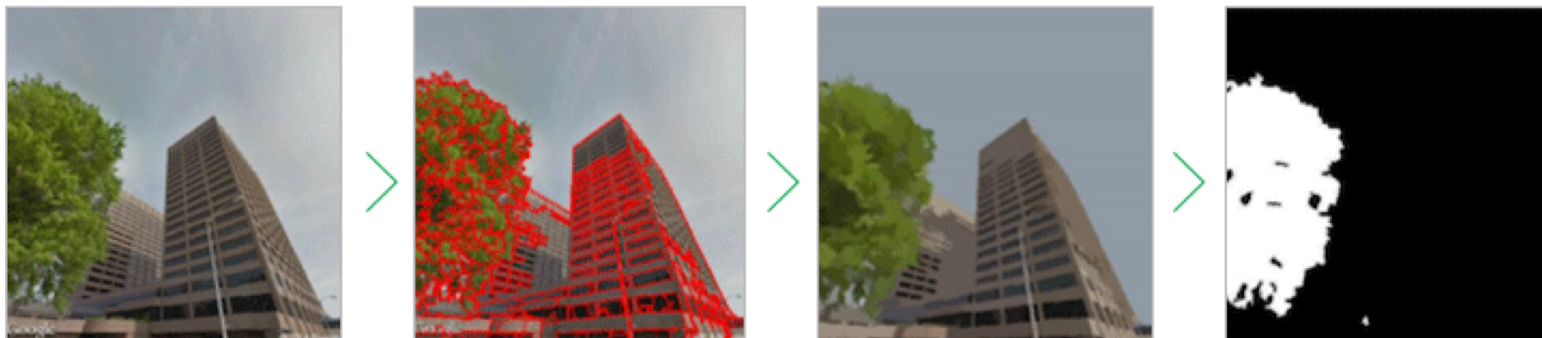
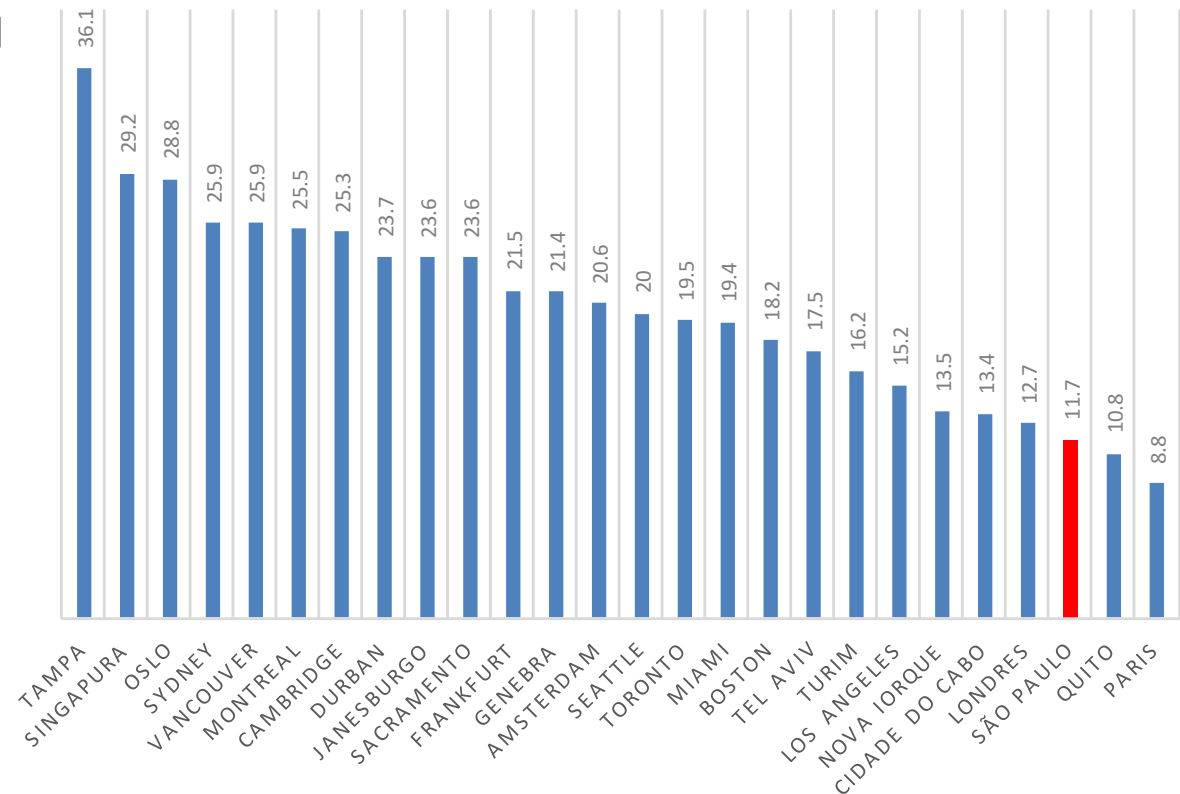


Adaptado de Buckeridge, M. 2015, Árvores urbanas em São Paulo: Planejamento, Economia e Água. Revista de Estudos avançados (29) 84



PERCEPTION OF ARBORIZATION
(GVI – TREEPEDIA %)
EM 26 CIDADES GLOBAIS

At USP, a similar
tool has been
developed
(called INACITY)



Treepedia and INACITY uses Google Street View (GSV) para calculate the Green View Index (GVI)
By using GSV, GVI gives an account of the urban arborization

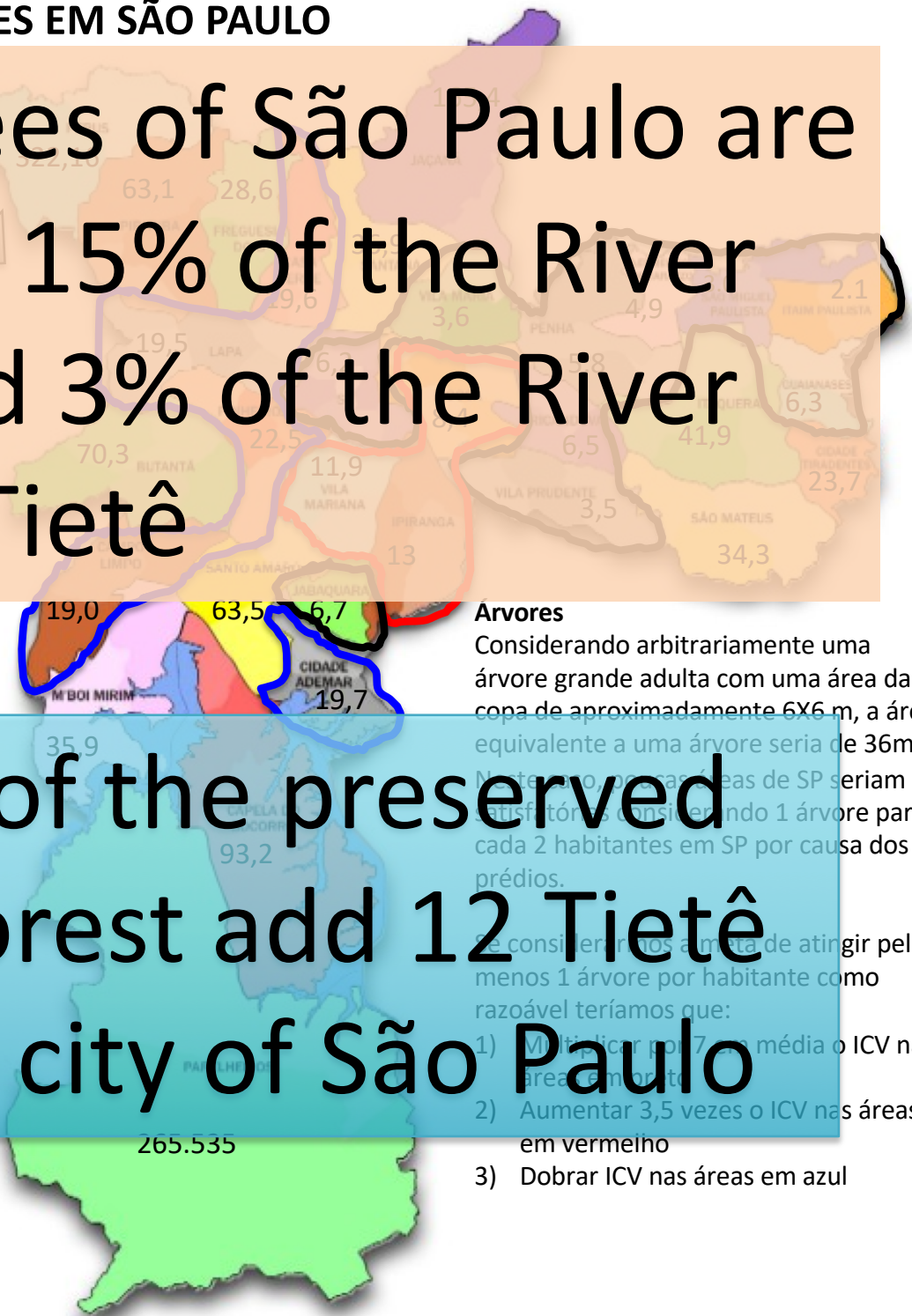
METAS PARA AUMENTAR AS ÁREAS VERDES EM SÃO PAULO

Marcos Buckeridge, Instituto de Biociências,
Universidade de São Paulo
msbuck@usp.br

The 650,000 trees of São Paulo are equivalent to 15% of the River Pinheiros and 3% of the River Tietê

Preto: regiões de prioridade 1 (8,5 a 13)
Vermelho: regiões de prioridade 2 (8,5 a 13)
Azul: regiões de prioridade 3 (13,1 a 22,5)

São 5 faixas de ICV:
0-5 muito baixo
5-11 baixo
11-20 médio-baixo
20-35 médio-alto
35-65 alto
75+ muito alto



Árvores
Considerando arbitrariamente uma árvore grande adulta com uma área da copa de aproximadamente 6X6 m, a área equivalente a uma árvore seria de 36m².

Neste caso, para as áreas de SP seriam satisfatórias considerando 1 árvore para cada 2 habitantes em SP por causa dos prédios.

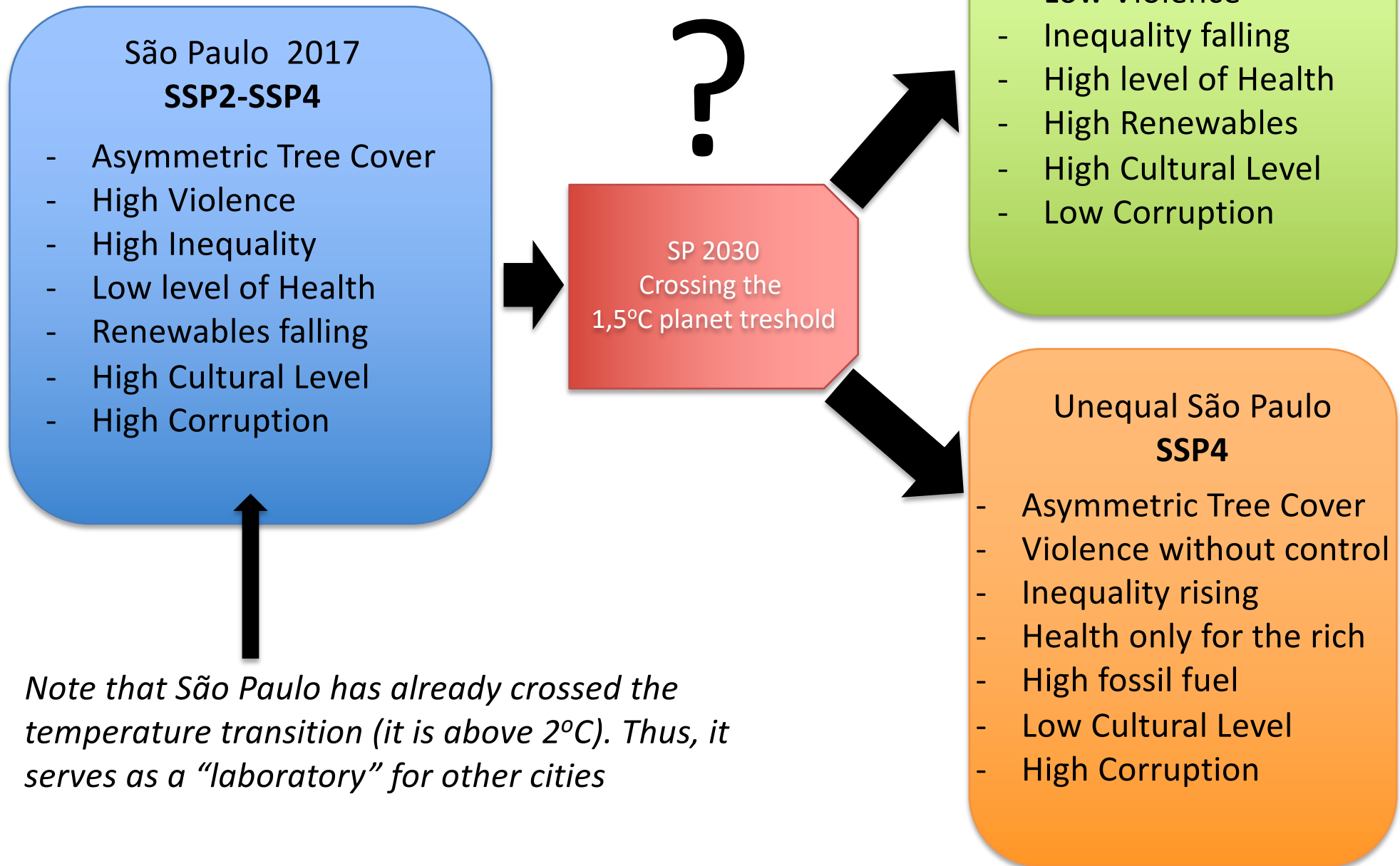
Se considerarmos a meta de atingir pelo menos 1 árvore por habitante como razoável teríamos que:

- 1) Multiplicar por 7 a média o ICV nas áreas em preto
- 2) Aumentar 3,5 vezes o ICV nas áreas em vermelho
- 3) Dobrar ICV nas áreas em azul

The 79 km² of the preserved Cantareira Forest add 12 Tietê Rivers to the city of São Paulo

Adaptado de Buckeridge, M. 2015. Árvores urbanas em São Paulo: Planejamento, Economia e Ação. Revista de Estudos Avançados 29(1):34

ROUTES TO THE FUTURE FOR SÃO PAULO 2050



Note that São Paulo has already crossed the temperature transition (it is above 2°C). Thus, it serves as a “laboratory” for other cities

THANK YOU



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