# Cool Cities?


## Climate Change and Urbanization

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# Urbanization and Climate Change

1. Urbanization and the Climate Change Debate.

2. Sprawl , Mitigation and Adaptation.

3. Research agendas.

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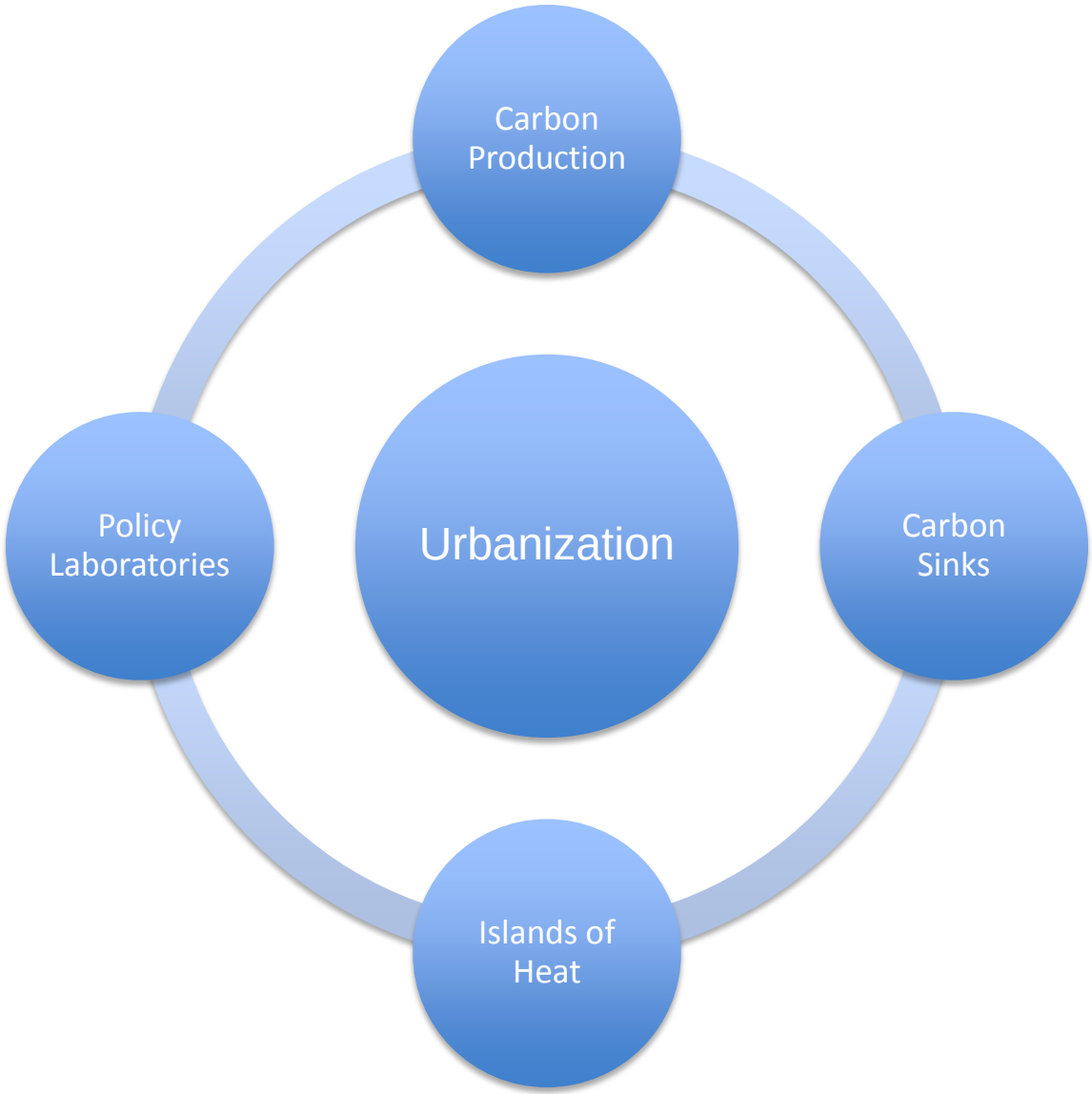


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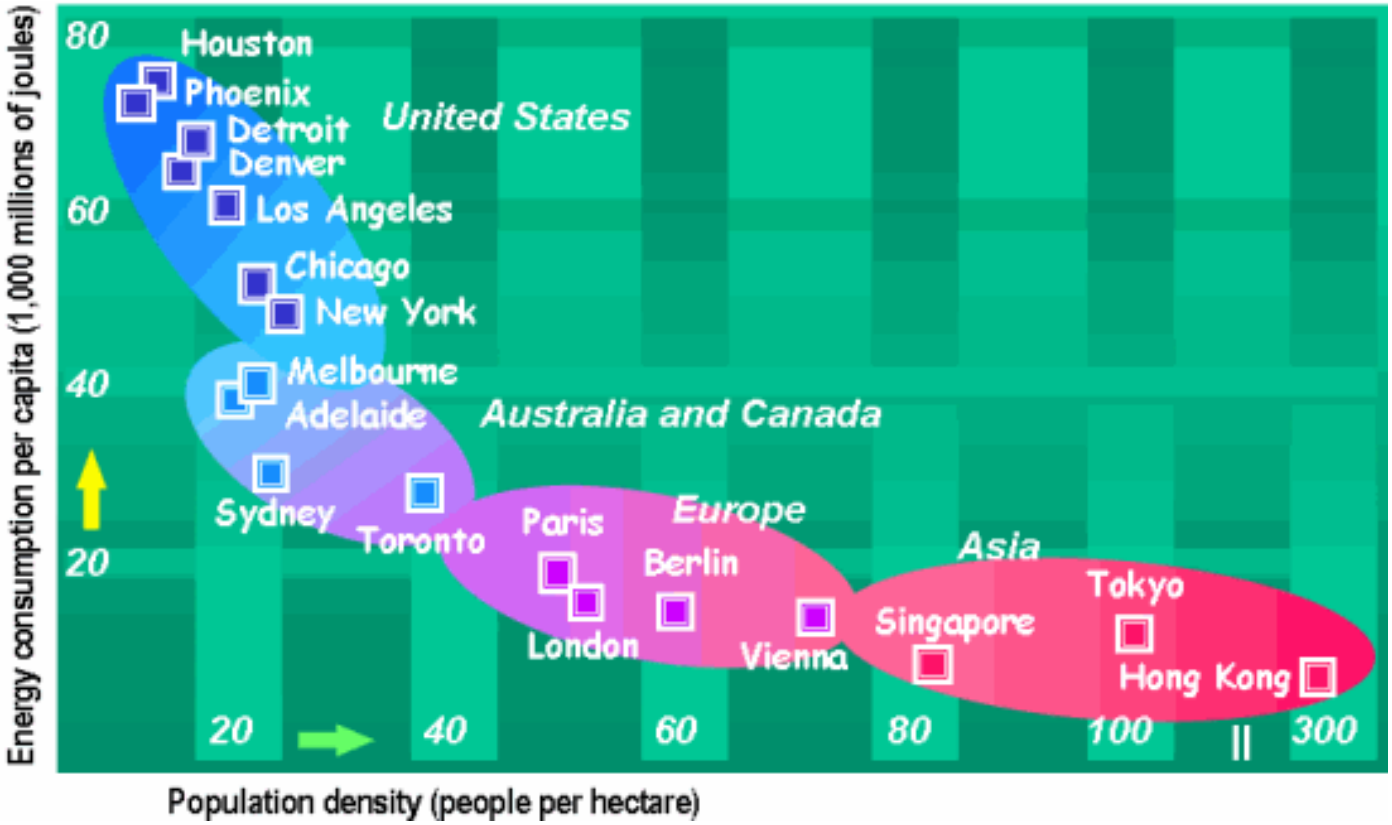
# 2. Sprawl , Mitigation and Adaptation.

“National Automobile Slum” (Kunstler)


Energy consumption per capita (1,000 millions of joules)
80
60
40
20
Houston
Phoenix
Detroit
Denver
Los Angeles
Chicago
New York
United States
Melbourne
Adelaide
Australia and Canada
Sydney
Toronto
Paris
London
Europe
Berlin
Vienna
Asia
Singapore
Tokyo
Hong Kong
20
40
60
80
100
300
Population density (people per hectare)

# VIRTUALLY EVERYWHERE, CITIES ARE CLEANER THAN SUBURBS.

| Metropolitan Statistical Area | Suburb-City Difference in Emissions from Driving and Public Transportation | Suburb-City Difference in Emissions from Home Heating | Suburb-City Difference in Emissions from Electricity | Suburb-City Difference in Total $CO_2$ Output Emissions |
|---|---|---|---|---|
| **Largest Suburb-City Difference** | ANNUAL $CO_2$ EMISSIONS (IN POUNDS) PER AVERAGE HOUSEHOLD | | | |
| New York, NY | 4,462 | 5,650 | 4,015 | 14,127 |
| Nashville, TN | 6,549 | 986 | 3,911 | 11,446 |
| Boston, MA | 5,066 | 4,460 | 1,837 | 11,363 |
| Atlanta, GA | 4,409 | 958 | 5,676 | 11,043 |
| Philadelphia, PA | 4,575 | 838 | 4,926 | 10,339 |
| **Moderate Suburb-City Difference (Selected)** | | | | |
| San Francisco, CA | 4,883 | 2,678 | 2,078 | 9,639 |
| Washington, DC | 2,470 | 140 | 5,757 | 8,367 |
| Houston, TX | 2,799 | 676 | 4,726 | 8,201 |
| Dallas, TX | 2,806 | -884 | 4,009 | 5,931 |
| Chicago, IL | 1,983 | -219 | 1,102 | 2,866 |
| **Smallest Suburb-City Difference** | | | | |
| Tampa, FL | 2,858 | -873 | -1,239 | 746 |
| Dayton, OH | 1,270 | -2,893 | 1,534 | -89 |
| Pittsburgh, PA | 3,297 | -3,744 | 318 | -129 |
| Los Angeles, CA | 857 | -119 | -2,455 | -1,717 |
| Detroit, MI | 2,263 | -6,800 | -48 | -4,585 |

# Adaptation and the resilient city – Learning from New Orleans

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# 3. Research agendas.


Mapping Sprawl

Urban Hazard Evaluation and Mapping

Flood and flood frequency

Building Resilience in Urban Systems

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