



# Pathways to urban sustainability “pieces” of the vision



A world map with a black background and a light gray dotted grid. Red squares of varying sizes are placed across the map to represent projected urban population density in 2050. The squares are most concentrated in North America, Europe, and East Asia, with smaller squares scattered across South America, Africa, and Australia. The text "BY 2050, 75% OF THE PLANET WILL LIVE IN CITIES" is centered over the map in white, bold, sans-serif font.

**BY 2050, 75% OF THE PLANET WILL LIVE IN CITIES**



A world map with a black background and a light gray dotted grid. Red squares of varying sizes are placed on the map to represent urban areas. The squares are most densely packed in North America, Europe, and East Asia, with smaller squares scattered across South America, Africa, and Australia. The text "BY 2050, 75% OF THE PLANET WILL LIVE IN CITIES" is centered over the map.

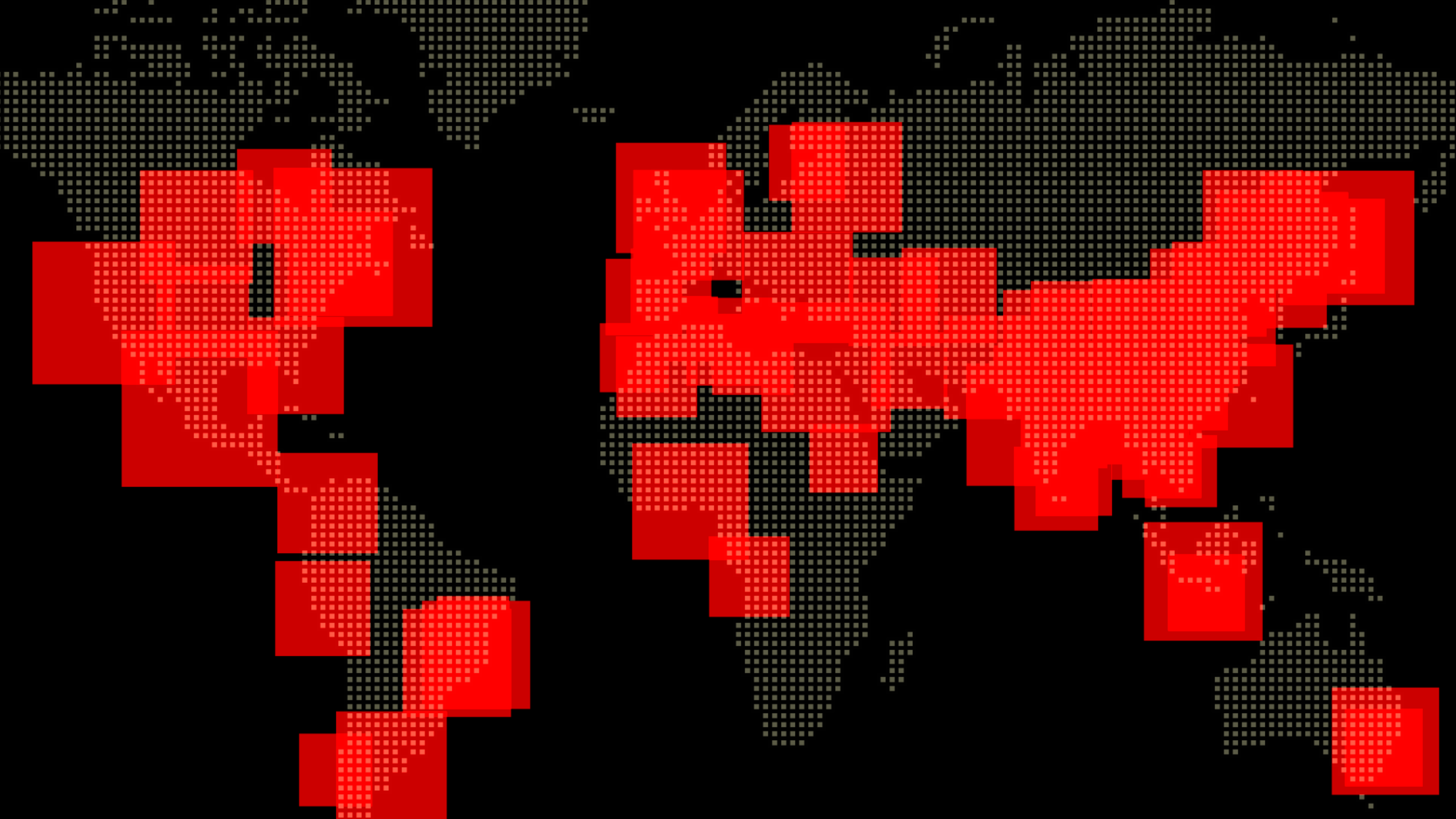
**BY 2050, 75% OF THE PLANET WILL LIVE IN CITIES**



A world map with a black background and a light gray dotted grid. Red, semi-transparent, pixelated shapes are overlaid on the map, representing the projected urban footprints of major cities by the year 2050. These shapes are concentrated in North America, Europe, and East Asia, with smaller, more distinct shapes in South America, Africa, and Australia. The text "BY 2050, 75% OF THE PLANET WILL LIVE IN CITIES" is centered over the map in white, bold, sans-serif capital letters.

**BY 2050, 75% OF THE PLANET WILL LIVE IN CITIES**







A world map on a black background, where landmasses are represented by a grid of small grey dots. Overlaid on this map are numerous red squares of varying sizes, which represent urban areas. These squares are concentrated in North America, Europe, and East Asia, with a few smaller ones scattered in South America, Africa, and Australia. The text 'OVER 7 BILLION PEOPLE IN CITIES BY 2050' is centered horizontally across the middle of the map.

**OVER 7 BILLION PEOPLE IN CITIES BY 2050**



A world map on a black background, where landmasses are represented by a grid of small grey dots. Overlaid on this map are numerous red squares of varying sizes, which represent urban areas. These squares are concentrated in North America, Europe, and East Asia, with some smaller squares scattered across South America, Africa, and Australia. The text 'OVER 7 BILLION PEOPLE IN CITIES BY 2050' is centered horizontally across the middle of the map.

**OVER 7 BILLION PEOPLE IN CITIES BY 2050**



A high-angle, red-tinted photograph of a city street intersection. The image shows a grid of streets with cars and pedestrians. The text "HOW CAN OUR CITIES PREPARE?" is overlaid in white, bold, sans-serif font across the center of the image.

**HOW CAN OUR CITIES PREPARE?**



An aerial photograph of a city street, showing buildings, sidewalks, and parked cars. The entire image is overlaid with a semi-transparent red filter. The text "HOW CAN OUR CITIES PREPARE?" is centered in white, bold, sans-serif capital letters.

**HOW CAN OUR CITIES PREPARE?**



**BY DESIGN**



1

**FOCUS ON URBAN FORM**



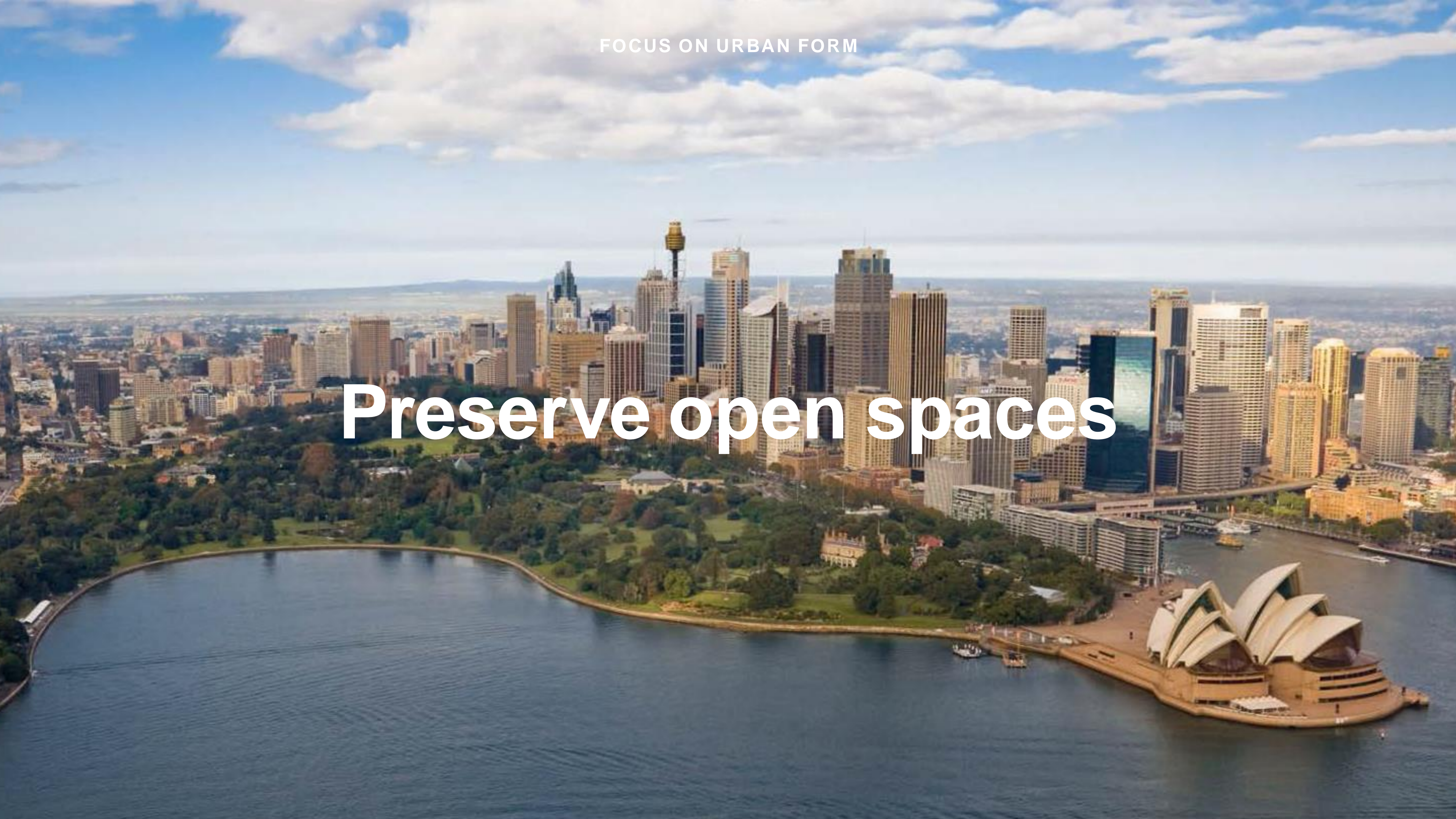
FOCUS ON URBAN FORM

**Insist on compact development**



FOCUS ON URBAN FORM

**Preserve open spaces**





FOCUS ON URBAN FORM

# Demand walkable districts





FOCUS ON URBAN FORM

Promote mixed use





FOCUS ON URBAN FORM

**CREATE A LIVABLE DENSITY**

2

**ACT REGIONALLY**



ACT REGIONALLY

Connect urban centers





ACT REGIONALLY

# Restore watersheds

A wide-angle photograph of a coastal scene. The sky is a vibrant blue, filled with large, fluffy white clouds. Below the sky is a calm body of water, likely a lake or ocean, meeting a sandy beach. In the foreground, a shallow, muddy area is visible, with several clumps of green grass growing out of the water. Two people are walking on the beach in the middle ground, their figures reflected in the water. The overall scene suggests a natural, restored environment.



ACT REGIONALLY

# Repair ecosystems



ACT REGIONALLY

# Rethink agriculture



ACT REGIONALLY

**THINK BEYOND POLITICAL BOUNDARIES**



3

**REINVENT MOBILITY**



REINVENT TRANSPORT

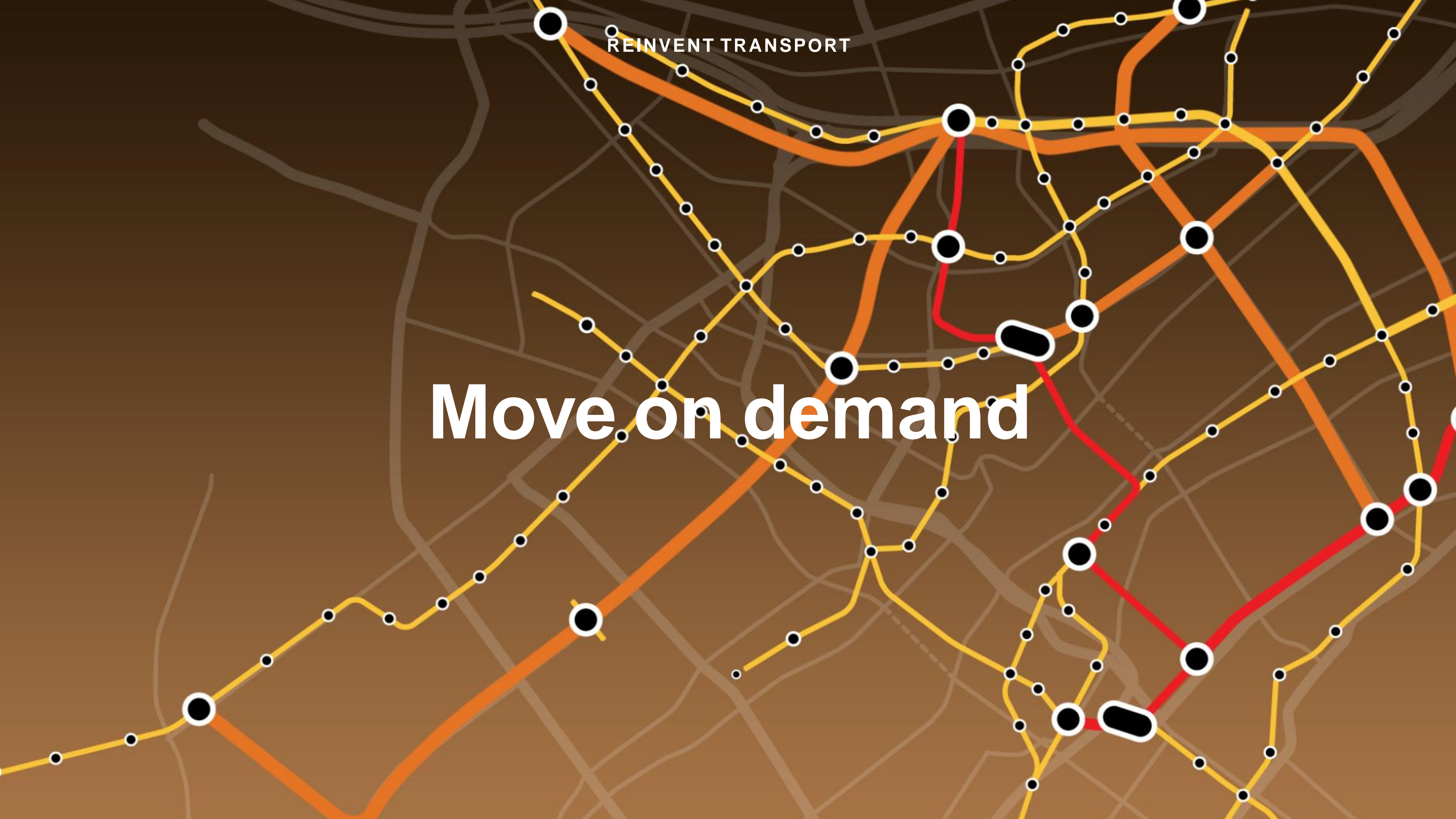
Prioritize transit





REINVENT TRANSPORT

Move on demand





REINVENT TRANSPORT

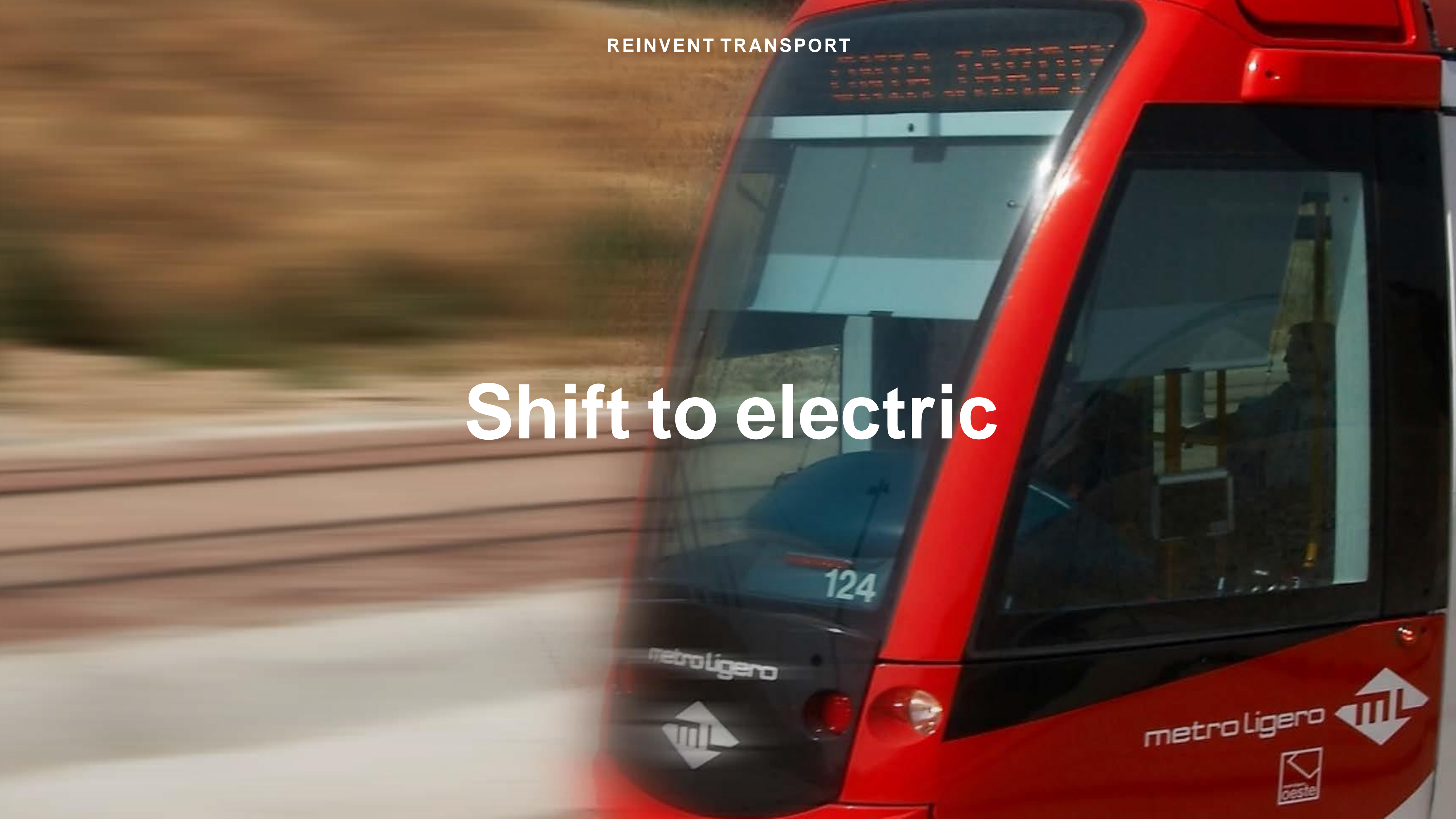
Use less energy

854.2



REINVENT TRANSPORT

# Shift to electric





REINVENT TRANSPORT

# DESIGN ACCESSIBILITY



4

**INNOVATE INFRASTRUCTURE**



**Cities emit 75% of greenhouse gases**



INNOVATE INFRASTRUCTURE

**Move to renewables**



# Achieve high performance





INNOVATE INFRASTRUCTURE

**Leverage data science**



INNOVATE INFRASTRUCTURE



**Retain & reuse water**



INNOVATE INFRASTRUCTURE

**ELIMINATE THE CONCEPT OF WASTE**



5

EMBRACE CULTURE



EMBRACE CULTURE

Advance the arts





EMBRACE CULTURE

Preserve traditions





EMBRACE CULTURE

# Respond to climate





EMBRACE CULTURE

Use regional building methods





EMBRACE CULTURE

**Reflect local character**





EMBRACE CULTURE

**STRENGTHEN THE SPIRIT OF PLACE**



6

**RAISE PEOPLE OUT OF POVERTY**



RAISE PEOPLE OUT OF POVERTY

**Offer quality education**



RAISE PEOPLE OUT OF POVERTY

**Provide access to food**





RAISE PEOPLE OUT OF POVERTY

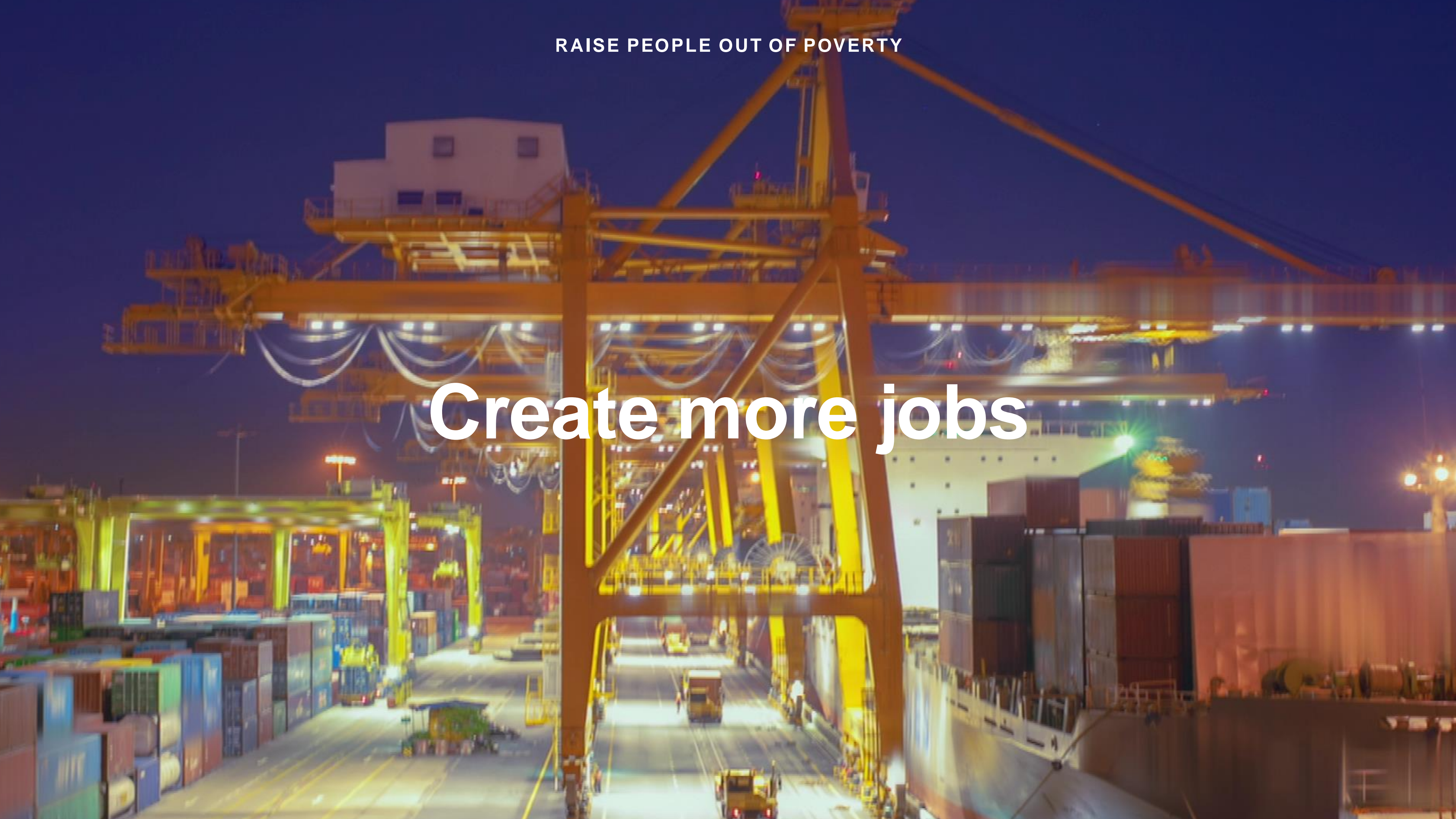
**Ensure safe neighborhoods**





RAISE PEOPLE OUT OF POVERTY

Create more jobs





RAISE PEOPLE OUT OF POVERTY

**ENABLE A BETTER FUTURE**



7

**SPARK URBAN SYNERGY**



SPARK URBAN SYNERGY

Be home to great minds



SPARK URBAN SYNERGY

A glowing blue brain with neural connections, rendered in a translucent, wireframe-like style. The brain is shown in profile, facing right, with intricate patterns of light blue and white lines representing neural pathways and synapses. The overall effect is one of high-tech, futuristic neuroscience.

# Invest in research and innovation



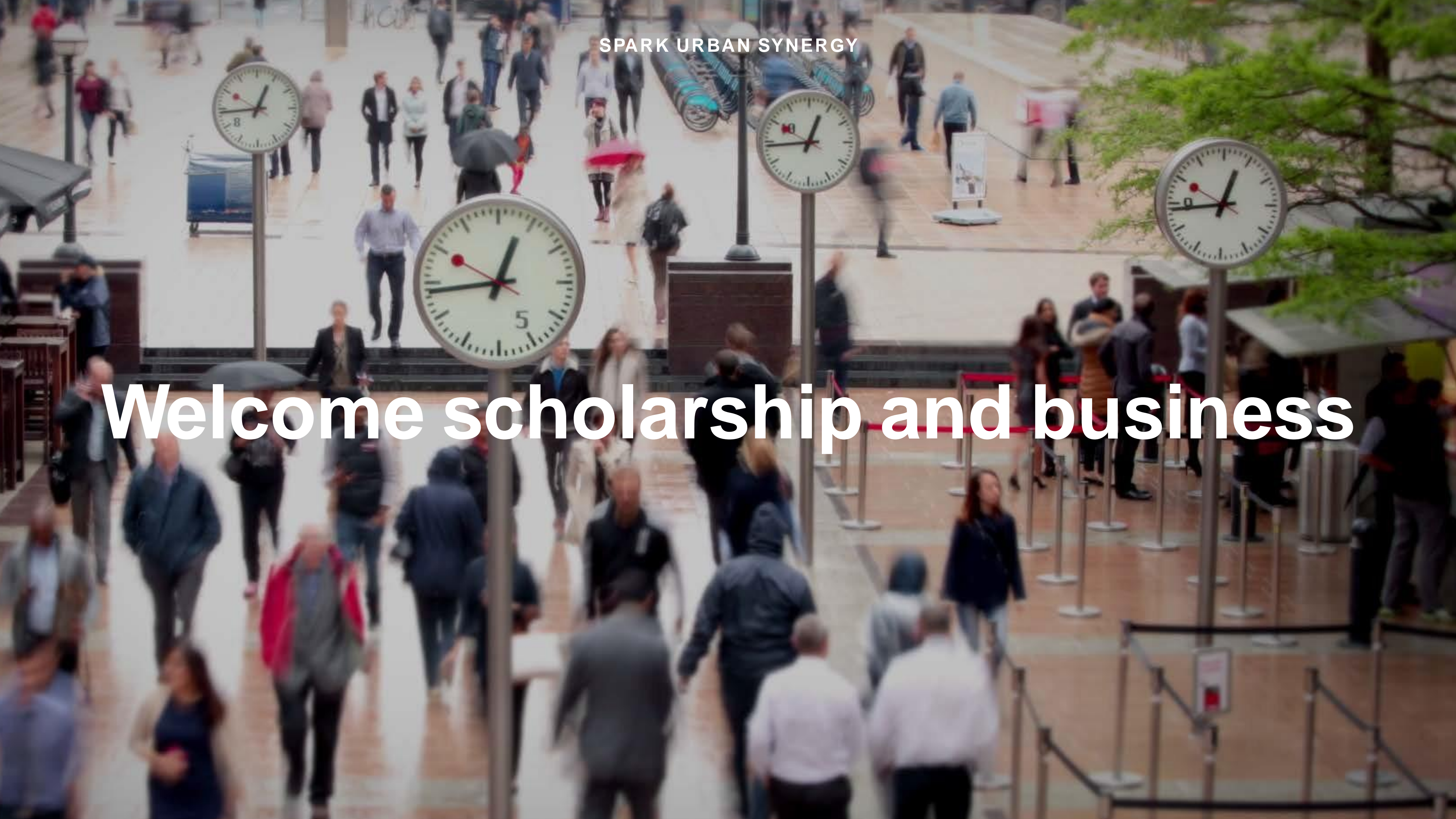


SPARK URBAN SYNERGY

**Invest in research and innovation**



SPARK URBAN SYNERGY



**Welcome scholarship and business**



SPARK URBAN SYNERGY

**EXPERIENCE A HEALTHIER CITY**



GREAT LAKES CENTURY VISION PLAN





# Fostering ecosystem stewardship





# High Performance Chicago





# Living without waste





OPTICS VALLEY





OPTICS VALLEY

**Respecting natural systems**





## CANARY WHARF DISTRICT





CANARY WHARF DISTRICT

# Reviving industrial areas Rebuilding districts





## DENVER UNION STATION



Mobility Denver



## DENVER UNION STATION

# Connecting city and region





## BEIJING CBD EAST EXPANSION





# Conserving energy at city scale







# Resiliency Guangzhou



# Designing for climate change





PARSONS NEW SCHOOL



Education **New York**



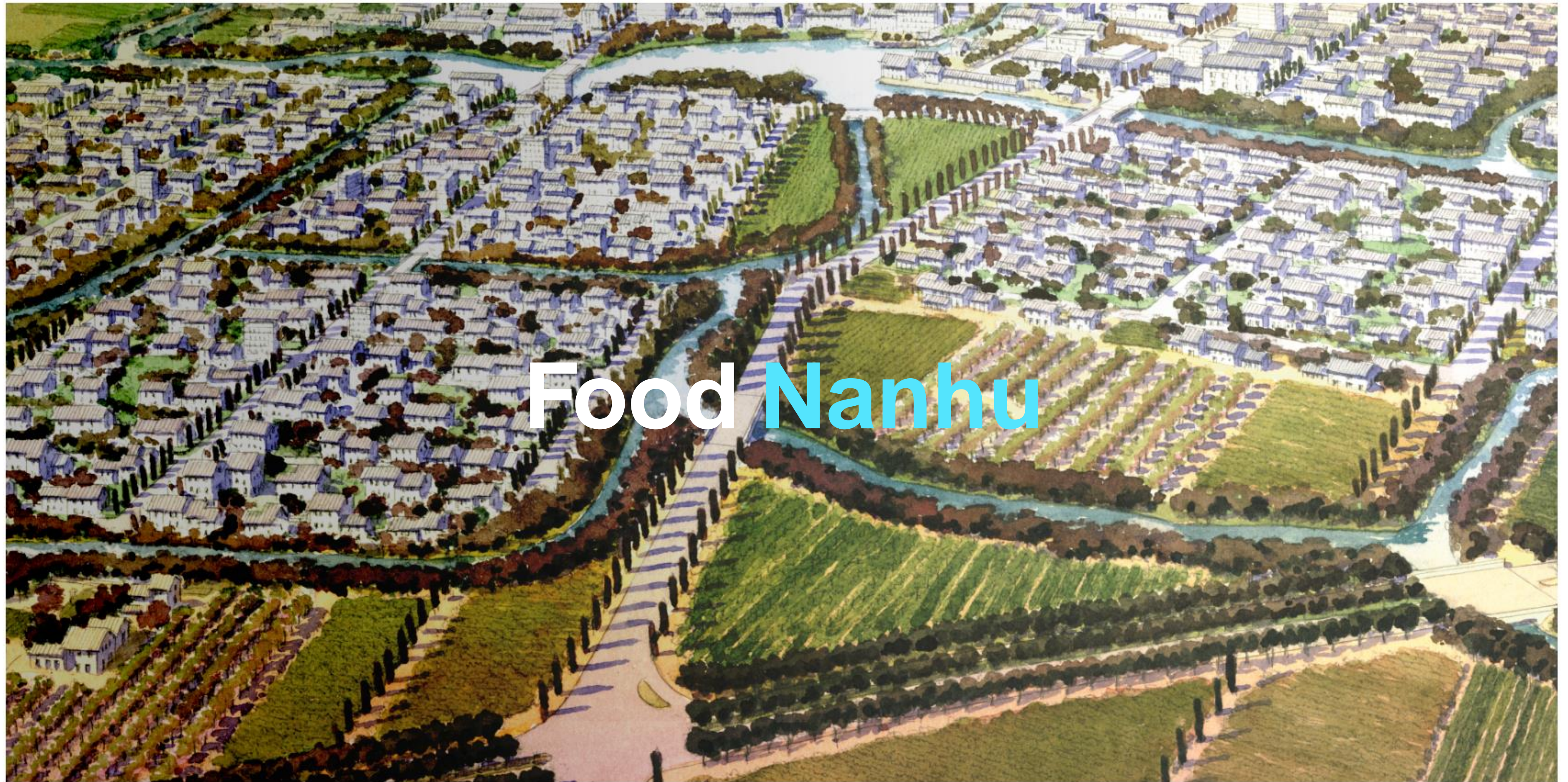
PARSONS NEW SCHOOL

# City & Institution partnerships





## NANHU NEW COUNTRY VILLAGE



Food Nanhu





**Growing the region's food supply**



BARANGAROO

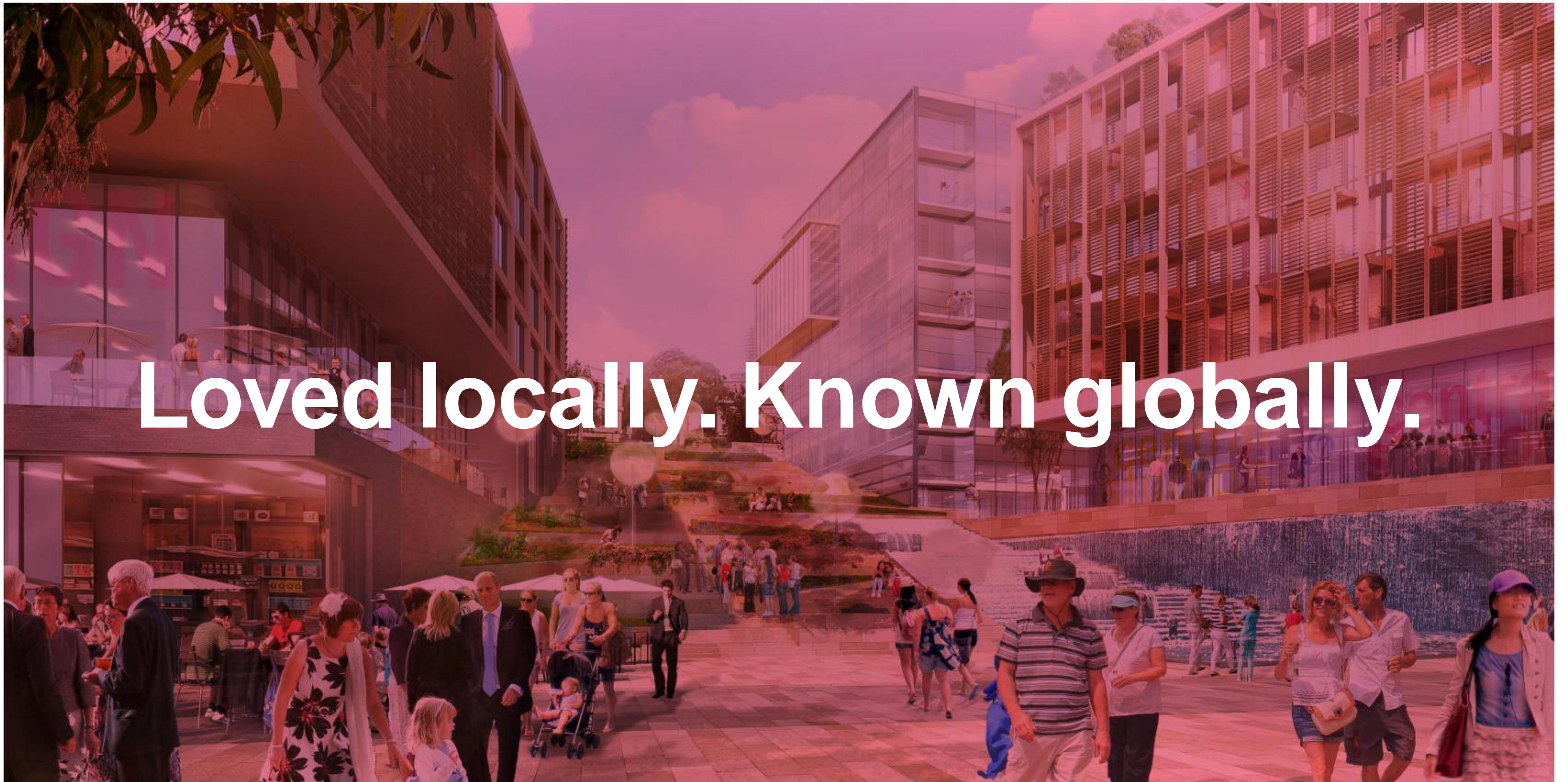


# Culture Sydney



BARANGAROO

Loved locally. Known globally.





MILLENNIUM PARK



Urban Vitality Everywhere



MILLENNIUM PARK

Nurturing the next generation





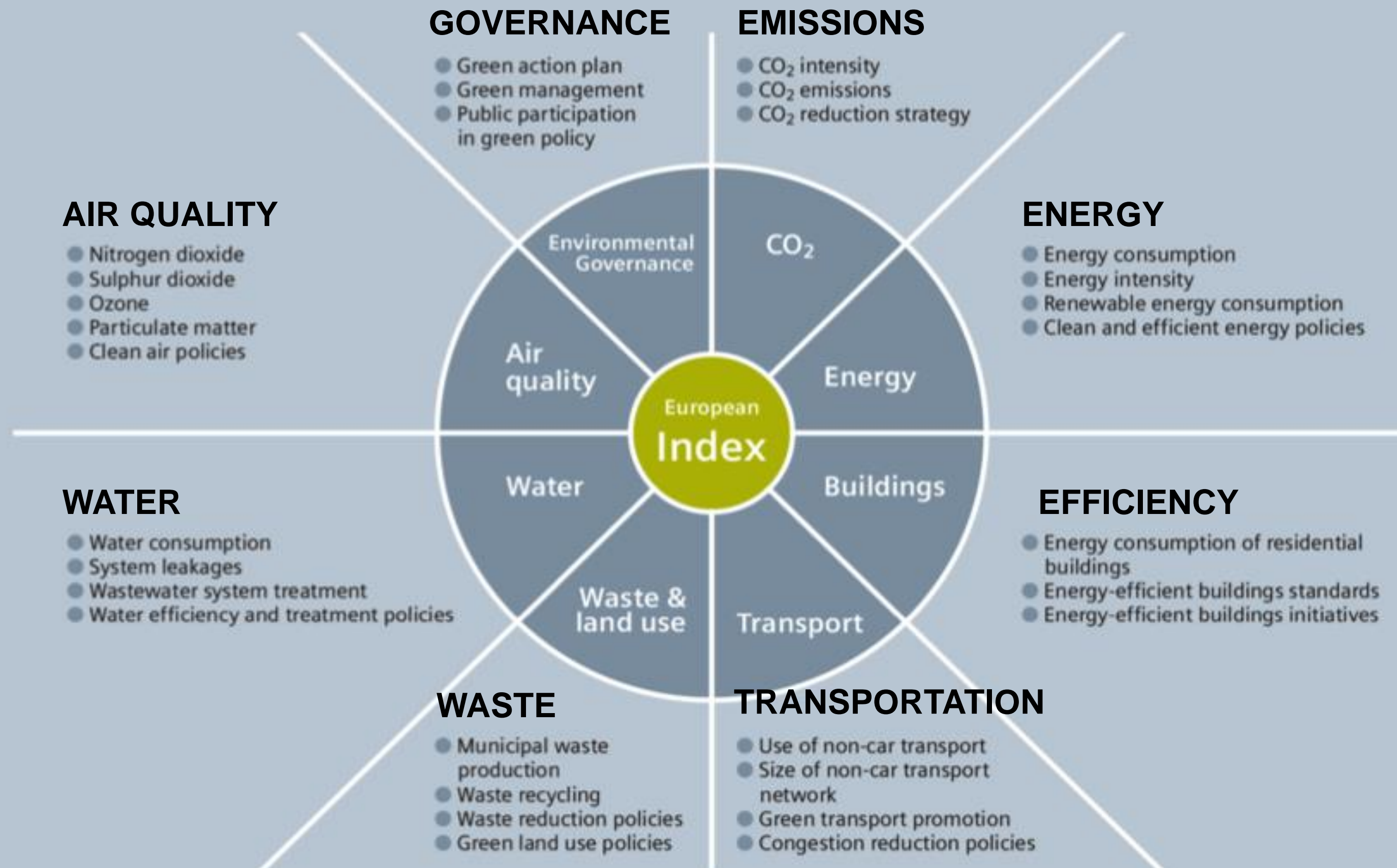




# DEFINING URBAN METRICS

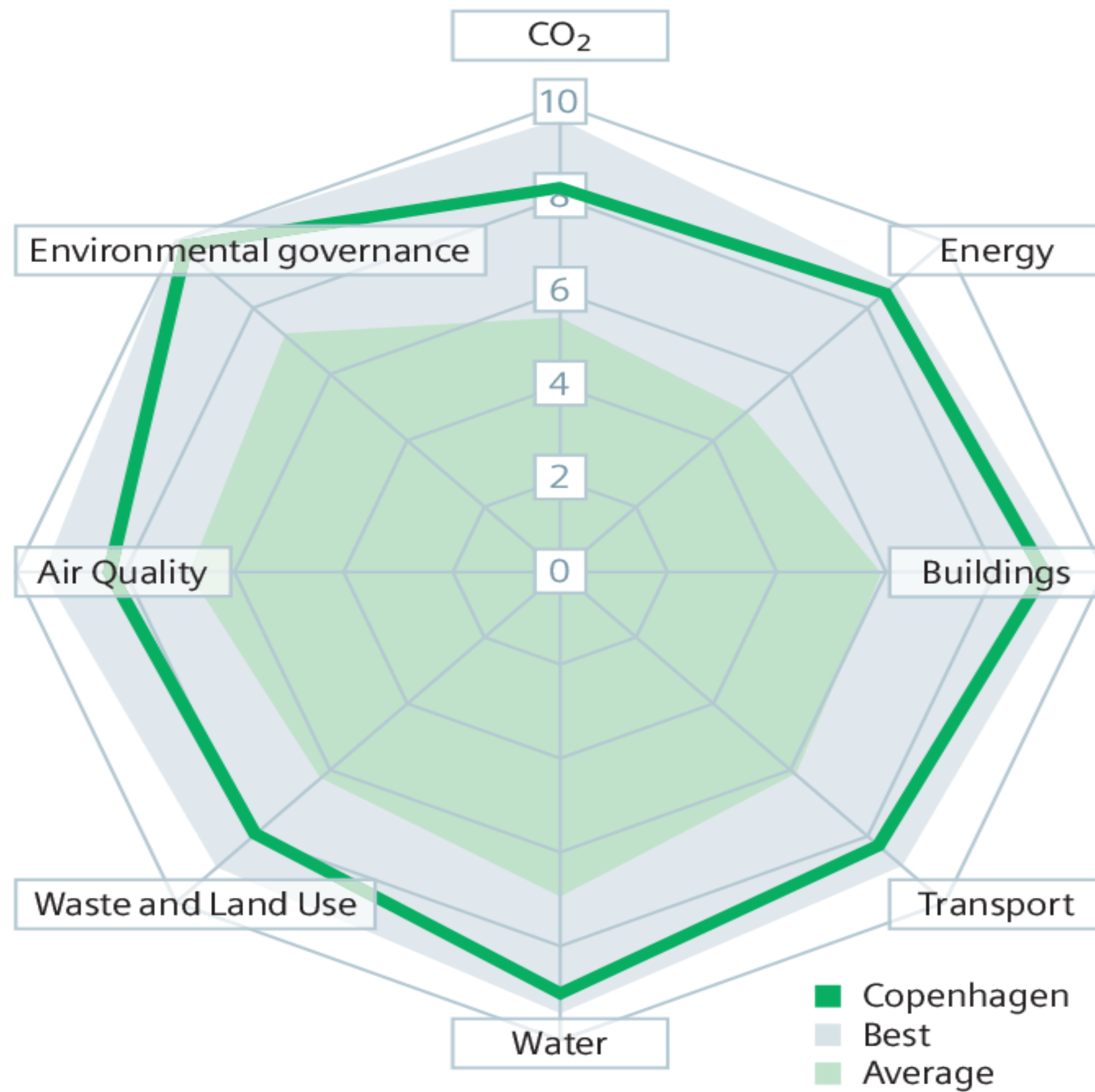


## THE GREEN CITY INDEX EVALUATES INDICATORS



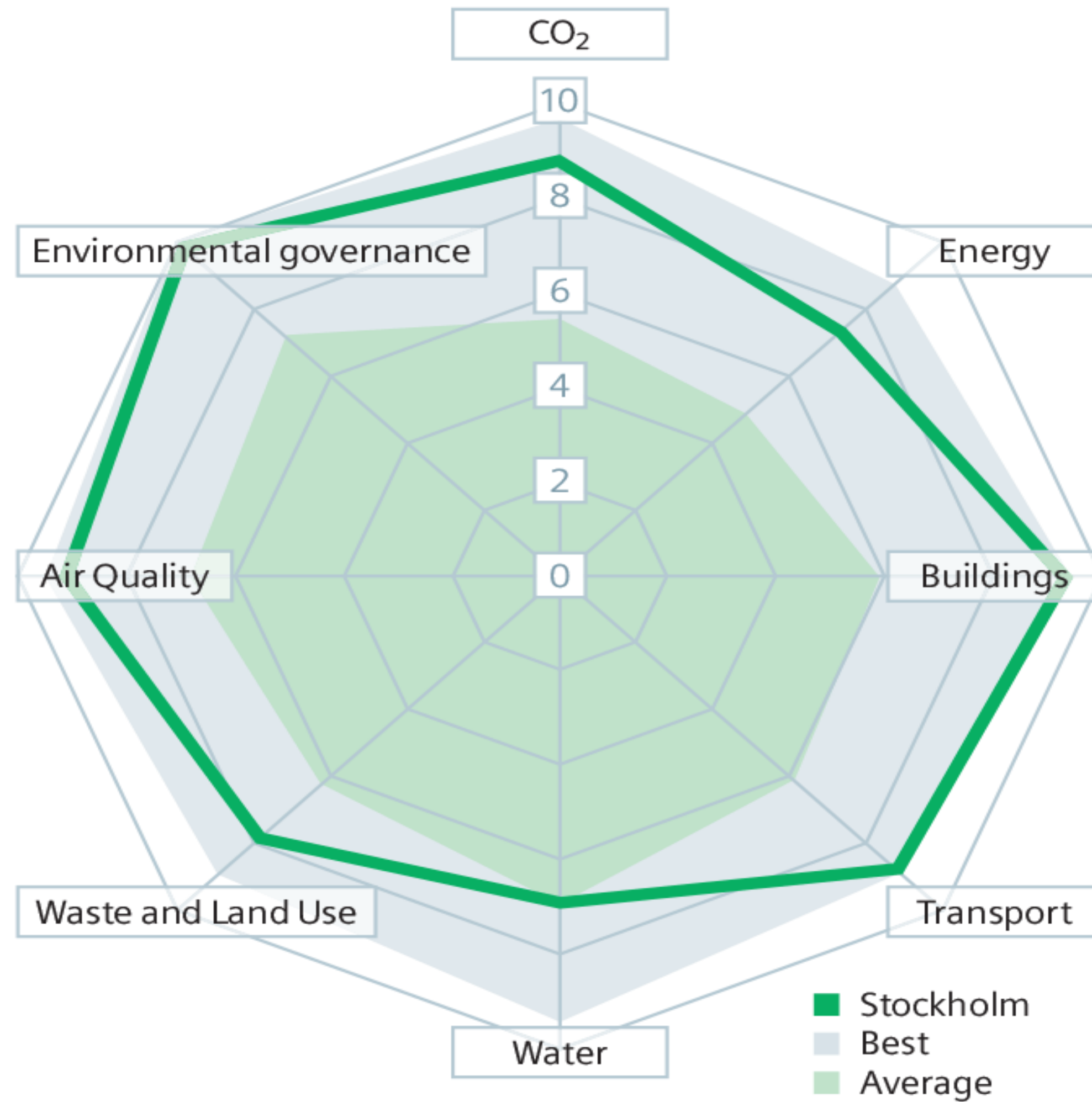


# COPENHAGEN, DENMARK



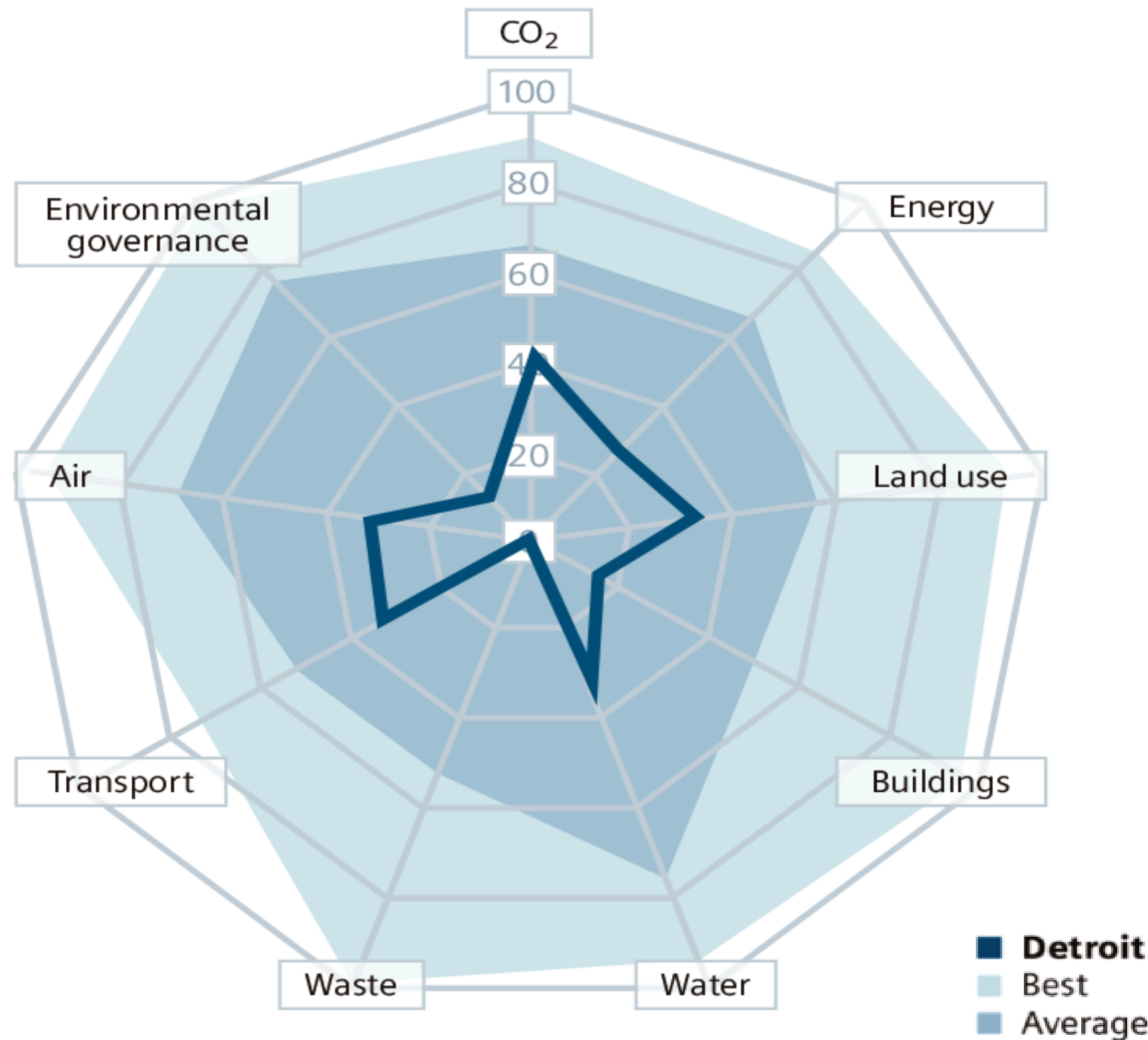


# STOCKHOLM, SWEDEN



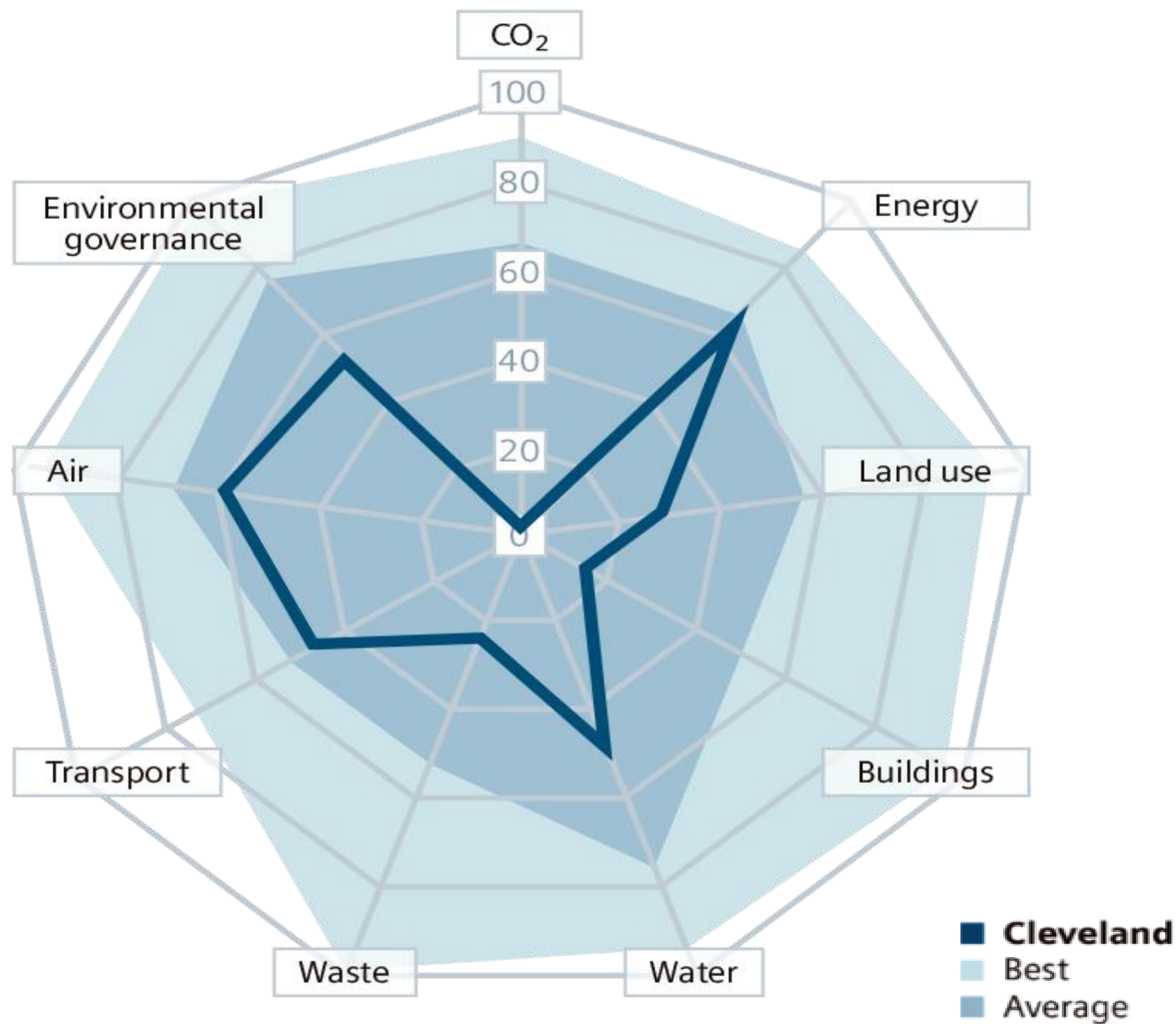


# DETROIT



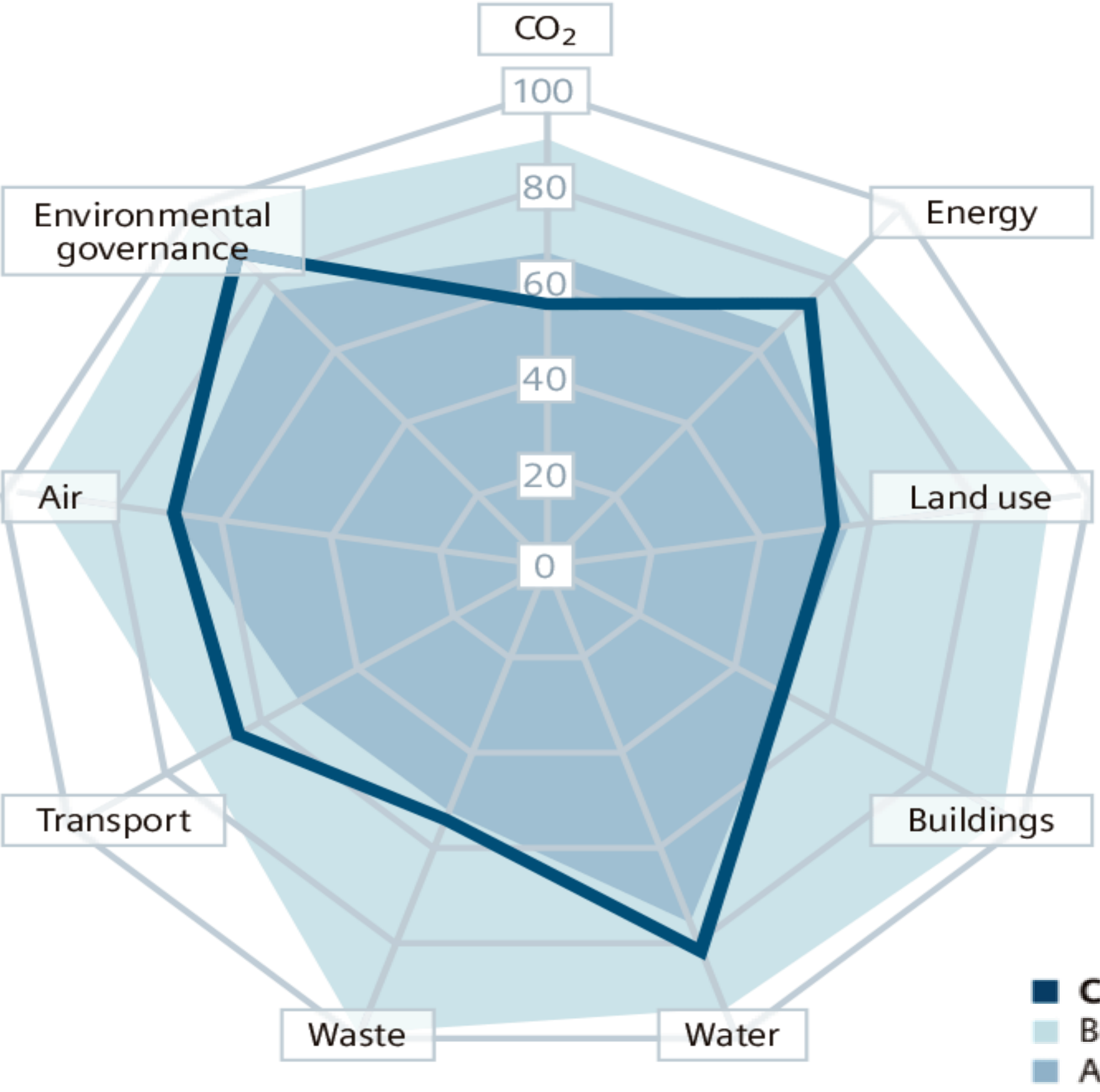


# CLEVELAND



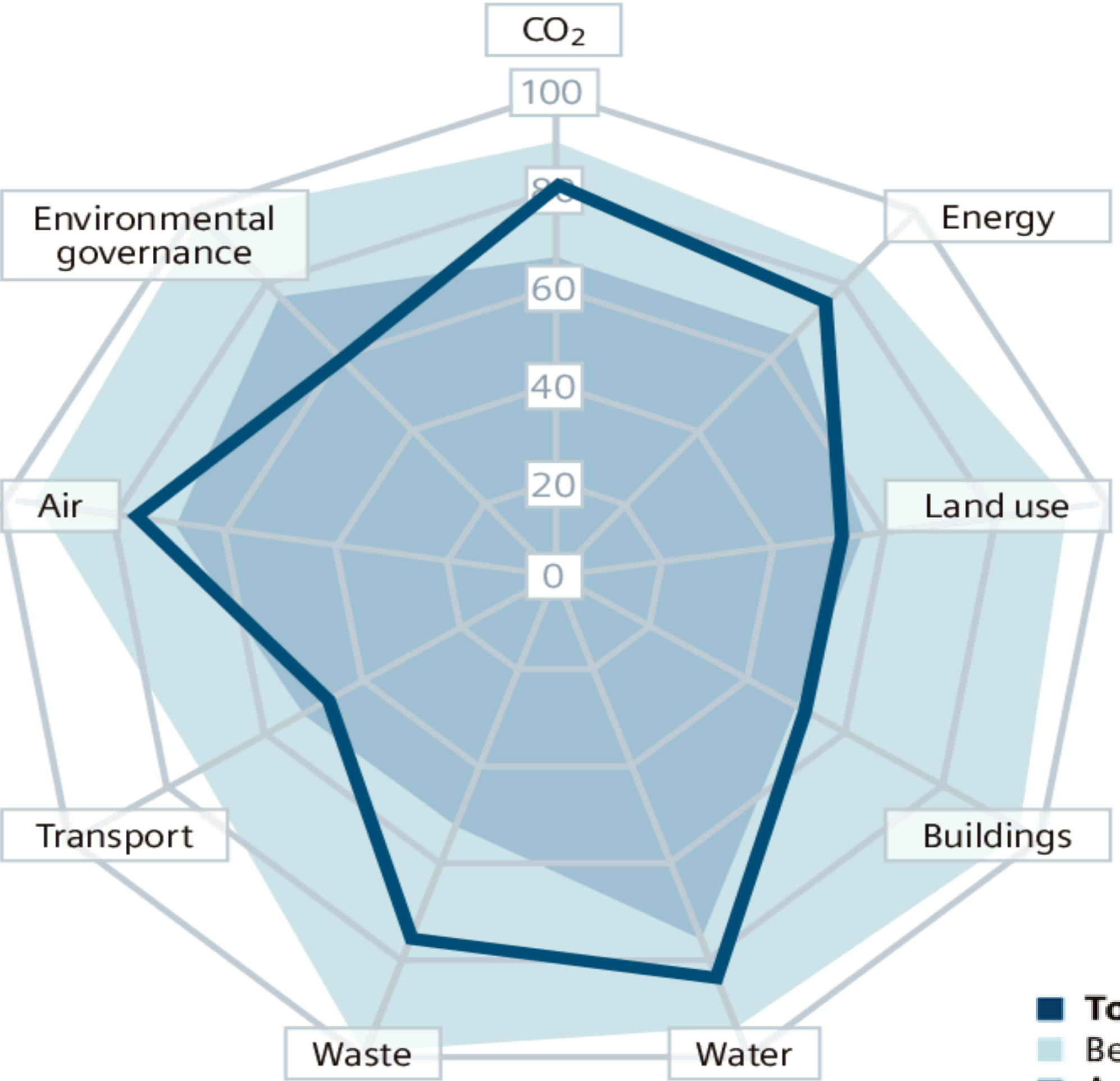


CHICAGO





TORONTO



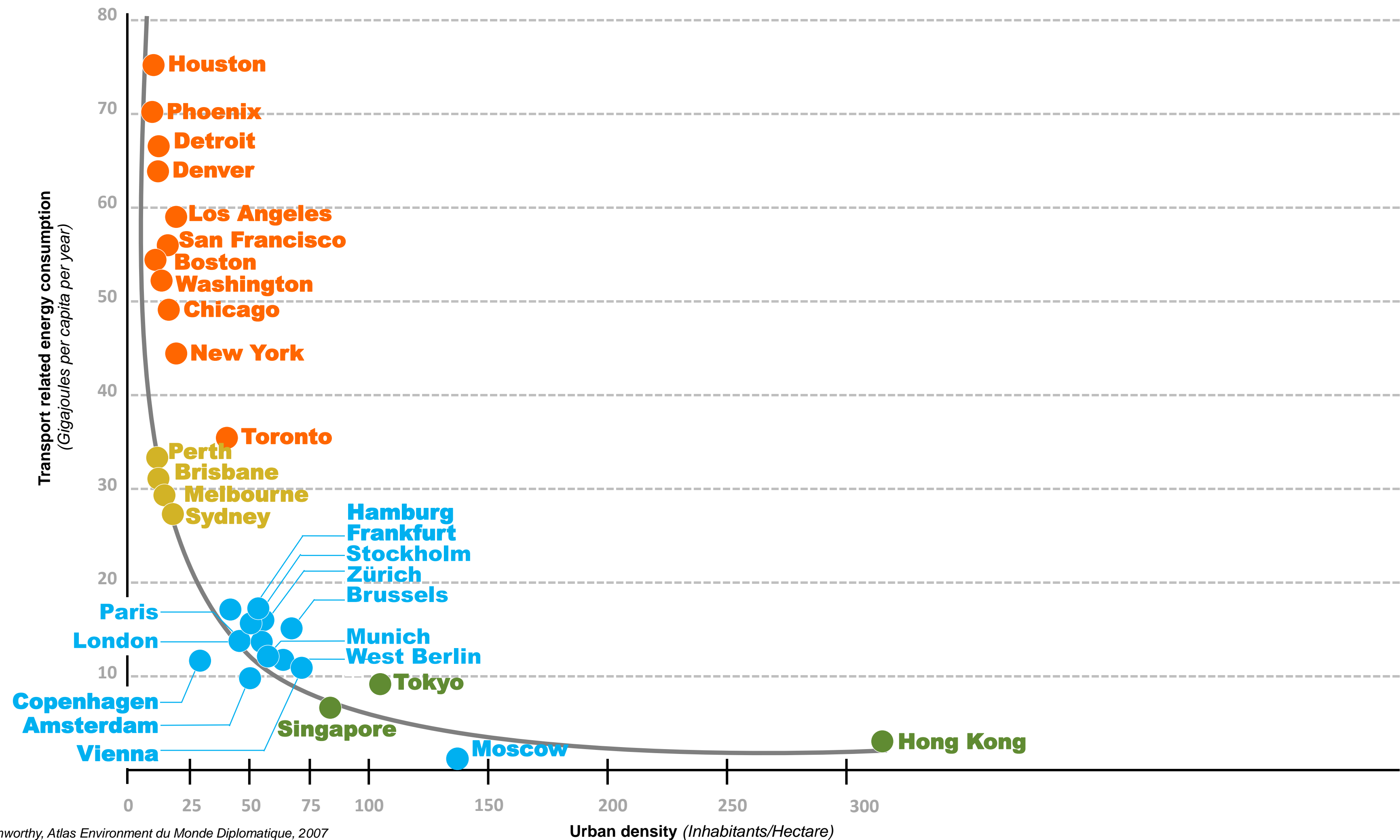
- Toronto
- Best
- Average



**TRANSPORTATION, ENERGY & DENSITY**



THE RELATIONSHIP BETWEEN TRANSPORTATION, ENERGY AND DENSITY

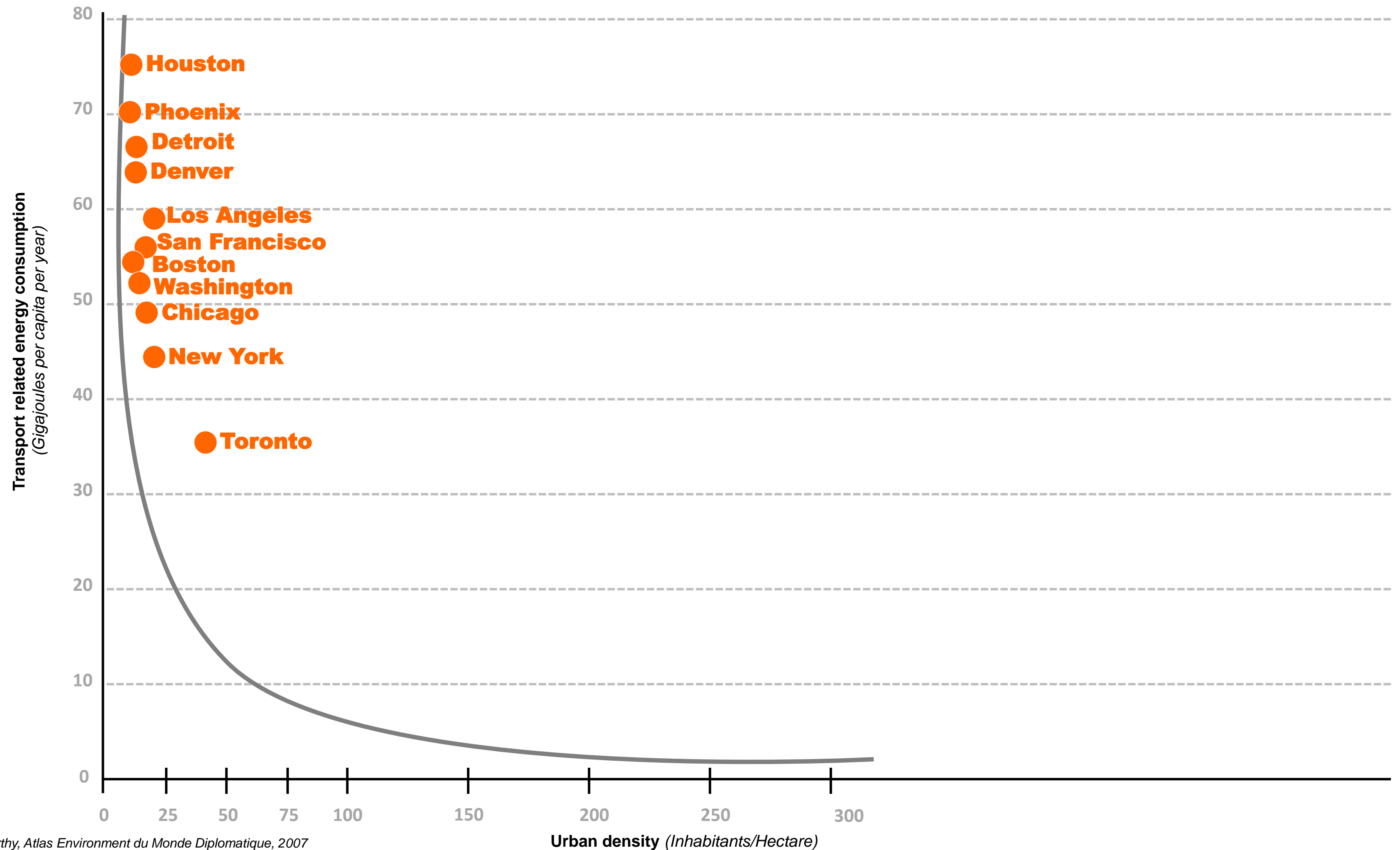


Source: Newman et Kenworthy, Atlas Environnement du Monde Diplomatique, 2007



# THE RELATIONSHIP BETWEEN TRANSPORTATION, ENERGY AND DENSITY

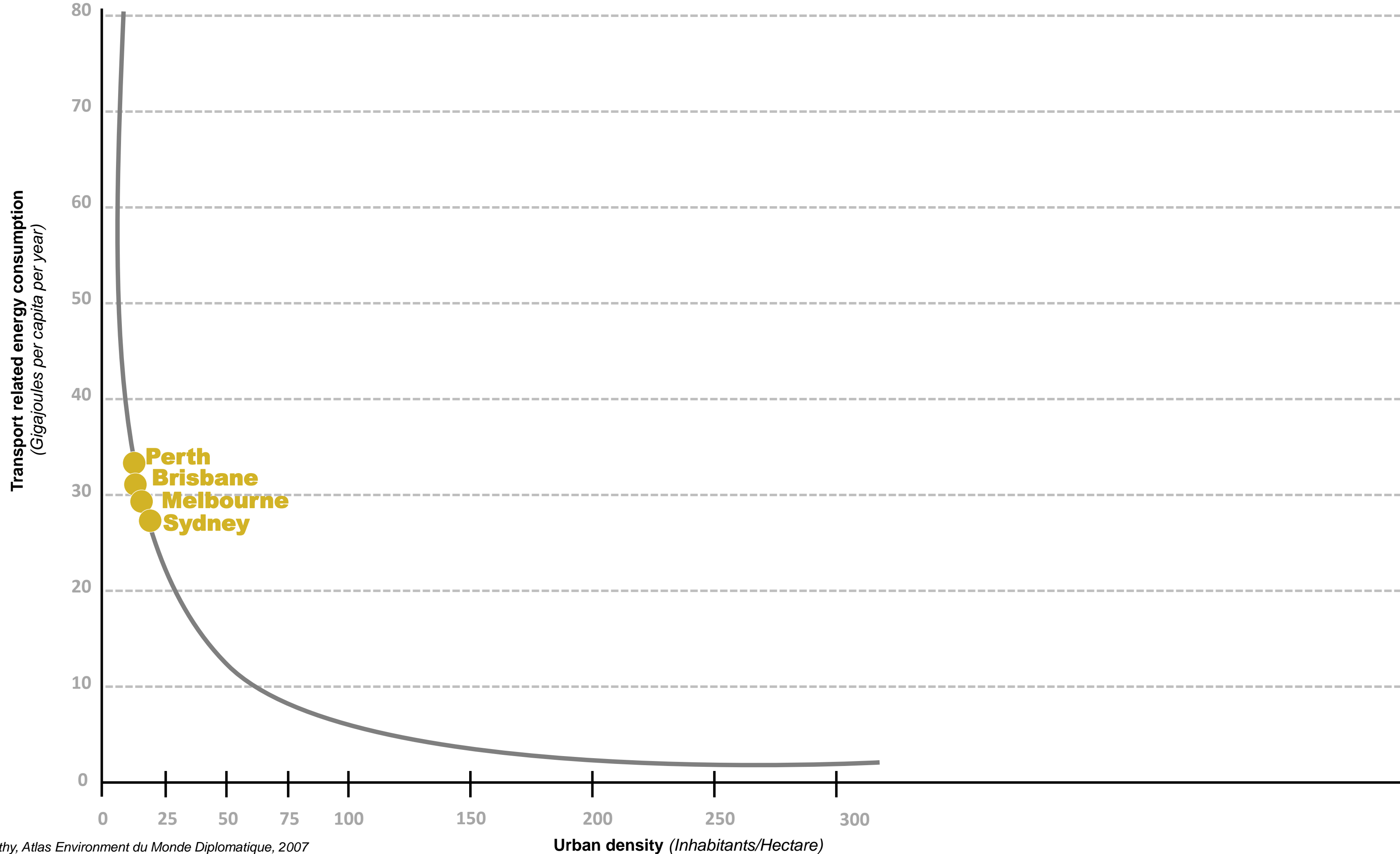
## North American Cities





THE RELATIONSHIP BETWEEN TRANSPORTATION, ENERGY AND DENSITY

# Australian Cities

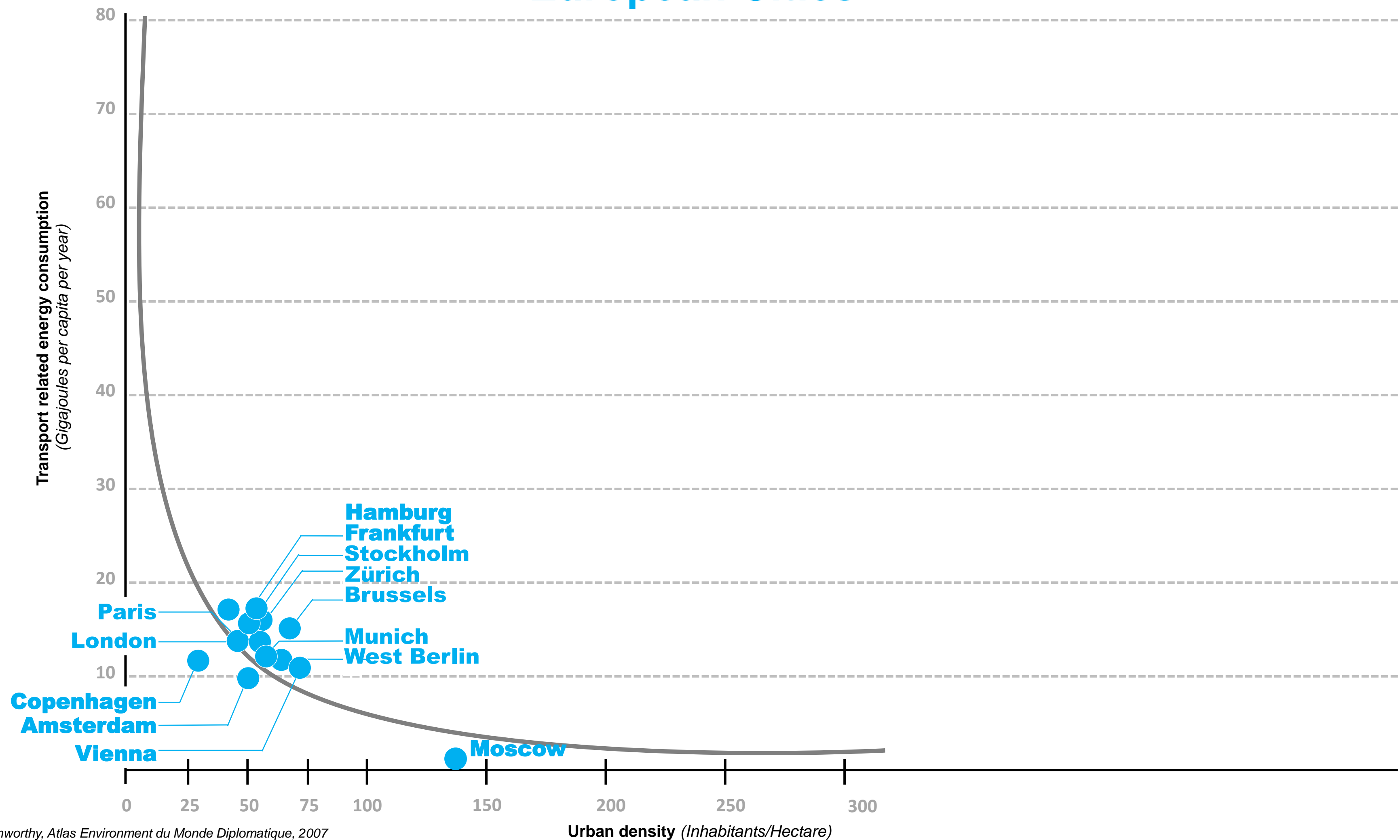


Source: Newman et Kenworthy, Atlas Environment du Monde Diplomatique, 2007



THE RELATIONSHIP BETWEEN TRANSPORTATION, ENERGY AND DENSITY

European Cities

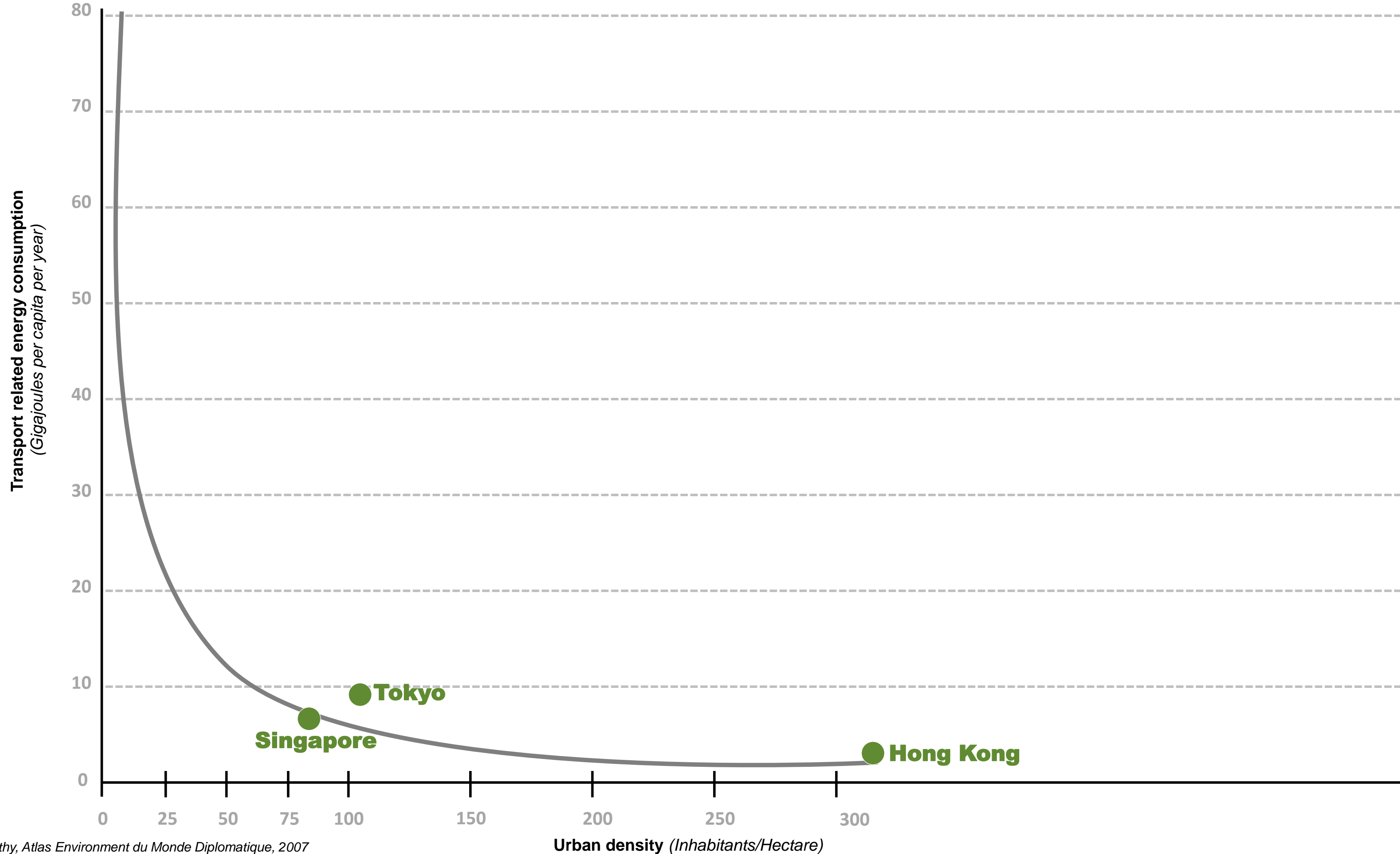


Source: Newman et Kenworthy, Atlas Environment du Monde Diplomatique, 2007



THE RELATIONSHIP BETWEEN TRANSPORTATION, ENERGY AND DENSITY

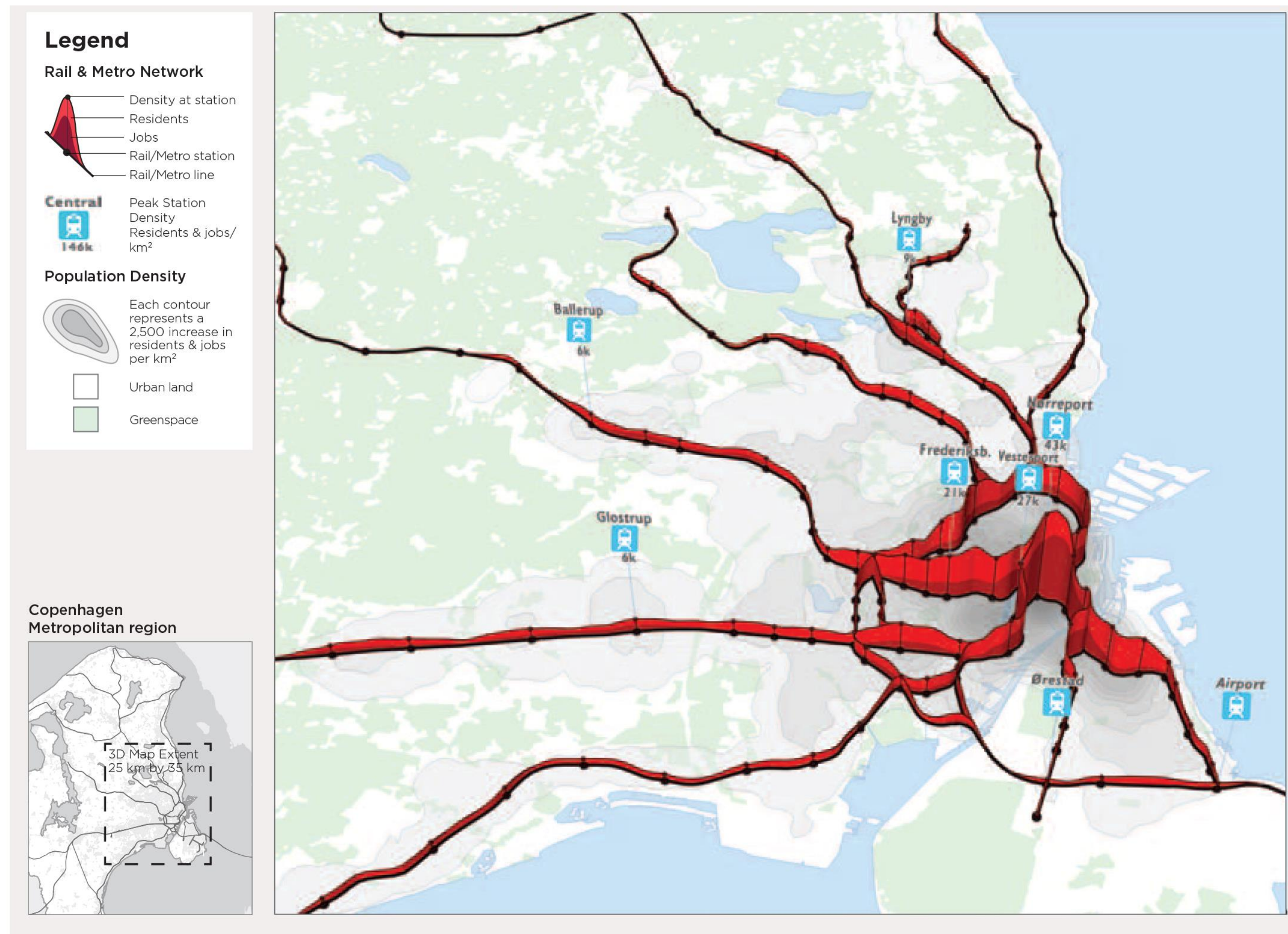
Asian Cities



Source: Newman et Kenworthy, Atlas Environment du Monde Diplomatique, 2007

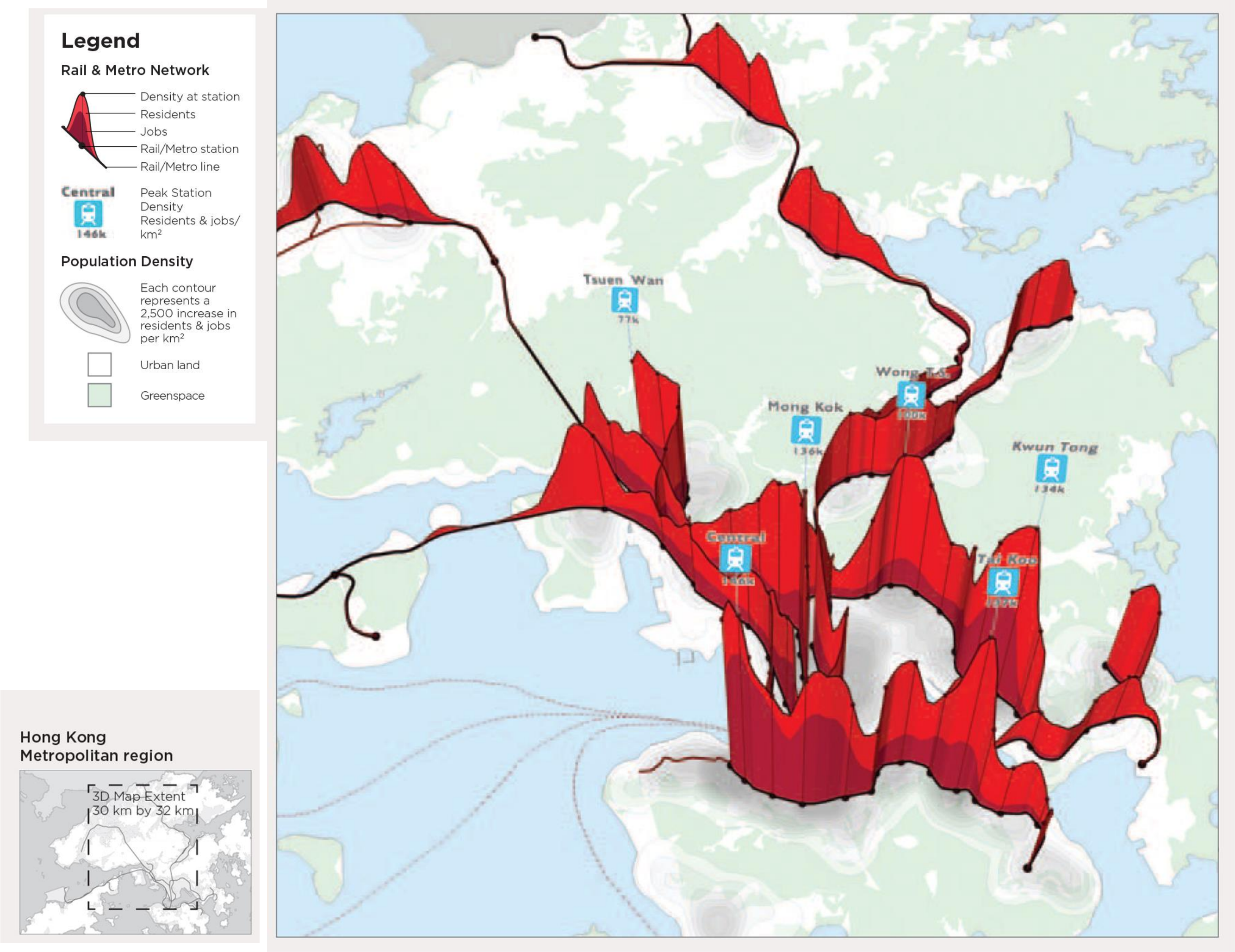


# POPULATION AND EMPLOYMENT DENSITY ALONG MAJOR TRANSIT ROUTES IN COPENHAGEN





POPULATION AND EMPLOYMENT DENSITY ALONG MAJOR TRANSIT ROUTES IN HONG KONG



Source: “Going Green” How cities are leading the next economy, LSE Cities, ICLEI, Global Green Growth Institute



An aerial map showing the proposed high-speed rail corridor between Beijing, Tianjin, and Tanggu. The corridor is highlighted in red, with yellow dashed circles indicating the project sites in Beijing, Yongle, Wuqing, Tianjin, and Tanggu. Red circles are drawn around the Beijing and Tanggu sites. The map also shows major roads and airports. The text "40 million people connected by high speed rail" is overlaid in the center.

**40 million people connected  
by high speed rail**

北京  
Beijing

亦庄项目位置  
Yizhuang - Project Site

永乐  
Yongle

武清  
Wuqing

天津  
Tianjin

塘沽  
Tanggu








# HIGH SPEED RAIL: CHINA AND THE UNITED STATES



500 Miles







A map of the Great Lakes region of North America, showing the five Great Lakes and surrounding landmasses. A yellow line with circular markers at each stop connects Milwaukee to Toronto. The line starts in Milwaukee, goes south to Chicago, then east through Fort Wayne, Toledo, Detroit, and Windsor, crossing the border into Canada at Windsor, and finally reaching Toronto. Major cities are labeled throughout the region, including Minneapolis, St. Paul, Green Bay, Appleton, Oshkosh, Madison, Racine, Kalamazoo, South Bend, Ann Arbor, Grand Rapids, Flint, Lansing, Sarnia, Bay City, Saginaw, Muskegon, Traverse City, Sault Ste Marie, Sudbury, North Bay, Collingwood, Kingston, Oshawa, St. Catharines, Rochester, Syracuse, Albany, Buffalo, Erie, Cleveland, Akron, Pittsburgh, Philadelphia, New York, Boston, Hartford, Providence, and Sydney. The text 'Milwaukee to Toronto' and '28,000,000+ people connected' is overlaid in large white font.

# Milwaukee to Toronto

28,000,000+ people connected





Chart a new course





**Direct funds  
to transit**



A photograph of Barack Obama, dressed in a dark suit, white shirt, and light blue striped tie. He is gesturing with both hands raised, palms facing forward, as if speaking or explaining something. The background is a solid blue color.

**Level with people  
about the true costs of an economy  
based on fossil fuels**



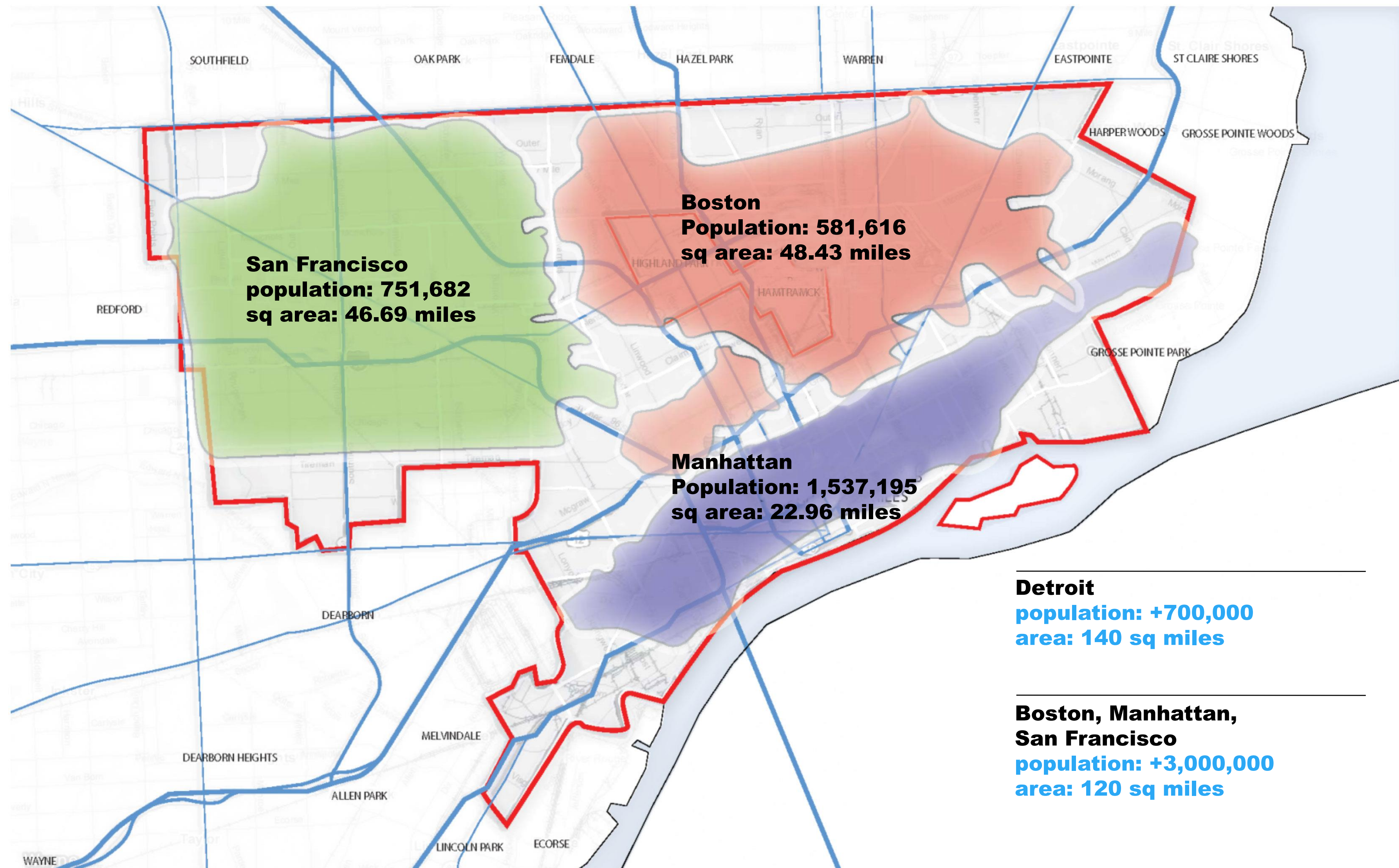
**URBAN DENSITY**





# Detroit 2010-2050





**San Francisco**  
population: 751,682  
sq area: 46.69 miles

**Boston**  
Population: 581,616  
sq area: 48.43 miles

**Manhattan**  
Population: 1,537,195  
sq area: 22.96 miles

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**Detroit**  
population: +700,000  
area: 140 sq miles

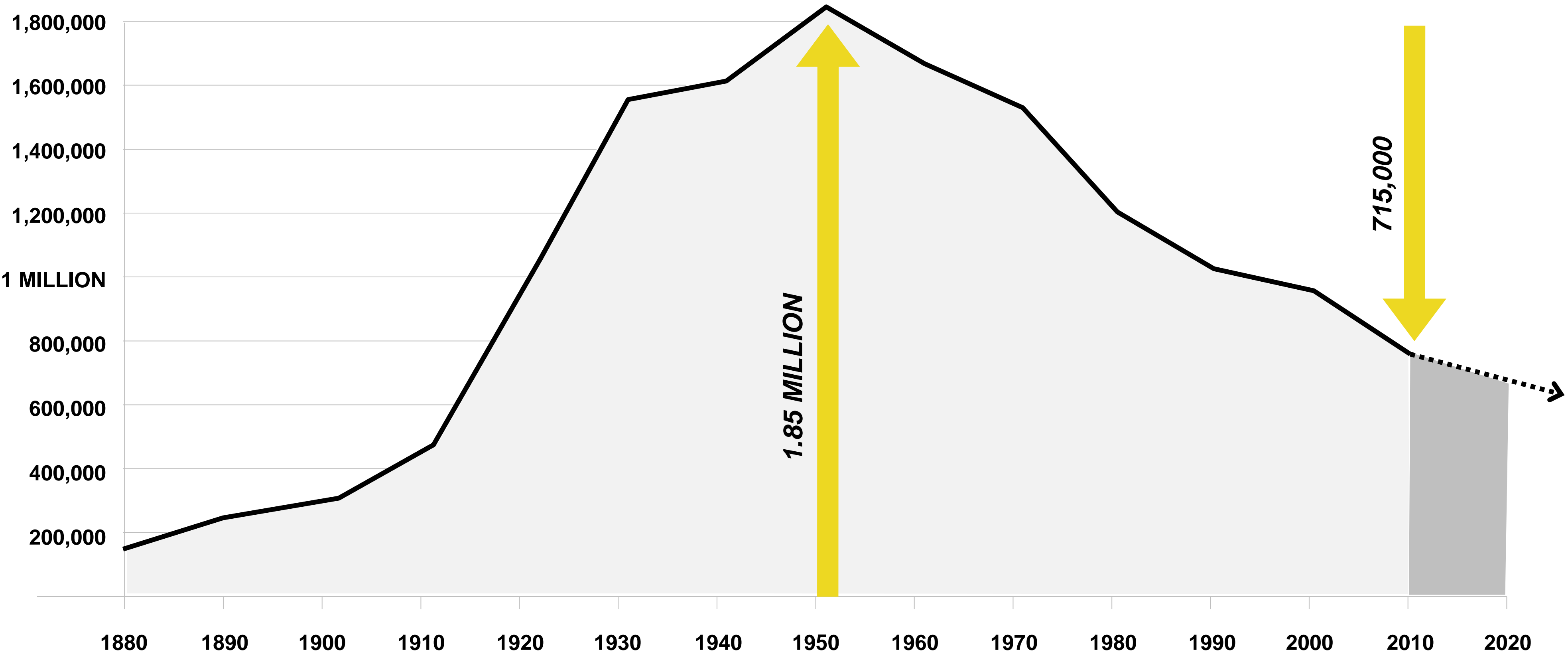
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**Boston, Manhattan,  
San Francisco**  
population: +3,000,000  
area: 120 sq miles



SHRINKING CITIES

# Detroit growth and decline: 1880 - 2020

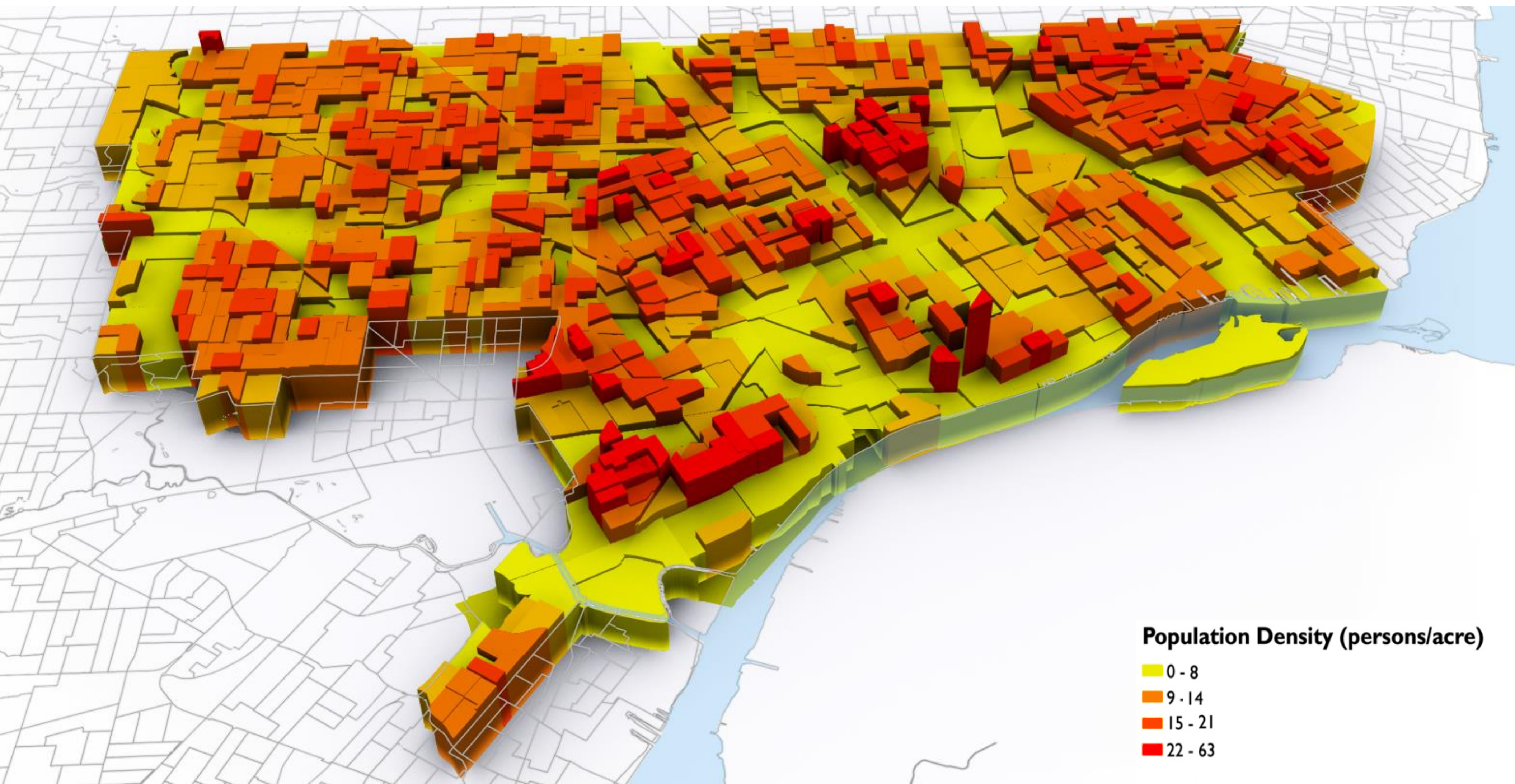






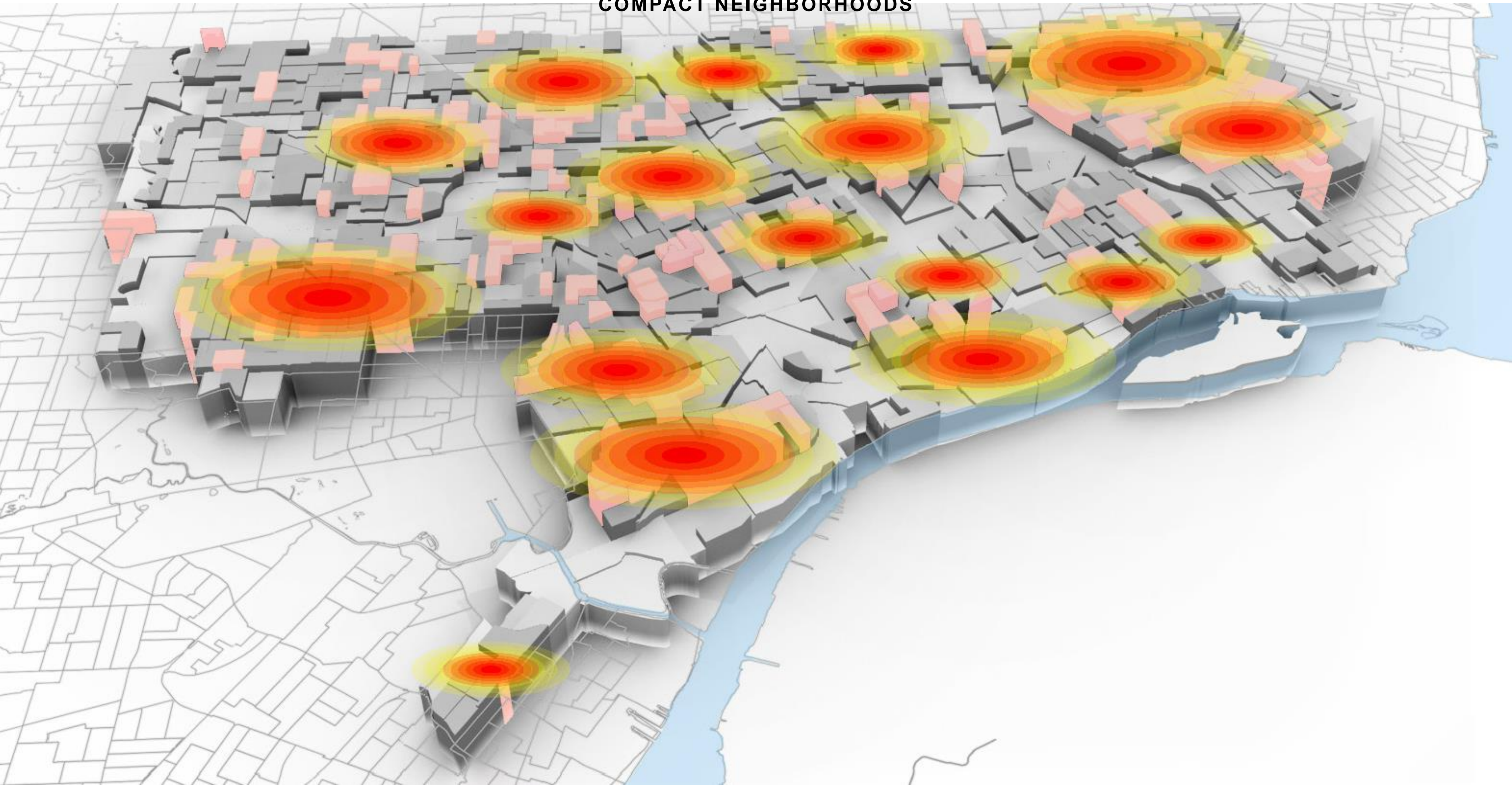


## THE CITY TODAY





## 2. DIRECT FUTURE GROWTH COMPACT NEIGHBORHOODS





#### 4. TRANSFORM VACANT LANDS INVENT NEW CITY PARKLANDS





# Stronger neighborhoods





An aerial photograph of a dense urban skyline, likely New York City. The image shows a variety of skyscrapers and buildings of different heights and architectural styles. In the background, a body of water and a distant shoreline are visible under a clear sky. The text "Downtown matters" is overlaid in the center of the image.


**Downtown matters**





**Engage the Community**



A vibrant scene of a modern urban park. In the foreground, a stone-lined pond features a central fountain with a tall, energetic water spray. To the left, tall reeds grow in the water. The middle ground is a grassy lawn where many people are sitting and relaxing. A large, leafy tree stands in the center of the lawn. The background is dominated by several tall, modern glass skyscrapers. The overall atmosphere is bright and sunny, with lush green foliage framing the scene.

**A greener city**



An aerial photograph of a large university campus. The image shows several large, modern academic buildings with flat roofs, interspersed with numerous parking lots filled with cars. A central road or highway runs through the middle of the campus, with various smaller buildings and green spaces on either side. The overall layout is organized and sprawling.

Shift priorities



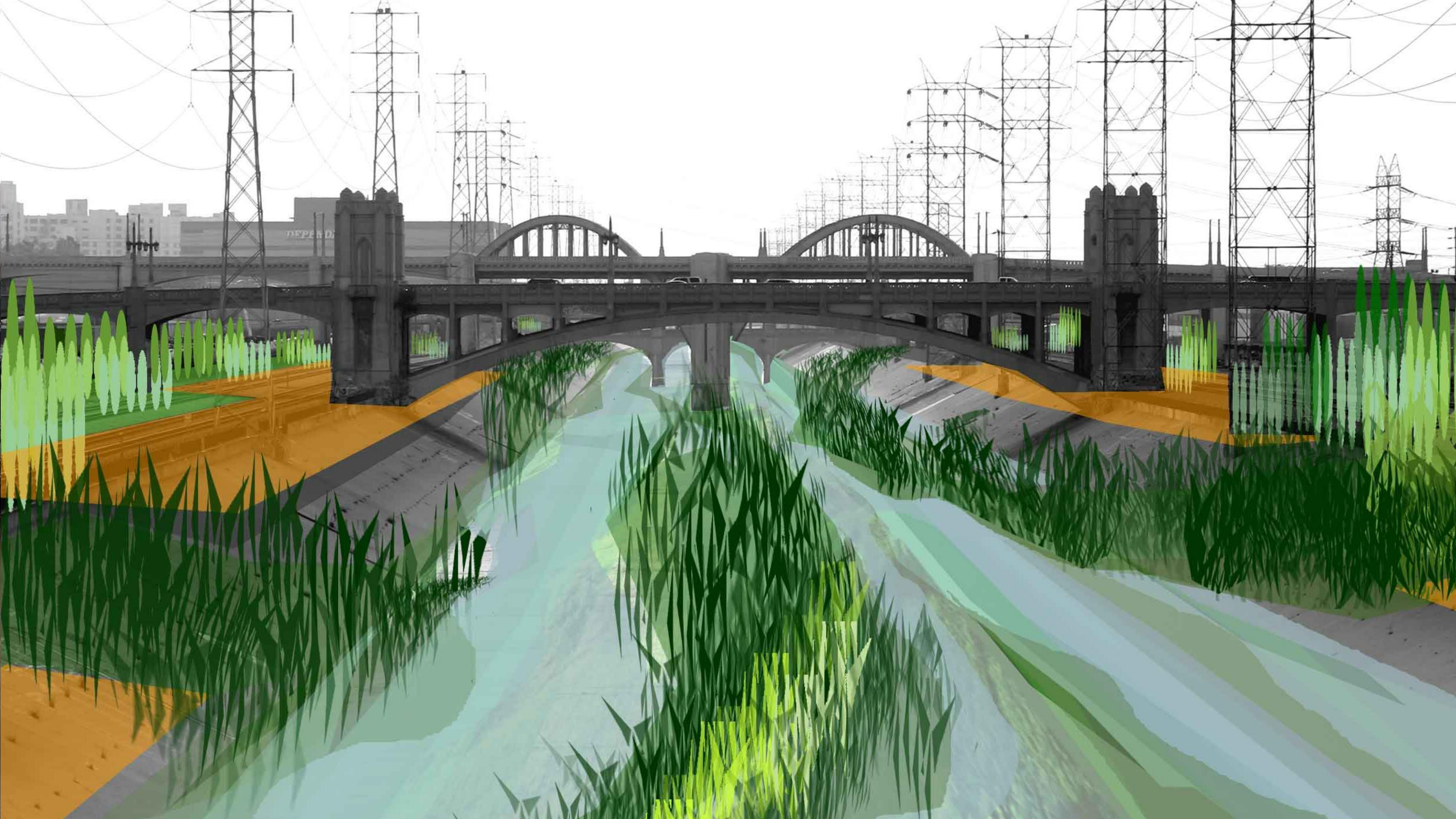
An aerial, high-angle view of a dense urban landscape. The city is composed of numerous white, rectangular building models of varying heights, creating a complex, textured skyline. The city is situated along a body of water, which is visible in the upper left and right portions of the image. In the background, a large, calm body of water stretches towards the horizon. A prominent, tall, thin structure, possibly a bridge or tower, is visible on the left side of the city. The overall scene is bathed in a soft, hazy light, suggesting a sunrise or sunset. The text "Reinvest in existing cities" is overlaid in the center of the image in a large, white, sans-serif font.

Reinvest in existing cities



# ECOSYSTEM INTEGRITY IN URBAN AREAS











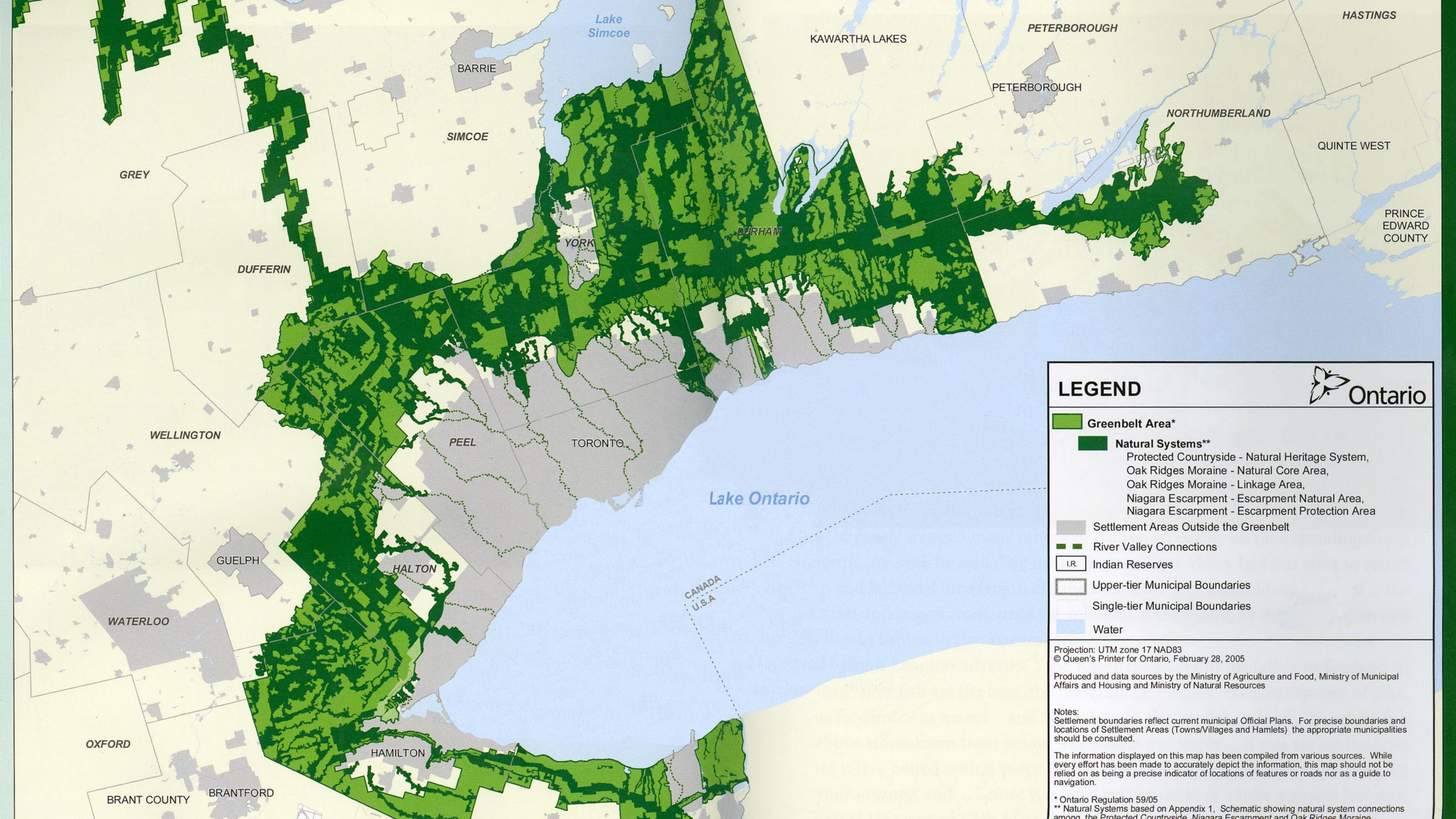
# A 32-mile park











## LEGEND



- Greenbelt Area\***
- Natural Systems\*\***
  - Protected Countryside - Natural Heritage System,
  - Oak Ridges Moraine - Natural Core Area,
  - Oak Ridges Moraine - Linkage Area,
  - Niagara Escarpment - Escarpment Natural Area,
  - Niagara Escarpment - Escarpment Protection Area
- Settlement Areas Outside the Greenbelt
- River Valley Connections
- I.R. Indian Reserves
- Upper-tier Municipal Boundaries
- Single-tier Municipal Boundaries
- Water

Projection: UTM zone 17 NAD83  
© Queen's Printer for Ontario, February 28, 2005

Produced and data sources by the Ministry of Agriculture and Food, Ministry of Municipal Affairs and Housing and Ministry of Natural Resources

Notes:  
Settlement boundaries reflect current municipal Official Plans. For precise boundaries and locations of Settlement Areas (Towns/Villages and Hamlets) the appropriate municipalities should be consulted.

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations of features or roads nor as a guide to navigation.

\* Ontario Regulation 59/05  
\*\* Natural Systems based on Appendix 1, Schematic showing natural system connections among the Protected Countryside, Niagara Escarpment and Oak Ridges Moraine



# INNOVATIONS IN URBAN DESIGN

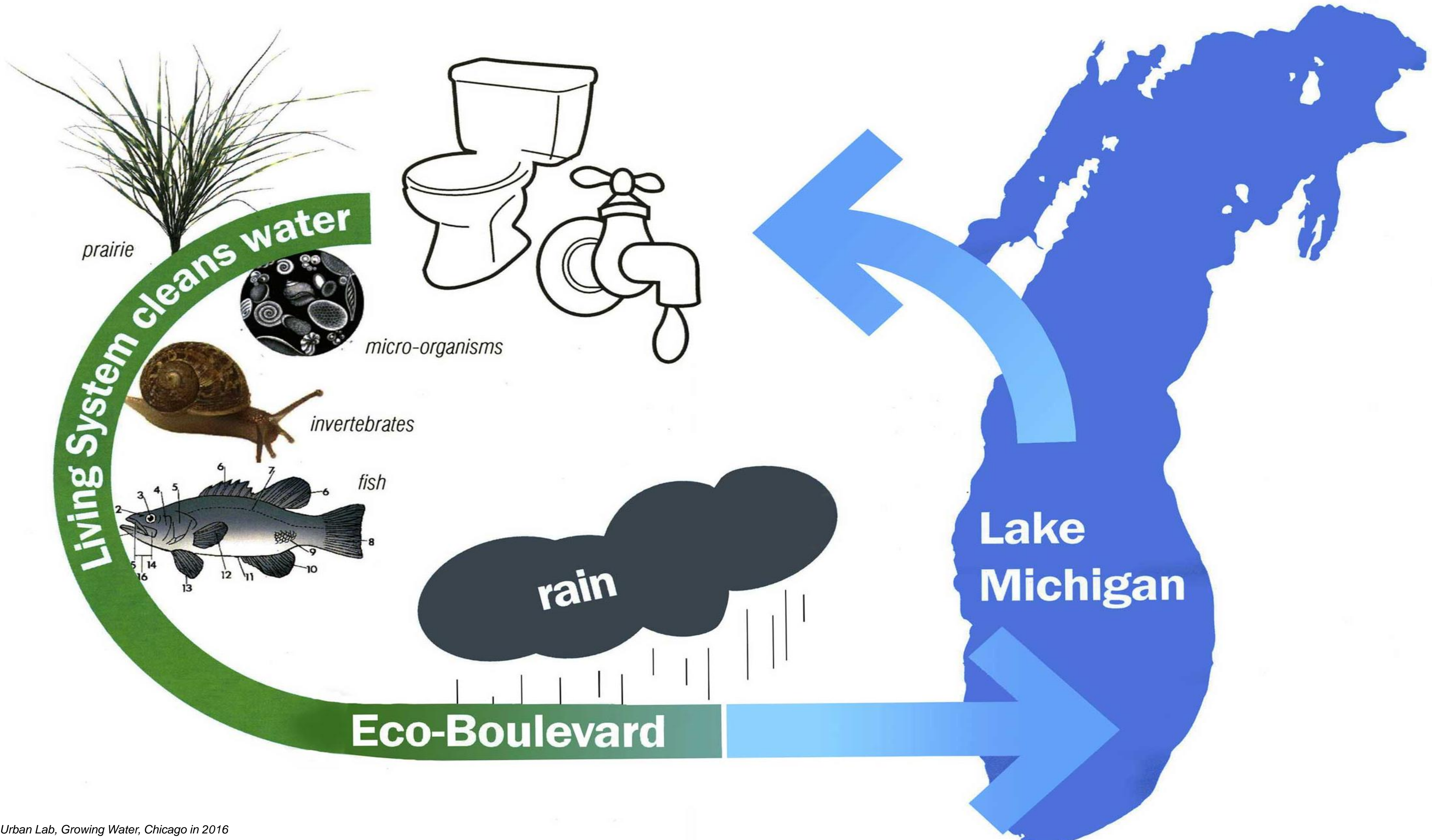








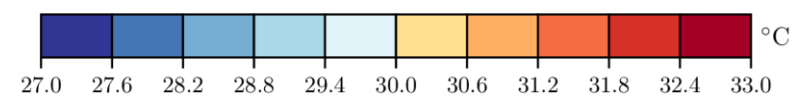
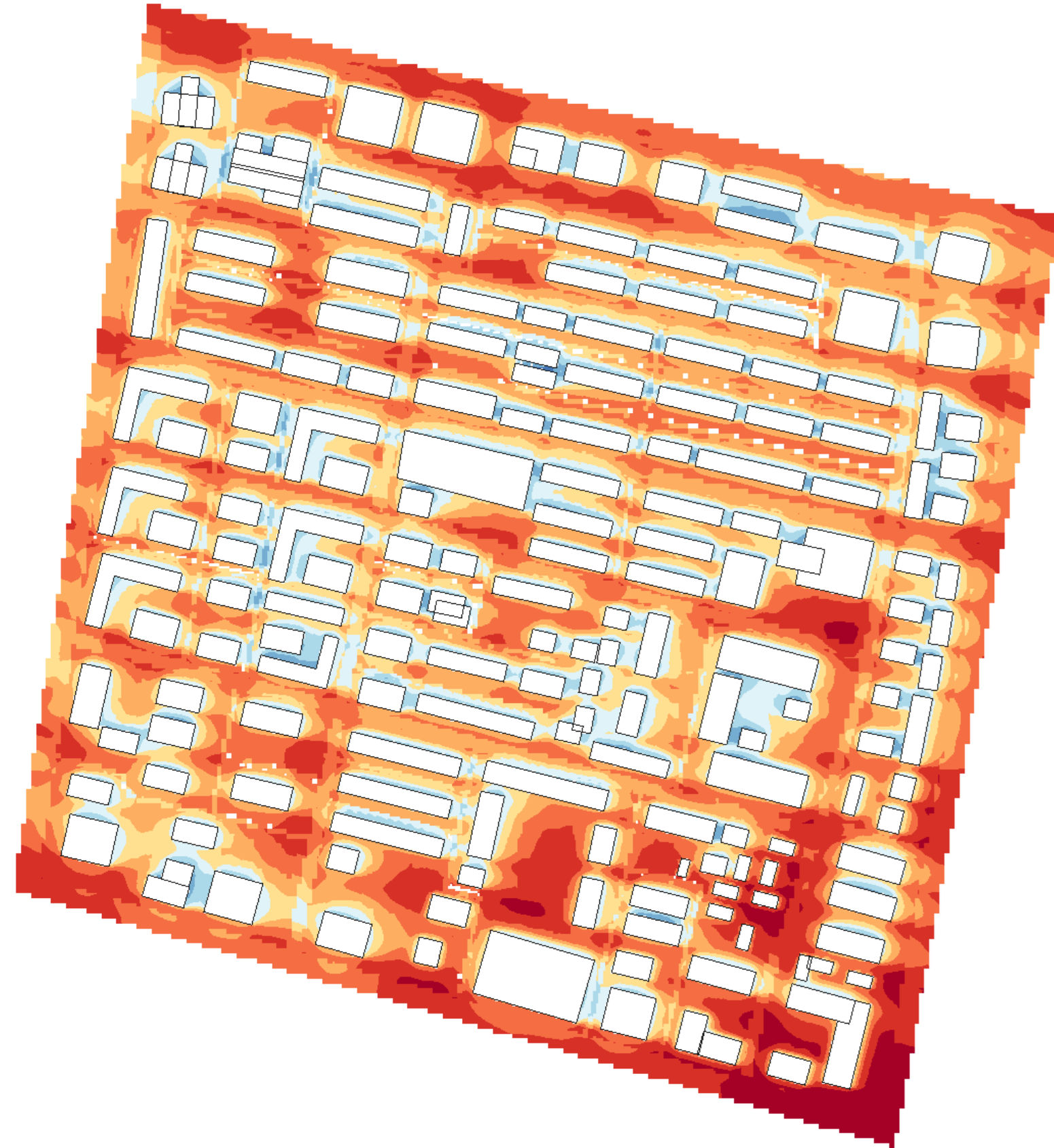




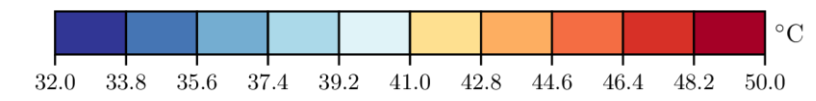
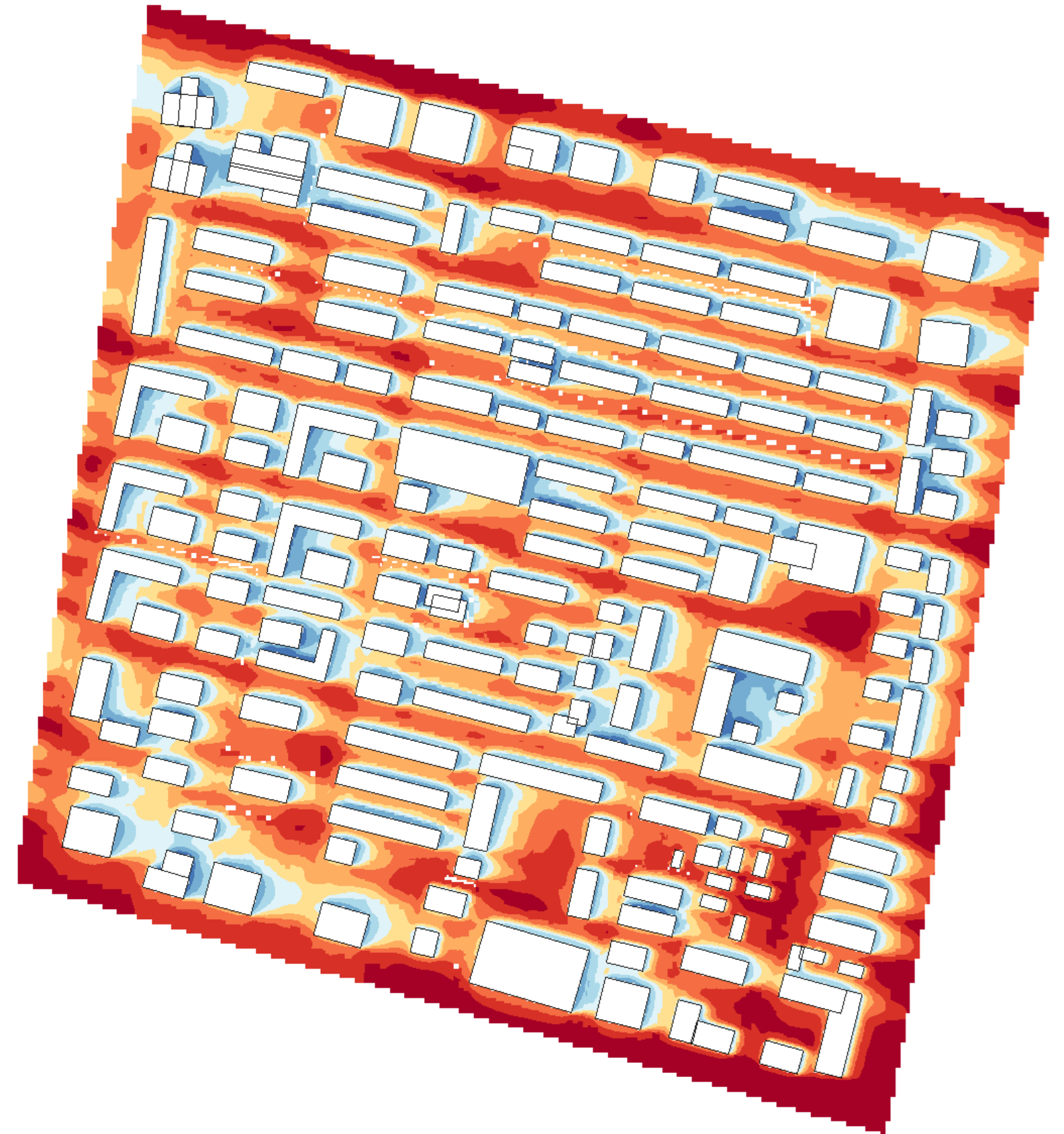


NANJING

# Test 0: Perceived temperature – no vegetation



Daily average

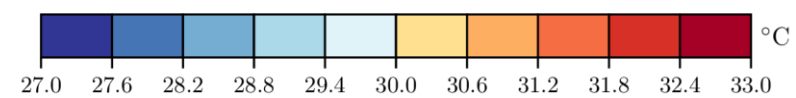
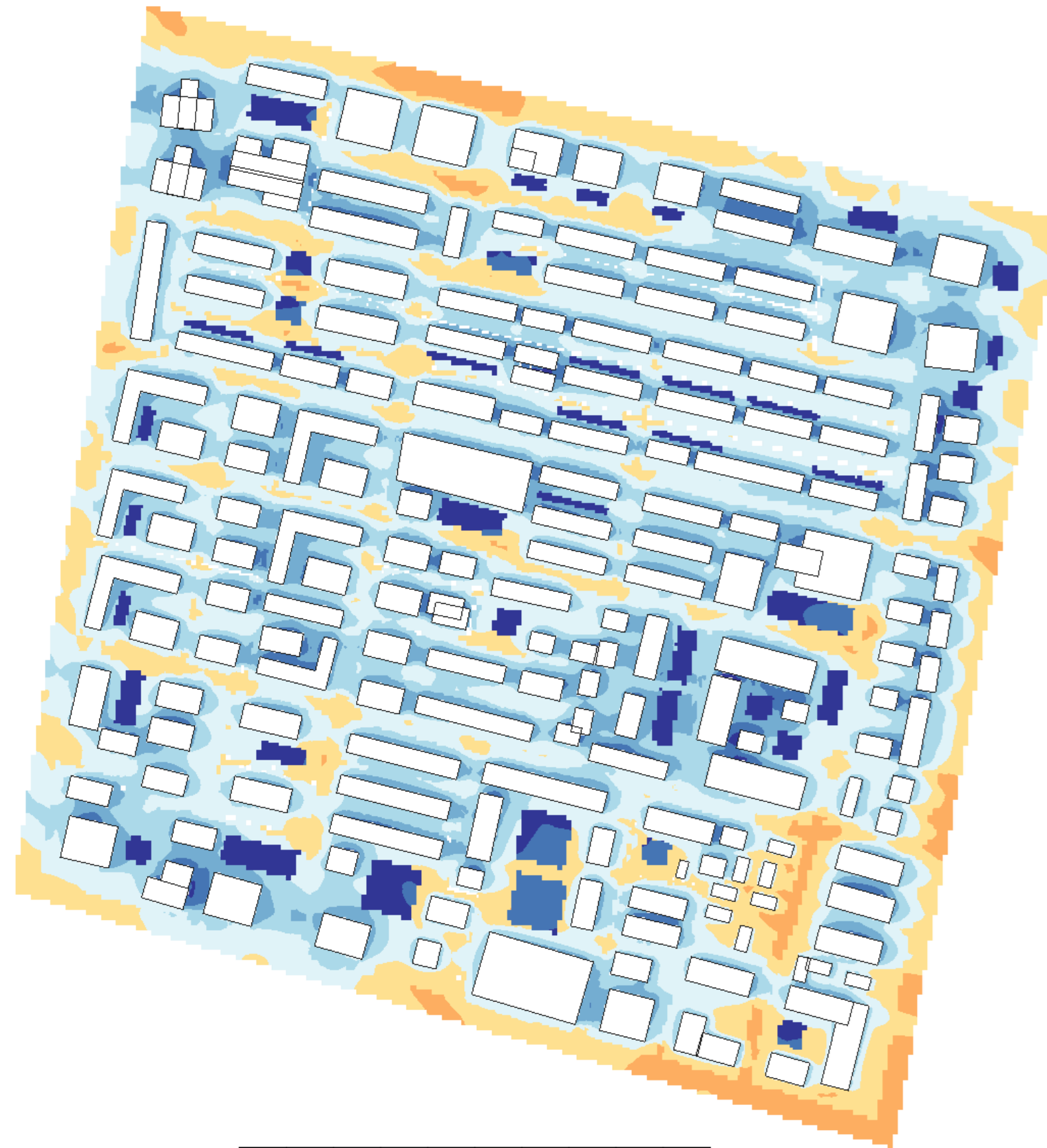


Afternoon average

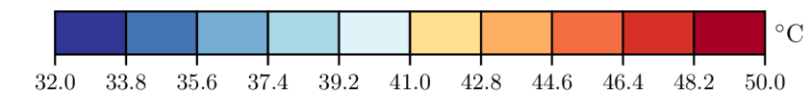
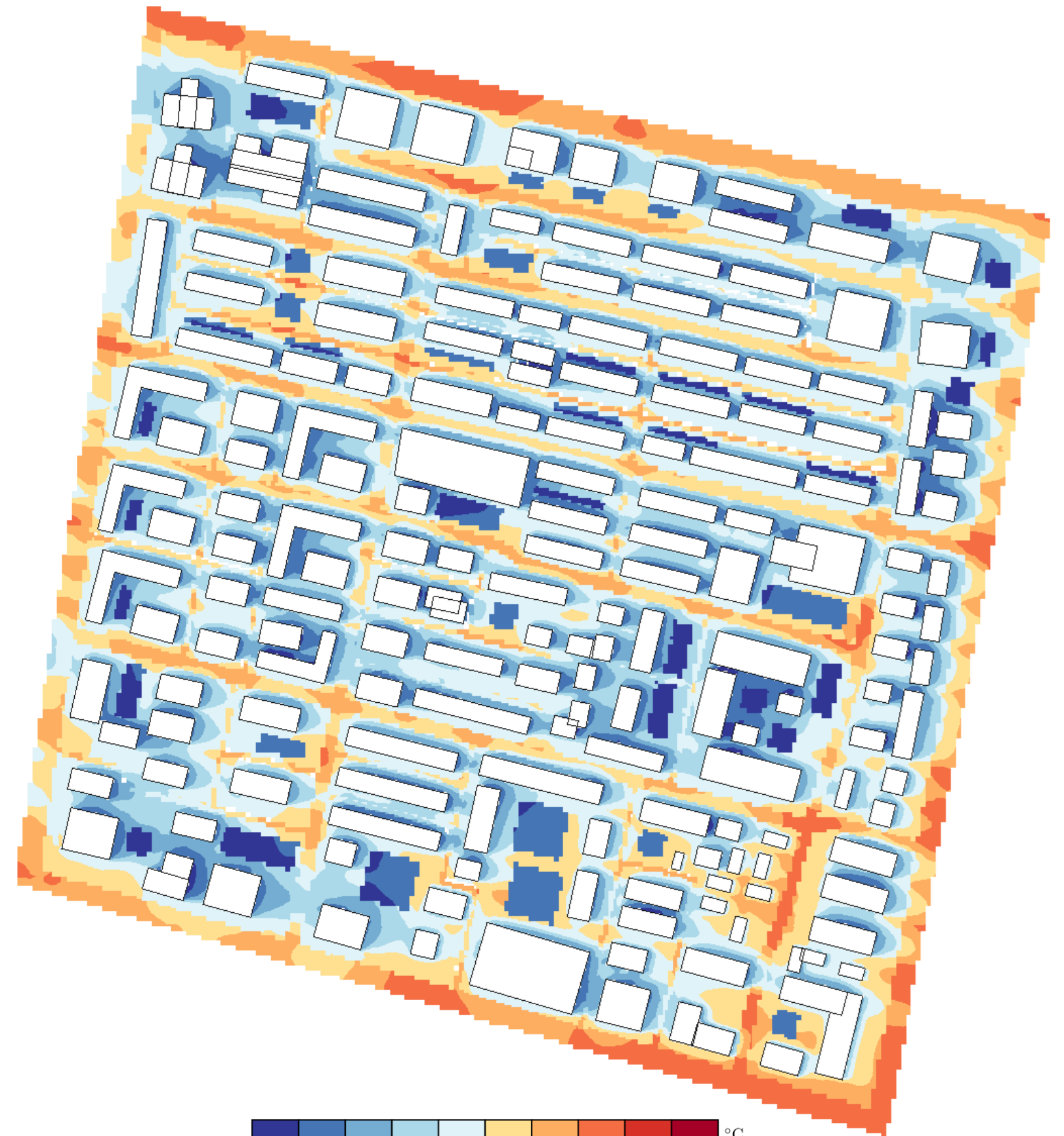


# NANJING

## Test 8: Perceived temperature – heavily vegetated

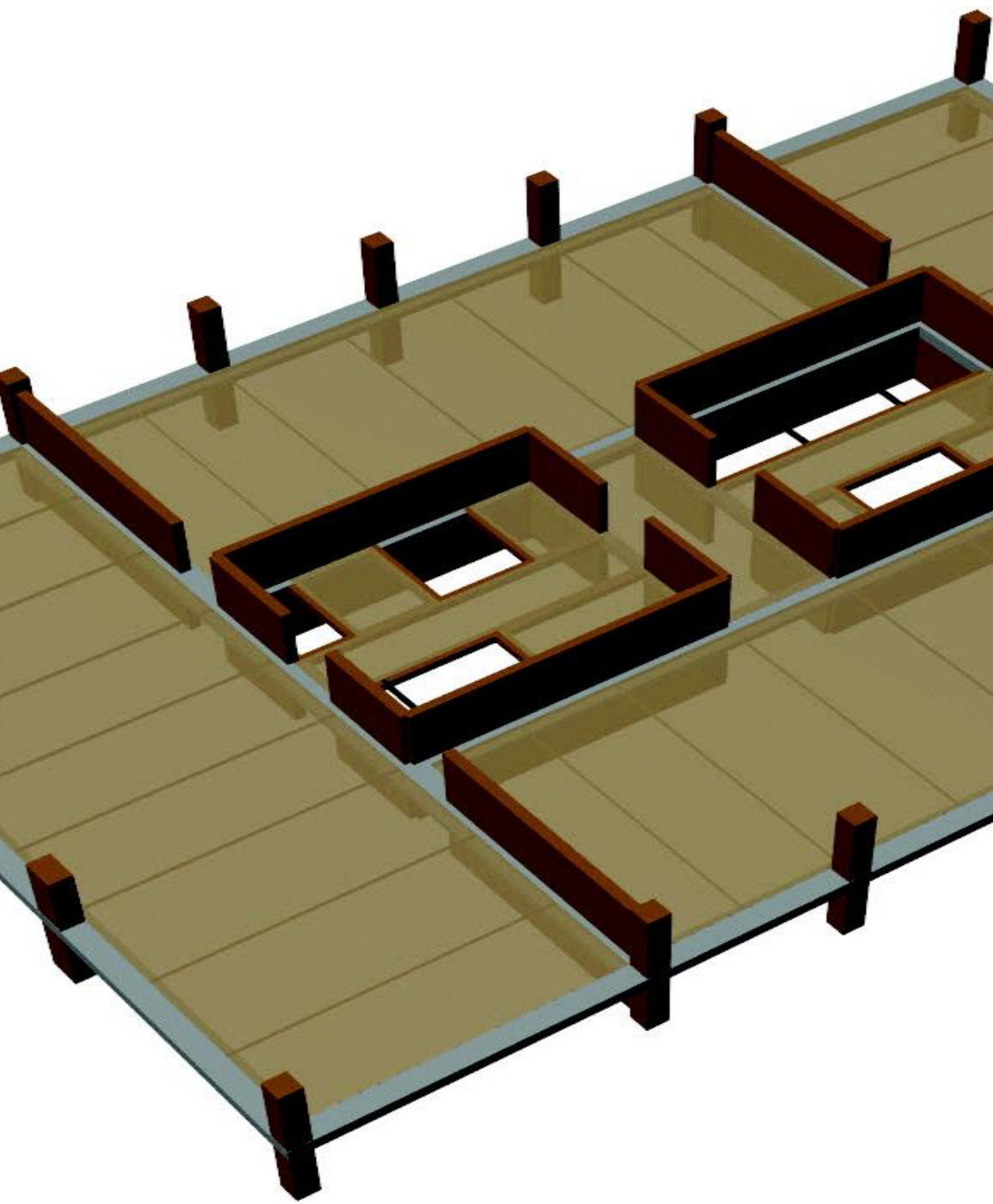


Daily average

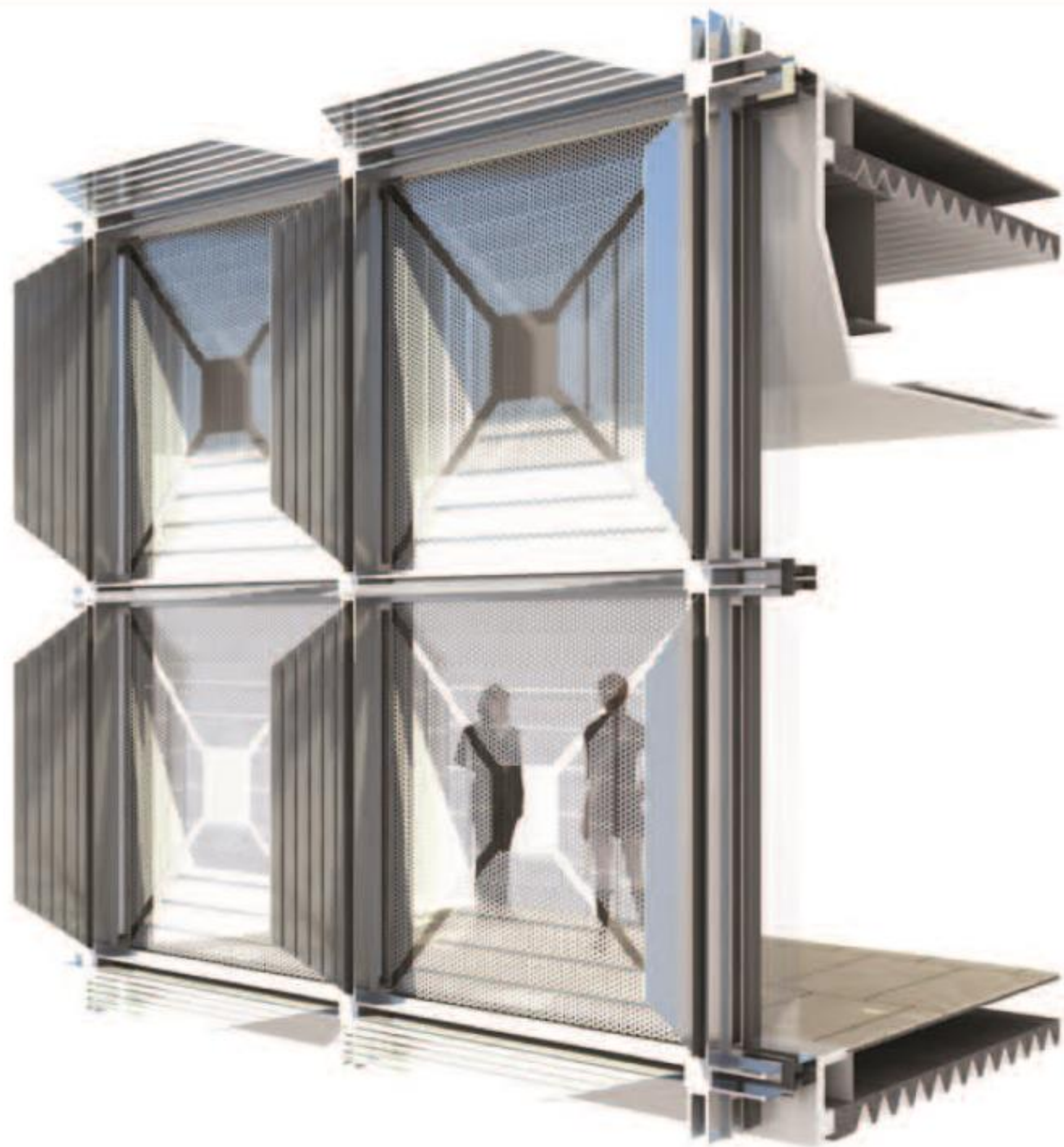


Afternoon average





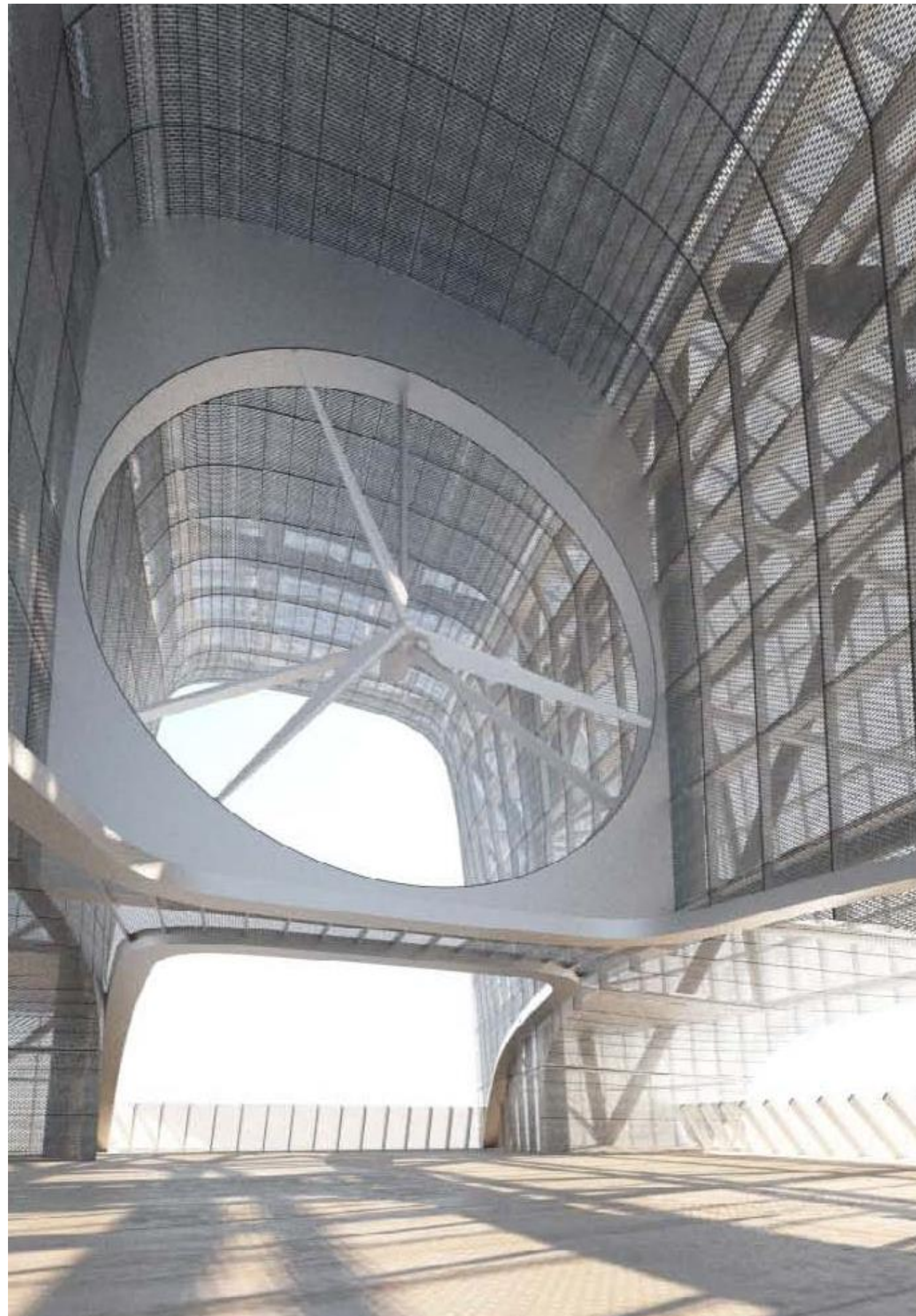




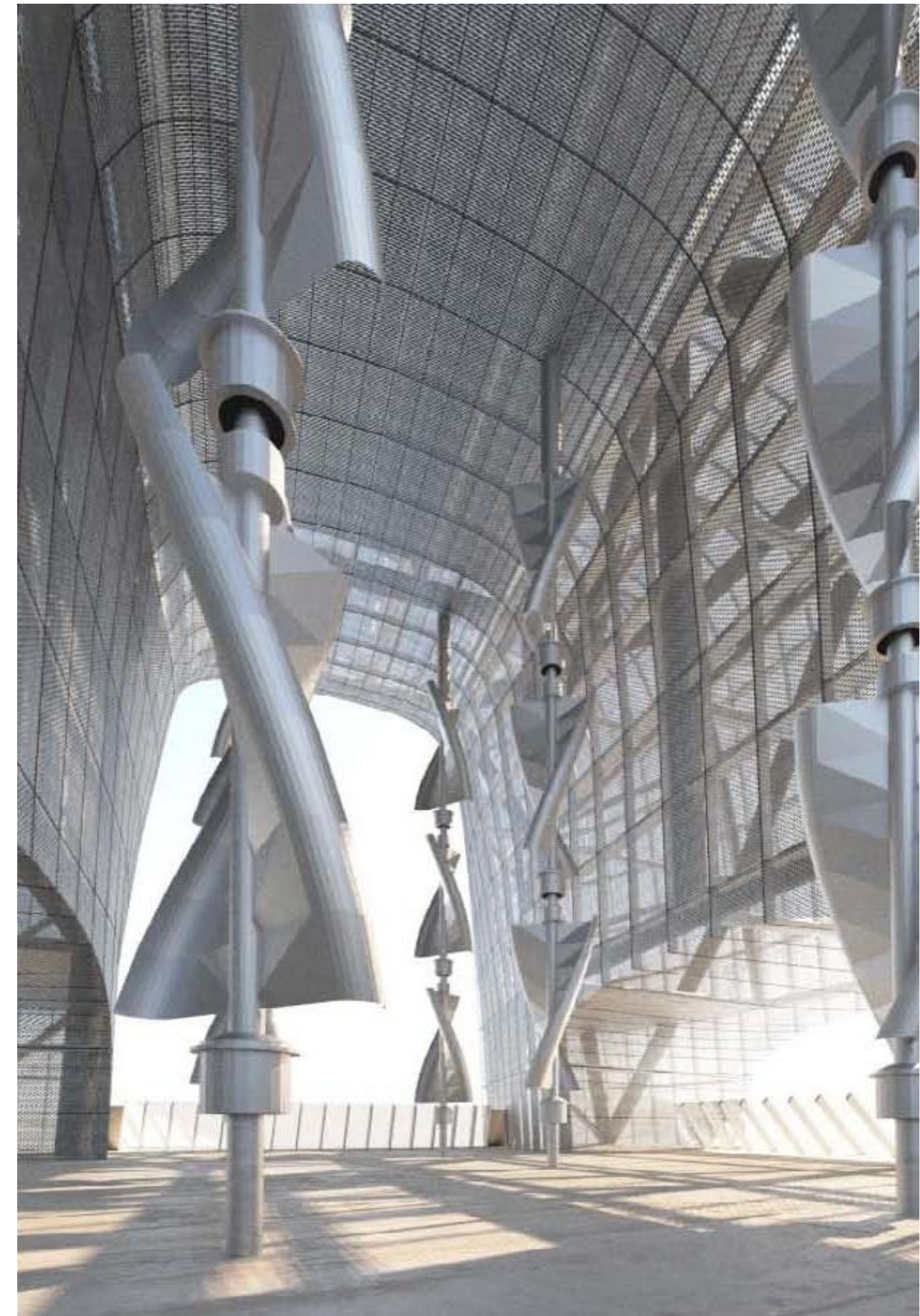








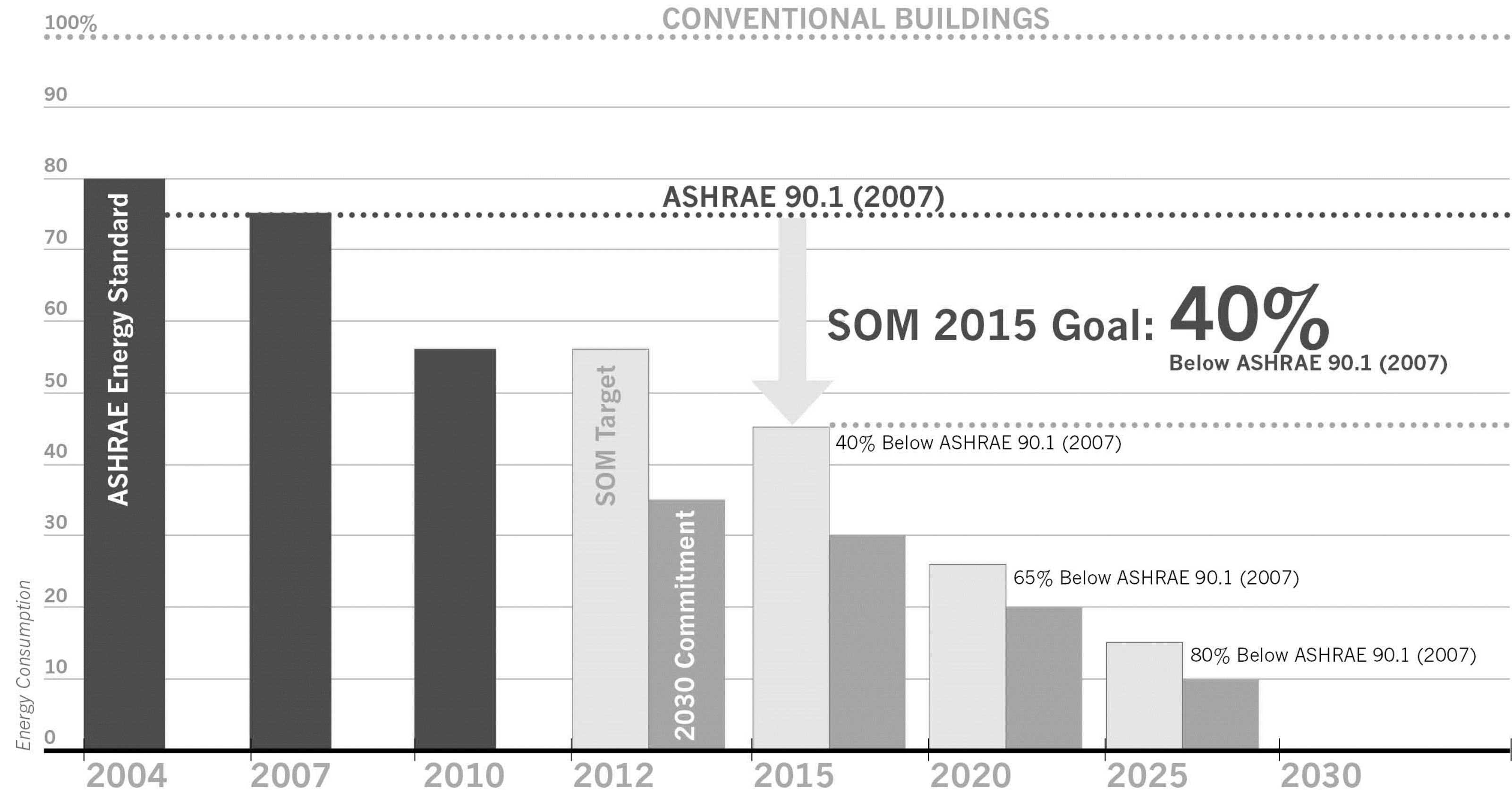
**Wind Turbine – HAWT Type**



**Wind Turbine – VAWT Type**



## HOW DOES SOM CONTRIBUTE?





# **American cities carbon emissions**

**Reduce carbon contents in  
energy production by 50%**

**Reduce demand at the users end  
by 50% = 85% reduction**

**Improve efficiencies of the  
systems by twice**