



Cities and Green Growth

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Outline

1/ ***Smart cities, eco-cities:***

The rationale for urban green growth

2/ ***Urban policies & greening strategies:***

International experimentation

3/ ***Financing green cities:***

The OECD-Chicago Proposal



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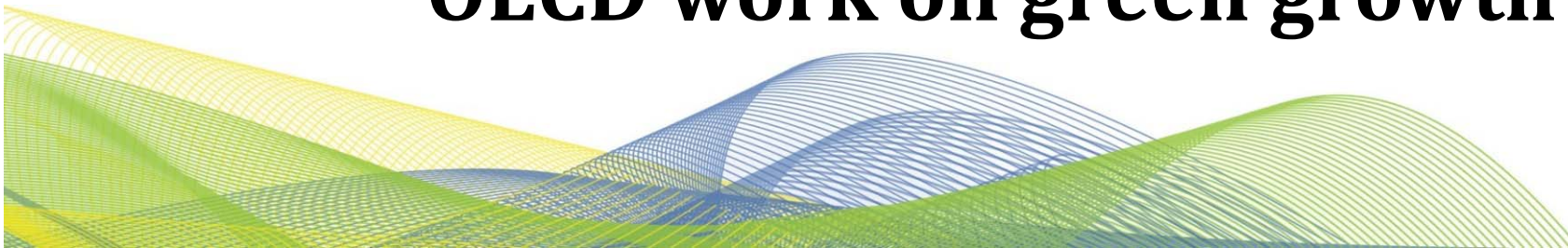
Smart cities, Eco-cities

Two approaches to urban service provision:

- **Smart cities:** harnessing technology, including ICT, for efficient service delivery
- **Eco (green) cities:** providing services necessary to growth and development in a way that reduces environmental impact



OECD work on green growth



OECD Green Growth Strategy

www.oecd.org/greengrowth

A different kind of growth is needed

Not just about recovery – a core economic strategy that leads to a **different way of thinking about development.**

*Green growth at the **urban** scale*

- A need to rethink for new sources of urban growth
- The presence of policy complementarities at the local level
- Urban development could address social issues and inclusive growth in a more direct way



Green Growth requires a more integrated policy model

Figure 1.2. New Development Paradigm: A Policy Complementarity Matrix

	E fficiency	E quity	E nvironmental Sustainability
Economic Policies	Sustained growth	Growth creates room to increase equity	Green growth improves sustainability
Social policies	Social inclusiveness can increase efficiency (Knowledge & Trust)	Social cohesion	Environmentally sustainable social policies
Environmental policies	Green economy can boost innovation & growth	Poor are most hurt by environmental degradation; environmental policies can enhance inclusiveness	Sustainable Environment

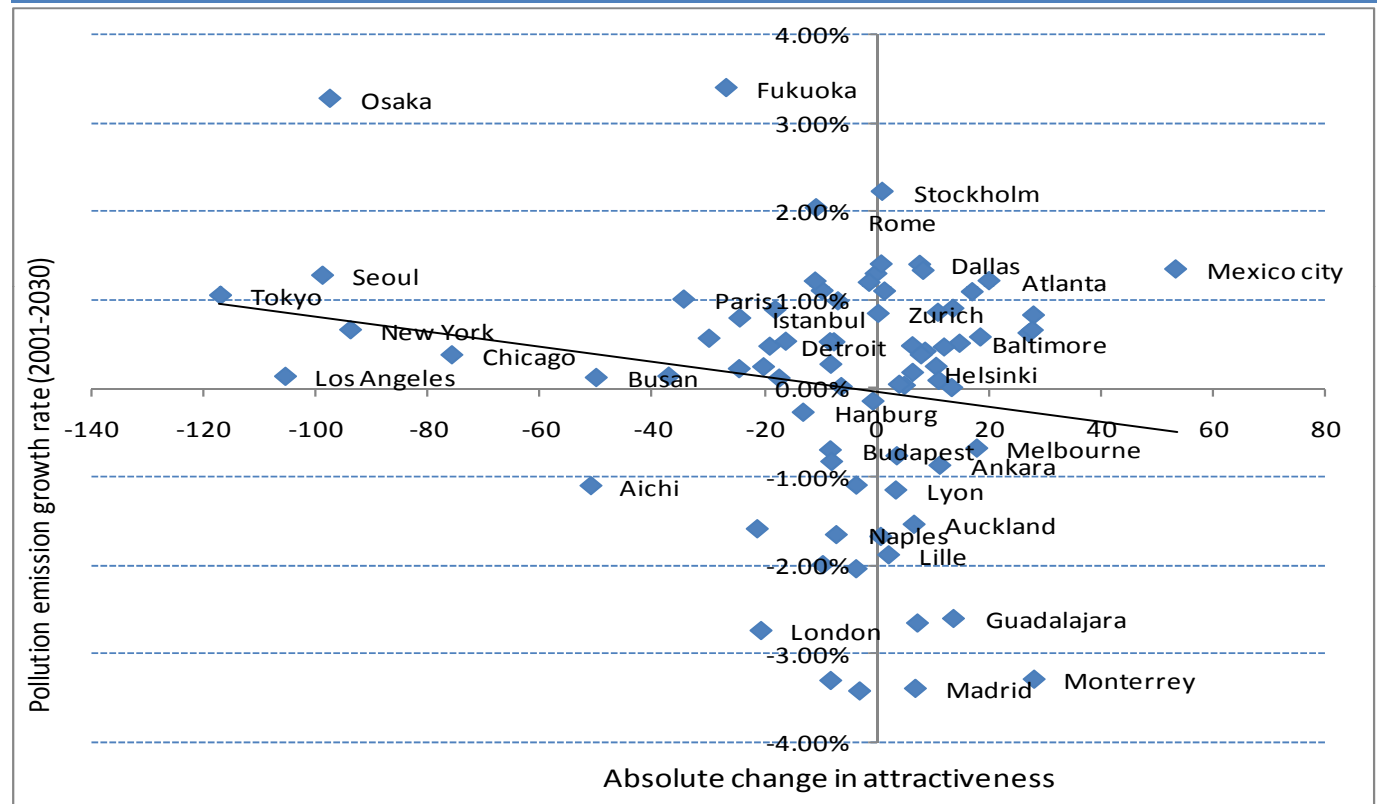
Source: OECD Regional Outlook 2011



The logic of city-scale action

- ***Economic role of cities*** (urbanisation and income)
 - ***Negative externalities*** (congestion, pollution, sprawl)
 - ***Contribution to climate change***
 - ***Vulnerability to climate change impacts***
- ***Opportunities for synergies and complementarities*** (attractiveness)

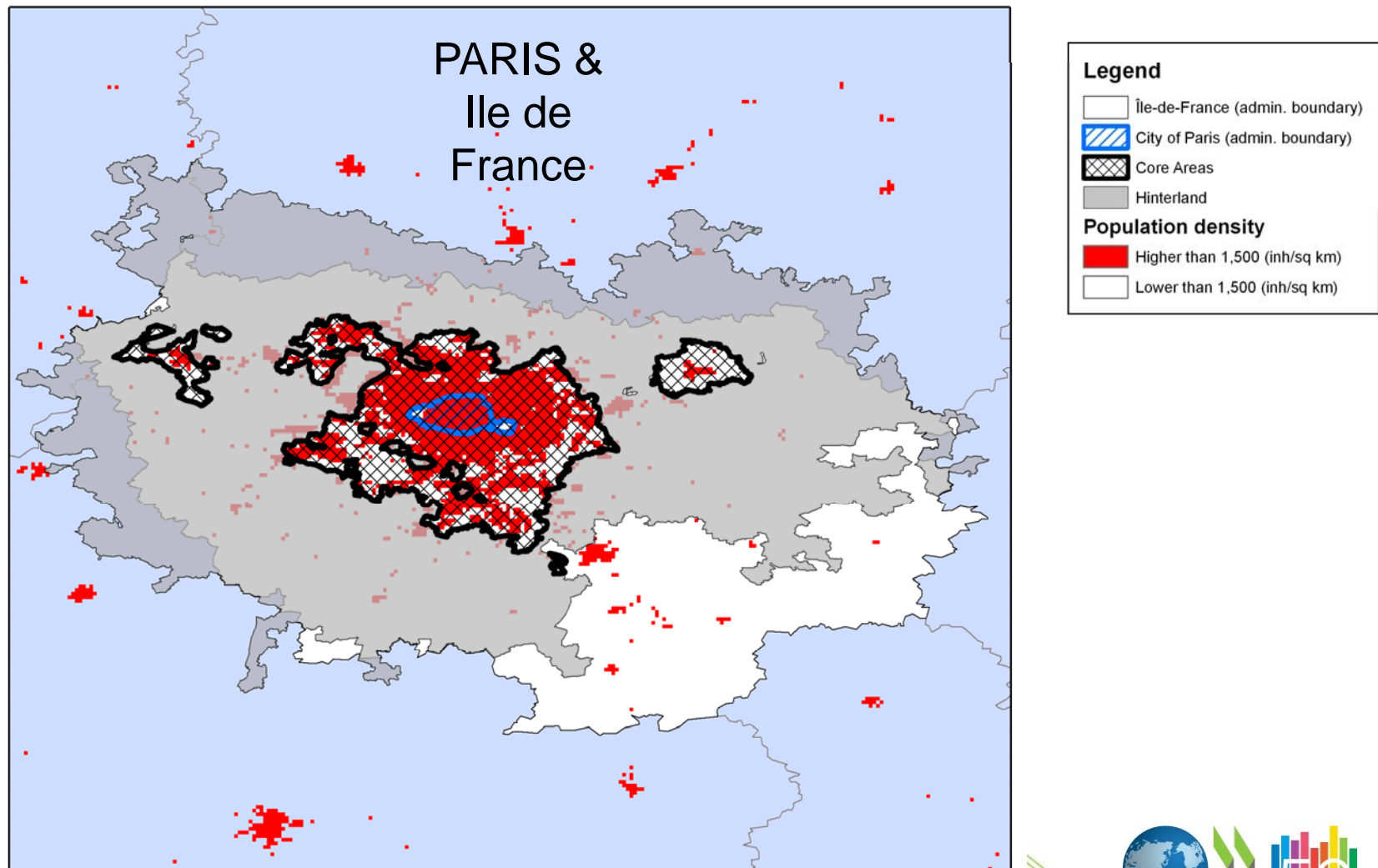
Change in attractiveness and pollution emissions across OECD metro-regions (2001-2030)



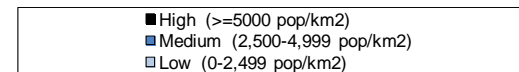
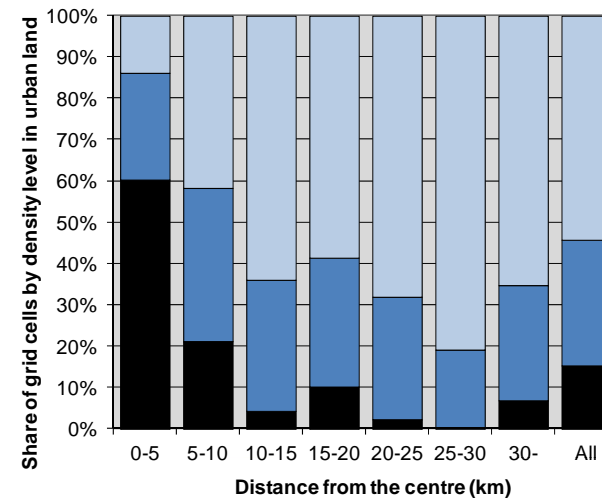
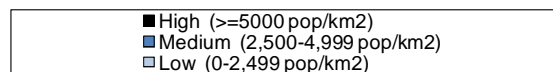
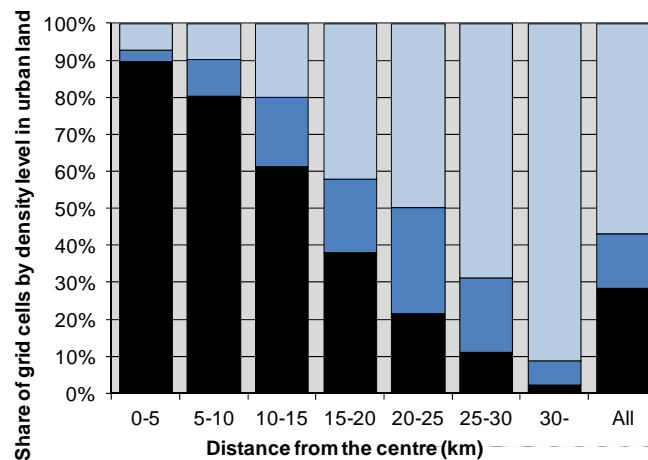
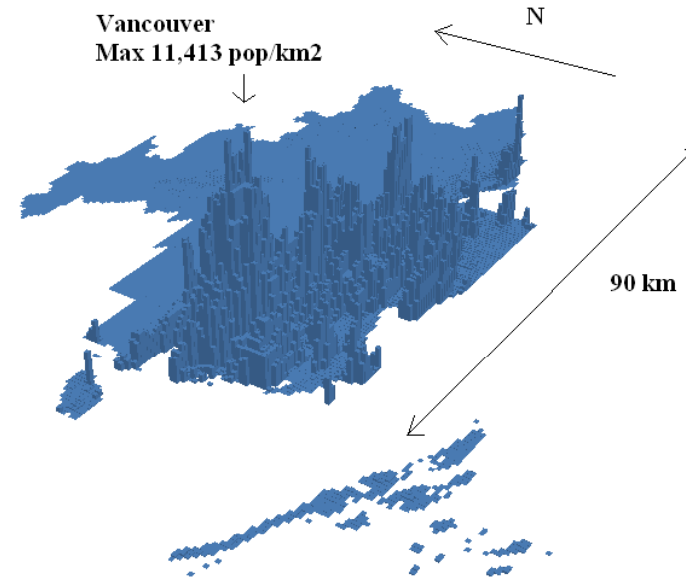
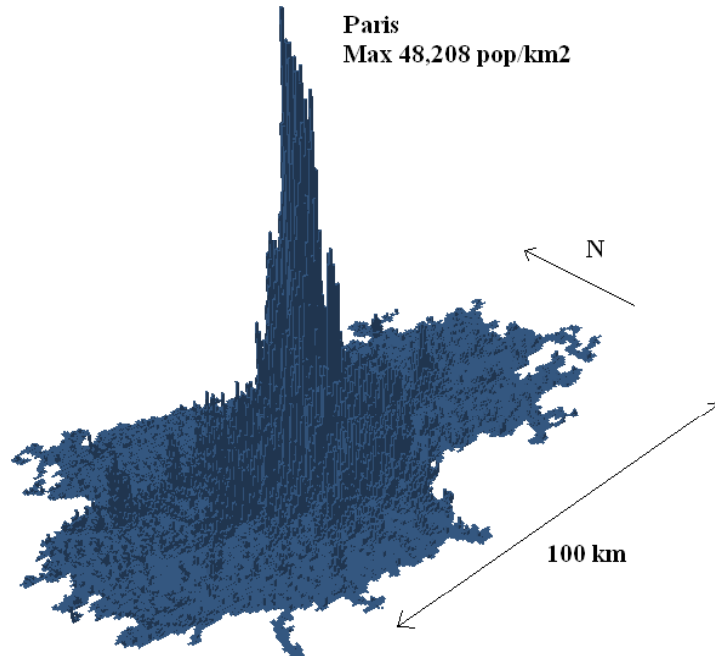
Source: Cities & Climate Change, OECD, 2011
Simulations with IMACLIM Model

But how to define a city?

New OECD definition of functional urban areas: The **core areas** are composed by single municipalities with more than 50% of population living within a high density urban cluster (contiguous dense grid cells above 1,500 people per km²). The **hinterland area** is identified by all those municipalities that send to the core area at least 15% of their workforce.

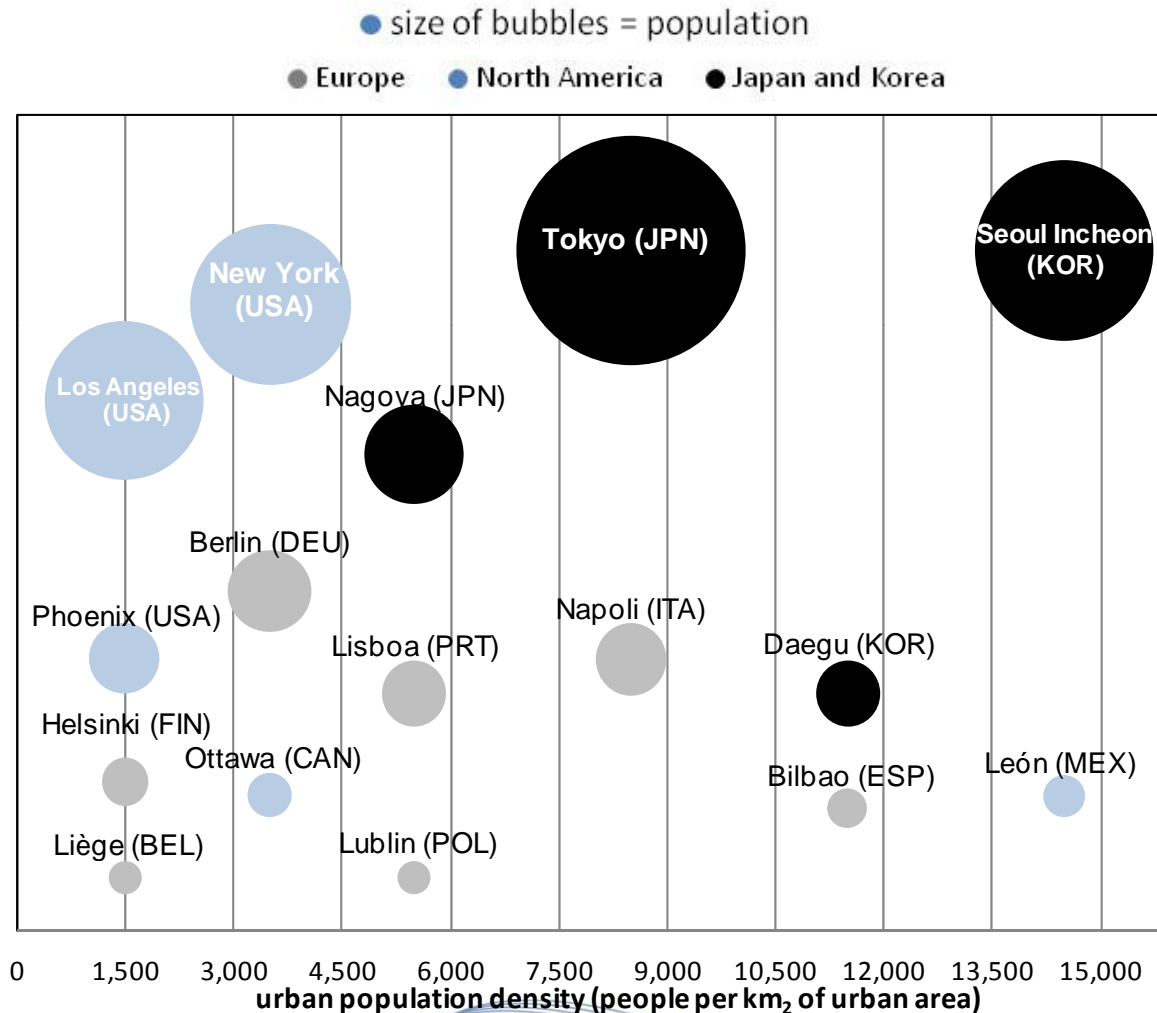


Analysis of density can help designing appropriate policies



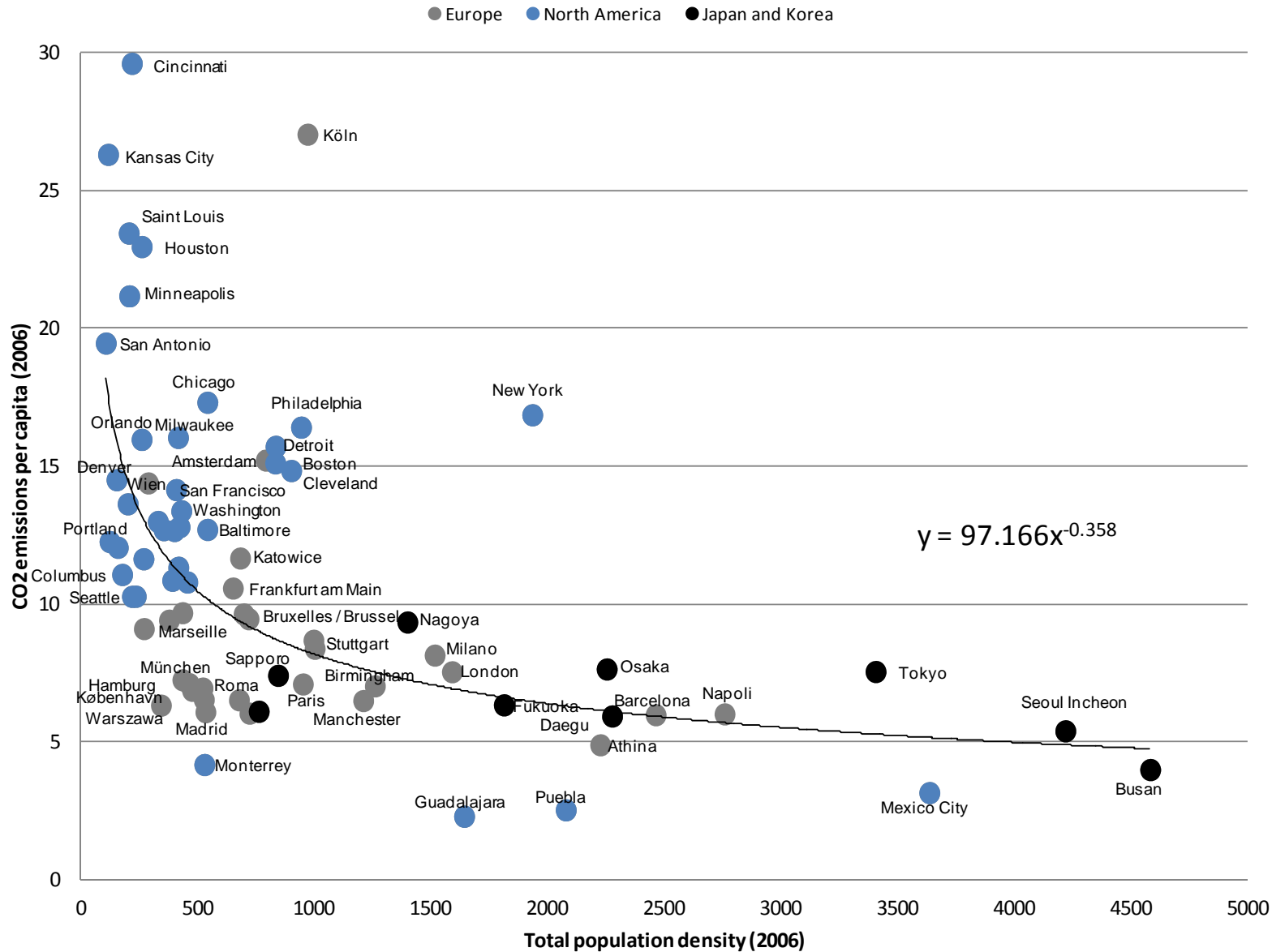
Urban land use and density for urban use differ greatly

- Tokyo (Japan) and Napoli (Italy) have the same urban population density (around 8 500 people per m_2 of urban area), even if Tokyo is 10 times bigger than Napoli in population size



Urban population density and total population in selected metro areas (2008)

CO₂ emissions and total population density



Doubling urban density → reduction of 70% of CO₂ emissions per capita

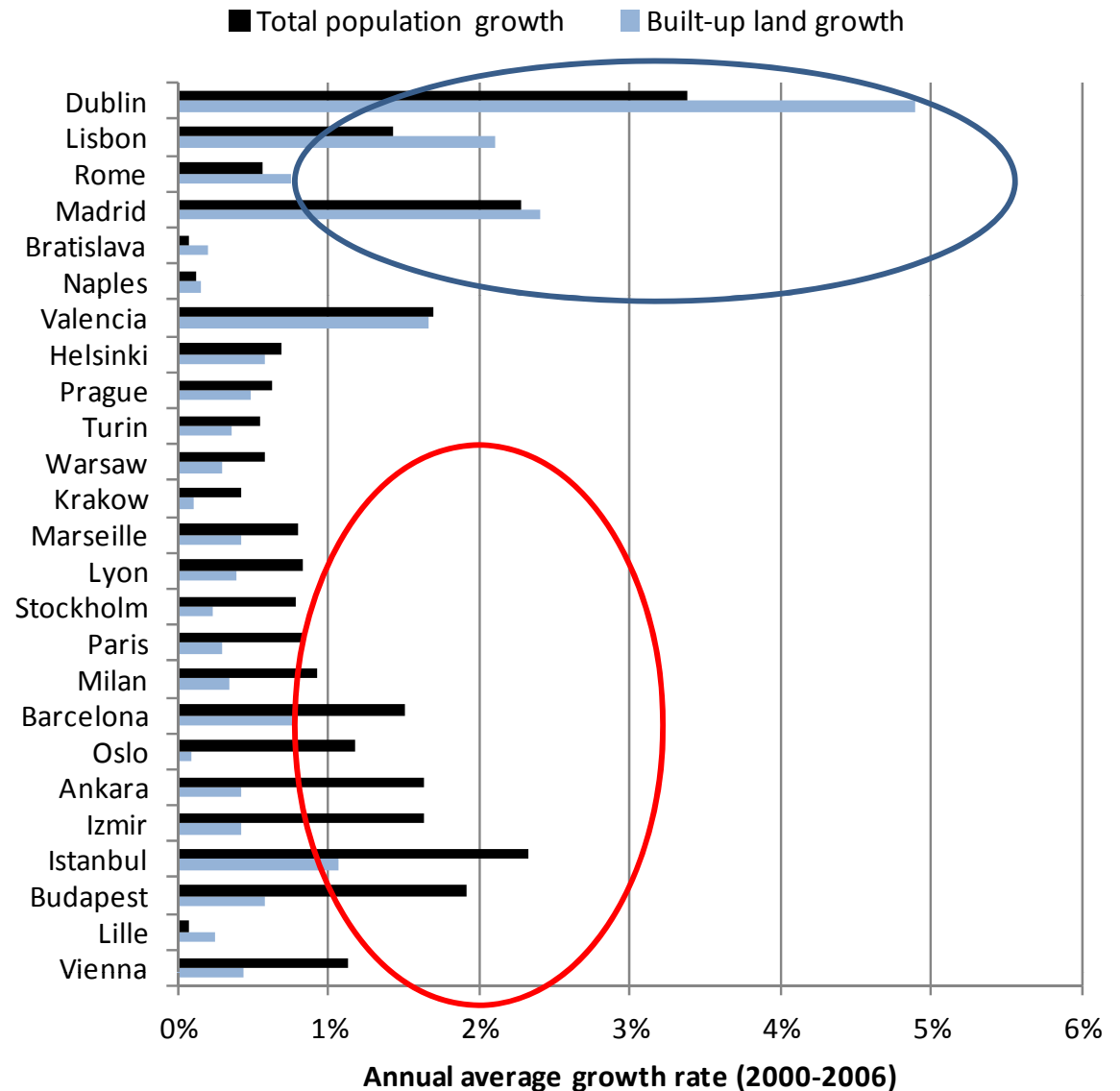
Memo: substituting coal to gas reduces emissions by around 40-50%



Mixed density trends in the OECD

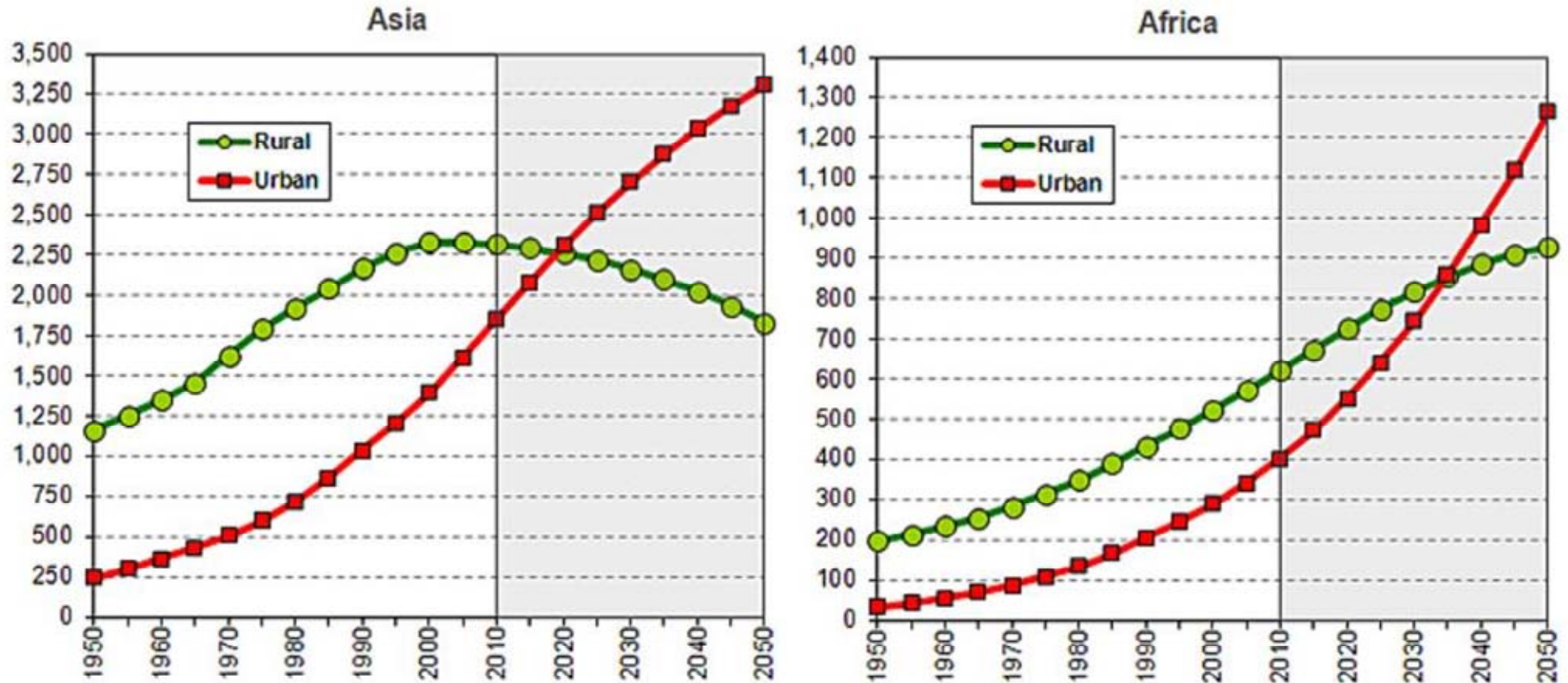
- On a **global scale**, over 1950 - 2010, built-up area expanded by 171% worldwide, and total population growth by 142%.
- Overall, In **OECD countries**, over 1950 -2010, built-up area expanded by 104%, and population growth by 66%.
- Recently, There are many cases of **compact urban development**, where urban population growth outpaces land consumption...
- **...Yet in some cases the tendency has still been toward sprawl.** Land consumption has increased more rapidly than the population growth in most OECD countries.

Population and built-up area growth rate in selected European regions (2000-06)



The form and pace of urbanisation will have implications for future global resource consumption

Urban and rural population by major regions, 1950-2050 (million)



Source: UN World Urbanization Prospects, the 2011 Revision

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Compact city policies can achieve integrated urban policy goals

- **Compact city policies prioritize dense, proximate development patterns; public transport linkages; and accessibility to local services and jobs.**
- **They can generate synergies:**

How compact city policies can contribute to urban sustainability [excerpt]

Compact city characteristics	Environmental benefits	Social benefits	Economic benefits
Shorter intra-urban distances	Fewer CO2 emissions, Less pollution from automobiles	Higher mobility of low-income households, due to lower travel costs	Higher productivity due to shorter travel time for workers
Better access to diversity of local services and jobs with mixed use of urban space	-	Higher quality of life due to access to local services (shops, hospitals, etc.)	Skilled labour force attracted by high quality of life Greater productivity due to more diversity, vitality, innovation and creativity

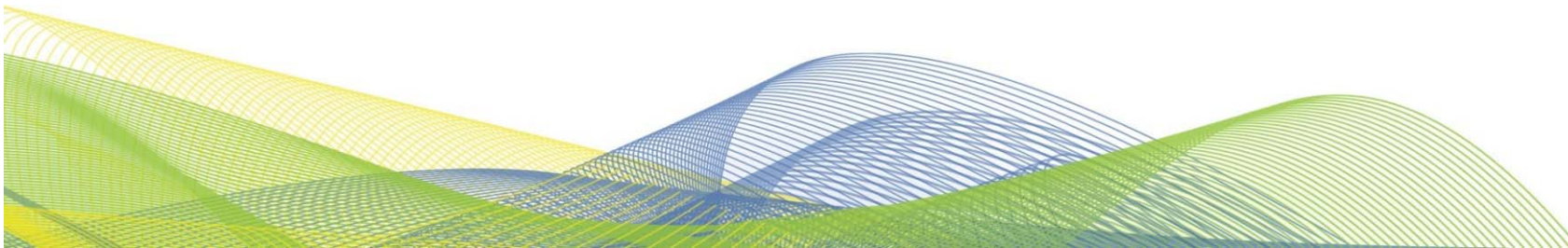
Urban greening strategies: A large policy experimentation

Sector-specific:

- Urban form & mobility
- Buildings
- Energy
- Water & waste

Horizontal:

- Workforce development
- Innovation



End the incentives to urban sprawl

Property taxes and fees related to urban development can be reformed to incentivise compact development. But the rate structure must truly differentiate between desirable (compact, transit-oriented development) and undesirable (single-family auto-dependent sprawl) outcomes to be effective.

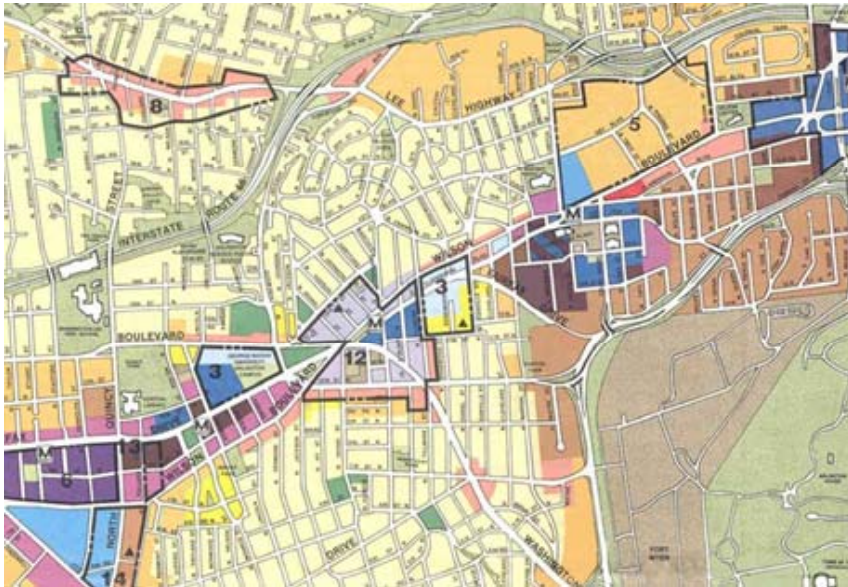
Policy solutions

- **Preferential property tax rate for multiple dwellings** (Copenhagen; Sweden)
- **Two-rate property tax system** (Sydney, Hong Kong, Pittsburg, Denmark, Finland)
- **Special Area Tax**
- **Development fees**

International Best Practices | **Smarter growth**

Linking development to transit

Siting development around public transit and co-locating housing, industrial, office and retail activities (mixed-use development) can promote public transit, walking and biking by making different urban services and functions more accessible.



Policy solutions

- **Mixed-use development**
- **Transit-oriented development**
 - Sjöstad (Stockholm)
 - Rosslyn-Ballston corridor (Arlington, Virginia)
 - Tokyo Midtown development
 - HafenCity (Hamburg, Germany)

International Best Practices | **Privileging public transit & green mobility**

Create cultural change

Marked better quality services and time savings gradually promote a cultural change in favour of public transportation and cleaner mobility. Linkages to other modal transportation are an important feature.

Policy solutions

- **Bus Rapid Transit (BRP)**
(Curitiba, Bogotá Transmilenio, Mexico City Metro Bus)
- **Public Bicycle Services** (Paris, Lyon, Barcelona, Mexico City)



International Best Practices | **Financing public transit**

Reducing auto use requires attractive public transit alternatives

Transportation-related fees and taxes can be used to fund the expansion of the public transit network and help create disincentives for auto use.

Policy solutions

- **Value capture tax** (Hong Kong, Miami, Milan, Bogota)
- **Congestion charges** (Singapore, London, Stockholm, Milan)
- **High-occupancy toll lanes**
- **Parking charges and fees**

International Best Practices | **Reducing building energy consumption & waste**

Lower the barriers to energy efficiency investments

Low-interest loans and ESCOs can lower the barriers for property owners to invest in energy efficiency and renewable energy technologies.

Policy solutions

- **Berlin Energy supply companies (ESCOs)** (Germany)
- **Toronto Mayor's Tower Renewal Programme** (Canada)
- **"Fifty-fifty" programme** (Japan)
- **Berkeley Financing Initiative for Renewable and Solar Technology (FIRST)** (US)

International Best Practices | **Conserving and treating water**

Water pricing schemes and conservation programmes encourage water conservation and can provide funding for water treatment.

Policy solutions

- **Water pricing schemes** (US and others)
- **Toronto WaterSaver Programme** (Canada)
- **Melbourne purple pipes (recycled water)** (Australia)

**Reduce waste destined to
landfills**

Policies that increase recycling, food composting, material re-use, and state of the art waste-to-energy minimise landfilled waste.

Policy solutions:

- **San Francisco Zero Waste (US)**
- **Chicago C&D recycling and reuse (US)**
- **Horsholm waste strategy (Denmark)**
- **Amsterdam waste-to-energy (Netherlands)**

International Best Practices | **Build a skilled workforce for the green economy**

Green human capital

Workforce development is an effective means to adapt skills to the emerging needs of the green economy.

Success stories

- **Solar Valley
Mitteldeutschland
(Germany)**
- **Massachusetts
Clean Energy Center (US)**

International Best Practices | **Spur innovation through research co-operation**

Facilitate connections

Facilitating connections between university research and private sector R&D for green technologies spurs green tech innovation.

Success stories

- **Milwaukee Water Council**
(US)
- **Øresund Environment Academy**
(Denmark/Sweden)
- **Solar Valley Mitteldeutschland**
(Germany)

Constructing synergies among Urban Policies

Impact → (reads horizontally)	Land-use Zoning	Transportation	Natural resources
Land-use zoning <i>Land-use zoning determines the density, height of buildings, and proportion of undeveloped land on each property.</i>	–	Segregation of land uses impacts travel distances and frequency; transit-oriented development zones encourage use of mass transportation.	Zoning designates natural resource areas that may be set aside to reduce vulnerability to flooding or urban heat island effects.
Transportation <i>Transportation policies determine the development and extension of road and mass transportation networks.</i>	Transportation infrastructure policies shape demand for land and acceptance of density increases.	–	Transportation systems impact natural resource and preserved zones.
Natural resources <i>Natural resource policies determine which areas are preserved from development and what uses are acceptable on them.</i>	Natural resource policies determine the limits of developed land-use zones and can improve quality of high-density zones.	Natural resource policies affect the placement of road and mass transportation infrastructure.	–

Examples:

- Retraining of local workers for building retrofit programmes
- Orienting development around public transportation and services
- ICT and public transportation investments to improve service quality cost-effectively
- Congestion fees and enhancements in bus service.
- Compact city policies and eco-neighbourhoods that reduce environmental impact of providing urban services

Integrating sectoral policies at the urban level: an example

Pro-Growth Policies → Greening Opportunities ↓	Infrastructure and Investment Policies	Innovation Policies	Human Capital Policies
Energy Policies	<i>Regulations and investments to support cogeneration of energy, district heating/cooling, and city purchase of renewable energy</i>	<i>Funding and technical assistance for regionally-located renewable energy R&D</i>	<i>Retraining of traditional economy workers for renewable energy production</i>
Impact on Jobs	Renewable energy production is more job-intensive than fossil-fuel energy production.	Low and high-skill job opportunities at renewable energy start-ups.	Facilitates transition between traditional economy jobs and renewable sector job opportunities.
Impact on Demand for Green Goods	District heating/cooling can increase access to renewable energy by enabling or requiring participation of buildings in district.	Lowering barriers to commercial development of renewables can lower final cost, thus enabling greater demand.	--
Impact on Urban Attractiveness	Can attract firms given renewable sources of energy less vulnerable to price fluctuations than fossil-fuels.	Funding and technical assistance can attract renewable energy SMEs and R&D activities, and add value to local academic institutions	Skilled labour pool can better attract renewable energy producing firms.

Source: OECD Regional Outlook 2011

➔ Outcome Indicators need to take into account the structure across the different policy areas; identify unbalances and weakest links



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Financing green cities: Current green infrastructure investment falls short

- Global infrastructure investment needs are **huge...** 35-40 trillion US\$ will be needed to improve the world's infrastructure until 2030 or 2 trillion US\$/year, or 2.5 % of global GDP(OECD, 2007).
- ...and investment is challenged by current global fiscal constraints
- A particularly acute problem in developing countries



Financing green cities: The Chicago proposal

Ensure policy alignment across levels of government

- National policies are key.
- Remove barriers to local government action.
- A holistic approach is necessary.
- Keep the policy package simple.

Make existing revenue sources greener

- The overriding aim is to internalize externalities.
- Road-pricing policies can help reduce traffic and pollution.
- Transport-related revenue sources require coherent planning.
- Fees for water and waste services should be more responsive to actual resource use.
- Where appropriate, intergovernmental grants should take into account environmental objectives.

Tap new sources of finance

- Carbon finance should be more accessible to cities.
- Infrastructure needs related to new development should be internalized in the financing of development projects.
- National-local cooperation is essential to developing access to new forms of green finance.

Thank you

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www.oecd.org/greencities

