Compact city policies: a comparative assessment

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Aim of the study

1. To better understand the **compact city concept** and the implications of today’s urban contexts

2. To better understand potential **outcomes**, particularly in terms of Green Growth

3. To develop **indicators** to monitor compact cities

4. To examine current compact city **practices in OECD**

5. To propose key compact city **strategies**
### Compact City?

**At the metropolitan scale:**

<table>
<thead>
<tr>
<th>Dense and proximate development patterns</th>
<th>Urban areas linked by public transport systems</th>
<th>Accessibility to local services and jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Urban land is intensively utilized</td>
<td>• Effective use of urban land</td>
<td>• Land use is mixed</td>
</tr>
<tr>
<td>• Urban agglomerations are contiguous or close together</td>
<td>• Public transport systems facilitate mobility in urban areas</td>
<td>• Most residents have access to local services either on foot or using public transport</td>
</tr>
<tr>
<td>• Distinct border between urban and rural land use</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Key findings
Five key urban trends

1. Urbanisation and the increasing need to conserve land resources
2. The threat of climate change to cities
3. The rise in energy prices
4. The challenge of sustainable economic growth
5. Declining population, ageing and smaller households in cities
Urban population keeps increasing

OECD countries (left) and World (right)
Land is consumed at a faster rate...
...than population growth
Energy price affects location choice
More demands for smaller houses...

Average household size

[Graph showing average household size across various countries for 1980 and 2008.]
...and urban living

Percentage of one-person households
2. How can compact city policies contribute to urban sustainability and green growth?
6 sub-characteristics

1. shorter intra-urban travel distances
2. less automobile dependency
3. more district-wide energy utilisation and local energy generation
4. optimal use of land resources and more opportunity for urban-rural linkages
5. more efficient public services delivery
6. better access to a diversity of local services and jobs
Environmental benefits

CO₂ emissions per capita in transport and density in predominantly urban areas, 2005-06

Per capita transport CO₂ emissions in 2006 (kg CO₂/population)

Urban density in 2005 (population/km²)

A: US, Canada, New Zealand
B: Australia, Austria, Belgium, Denmark, Czech Republic, Germany, Greece, Hungary, Ireland, Italy, Japan, Korea, Mexico, Norway, Poland, Portugal, Slovak Republic, Turkey
C: United States, Canada, New Zealand, Australia, Austria, Belgium, Denmark, Czech Republic, Germany, Greece, Hungary, Ireland, Italy, Japan, Korea, Mexico, Norway, Poland, Portugal, Slovak Republic, Turkey

Per capita transport CO₂ emissions and urban density in predominantly urban areas, 2005-06.
Lower expenditure on public service

Administrative cost in low-density urban areas

Population density (X-axis) and cost of infrastructure maintenance per capita (Y-axis)

Population density that meets the average cost (40 persons/ha)

Average cost per resident as a metropolitan region

Source: "Toyama City Compact Urban Development Investigative Research Report"
Walkability to local service

Distance to the nearest medical facilities

Source: Kaido and Kwon (2008)
Mobility

- **Affordability**: compact city can achieve lower transport costs
- **Higher mobility for people without access to a car**
Concerns

• Potential adverse negative effects
  1. Traffic congestion
  2. Housing affordability
  3. Quality of life (loss of open and recreational spaces, etc.)
  4. Energy (urban heat islands, etc.)

• Lack of local balances

• Long-term policy effects
3. Measuring the performance of a compact city
The proposed 18 indicators

- Population and urban land growth
- Population density on urban land
- Retrofitting existing urban land
- Intensive use of buildings
- Housing form
- Trip distance
- Urban land cover
3-D density map: Portland

Portland
Max 35,524 pop/km²

3-D density map: Paris

3-D density map: Vancouver

Vancouver
Max 11,413 pop/km²

Urban land cover

Athens (3.4 million)  Atlanta (4.6 million)
Population living close to transport stations/network

<table>
<thead>
<tr>
<th></th>
<th>Vancouver</th>
<th>Toyama</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within 800 m of rail service</td>
<td>29.8%</td>
<td>13.8%</td>
</tr>
<tr>
<td>Within 400 m of bus service</td>
<td>42.2%</td>
<td>63.7%</td>
</tr>
<tr>
<td>Within 800 m of bus service</td>
<td>83.9%</td>
<td></td>
</tr>
<tr>
<td>Within 800 m of rapid transit</td>
<td>13.8%</td>
<td></td>
</tr>
<tr>
<td>Within 400 m of FTN</td>
<td>42.2%</td>
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</tr>
<tr>
<td>Within 400 m of bus service</td>
<td>97.7%</td>
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</table>
Matching local services and homes
## Policy practices in use

<table>
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<tr>
<th>Regulatory / informative</th>
<th>Fiscal</th>
<th>Public investment / partnership</th>
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</thead>
<tbody>
<tr>
<td>• Master plan with explicit compact city goals / instruments</td>
<td>• Taxation of under-density</td>
<td>• Purchasing land for natural reserve</td>
</tr>
<tr>
<td>• Urban design guidelines</td>
<td>• Congestion tax / fee / charges</td>
<td>• Development agreement for dense/mixed-use development</td>
</tr>
<tr>
<td>• Urban growth boundary / urban containment boundary</td>
<td>• Subsidies for densification</td>
<td></td>
</tr>
<tr>
<td>• Greenbelt</td>
<td>• Tax incentives for promoting development near transit stations</td>
<td></td>
</tr>
<tr>
<td>• Urban service boundary</td>
<td>• Location Efficient Mortgage</td>
<td></td>
</tr>
<tr>
<td>• Agricultural / natural land reserve</td>
<td>• Split-rate property tax</td>
<td></td>
</tr>
<tr>
<td>• Minimum density requirement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Mixed-use requirement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Restriction on green-field development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Restricting location of facilities causing high trip frequency</td>
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*Source: OECD compact city survey*
## The five key strategies

| 1. Set explicit compact city goals | • Establish a national urban policy framework that includes compact city policies  
• Encourage metropolitan-wide strategic planning  |
|----------------------------------|---------------------------------------------------------------------------------|
| 2. Encourage dense and proximate development | • Increase effectiveness of regulatory tools  
• Target compact urban development in green-field areas  
• Set minimum density requirements for new development  
• Establish mechanisms to reconcile conflicts of interests  
• Strengthen urban-rural linkage  |
| 3. Retrofit existing built-up areas | • Promote brown-field development  
• Harmonise industrial policies with compact city policies  
• Regenerate existing residential areas  
• Promote transit-oriented development in built-up areas  
• Encourage “intensification” of existing urban assets  |
| 4. Enhance diversity and quality of life | • Promote mixed land use  
• Improve the match between residents and local services and jobs  
• Encourage focused investment in public space and foster a “sense of place”  
• Promote a walking and cycling environment  |
| 5. Minimise adverse negative effects | • Counteract traffic congestion  
• Encourage the provision of affordable housing  
• Promote high-quality urban design to lower “perceived” density  
• Encourage greening of built-up areas  |
Inner-city TOD (LRT, Toyama)
Transfer between the transport modes (LRT, Toyama)
Retrofitting built-up areas + housing affordability (Laneway Housing, Vancouver)
Urban design in contexts
(Southeast False Creek, Vancouver)
Storm water + heat island + perceived density
(green street, Portland)
Public and private green space (Paris)
Improving metropolitan governance

• A vision: region-wide, integrated, long-term
• Articulate the roles and responsibilities of all key actors and stakeholders in the vision
• Vertical and horizontal coordination
• Accountability, transparency and reporting
Next steps

• More case studies
  – Fast-growing metropolitan areas (Asia)
  – Shrinking metropolitan areas (US, Japan, Europe)

• Theme specific studies
  – Housing and compact city
  – Energy and compact city

• Indicators
Thank you

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