

## Efficient land use and public transport systems for sustainable cities (SDG 11)

**In OECD countries, cities and their respective commuting zones have three and a half times more buildings and infrastructure per capita than in the rest of the world.**

In cities and their commuting zones (i.e. FUAs) of OECD countries, around 280 m<sup>2</sup> of land per person are built-up, 3.5 times more than the average in the rest of the world. While housing and infrastructure for public services are crucial for well-being, extensive artificial surface cover can have major environmental impacts, such as diminishing biodiversity and deteriorating soil quality (Haščič and Mackie, 2018). In addition, low-density housing and urban sprawl can be associated with higher energy demand and transport-related CO<sub>2</sub> emissions (OECD, 2018). The extent to which built-up land in cities changes with respect to population is an indicator included in the UN Sustainable Development Goals to promote efficient land use and prevent urban sprawl. In this respect, FUAs in OECD countries differ remarkably from those in the rest of the world, with much higher average values, reflecting relatively high levels of infrastructure provision and road network (Figure 3.21, panel A).

In many OECD countries, the change in built-up area per capita in FUAs during the last 15 years has been high despite already high initial levels of the built environment. For example, in 160 out of 428 (37%) FUAs with high levels of built-up area per capita in 2000 (above 300 m<sup>2</sup> per person), land consumption has increased at a higher rate than the population. On the other hand, in 40 out of 143 FUAs with initial low levels of built-up area per capita in 2000 (below the 100 m<sup>2</sup> per person), the population is growing faster than the built-up area, which can intensify pressure on relatively limited infrastructure networks and undermine the provision of basic services to a growing population (Figure 3.23-Figure 3.24).

The amount of land dedicated to buildings and infrastructure has been increasing at different speeds depending on city size, with faster increases in the small- and medium-sized cities. Built-up areas per capita in FUAs with less than half a million inhabitants have increased by 15.6 m<sup>2</sup> per person since 2000, while it has increased by only 1.2 m<sup>2</sup> per person in those above half a million inhabitants during the same period. This trend is leading to a convergence in built-up area per capita across FUAs of different sizes in OECD countries – to an average close to 280 m<sup>2</sup> per inhabitant (Figure 3.21, panel B).

Efficient public transport systems can make cities not only more sustainable but also more productive. Good transport networks improve people's accessibility to existing services and amenities. They also minimise the commuting time of workers to their place of work and maximise the number of jobs (firms) reachable to workers, which can contribute to higher productivity (OECD, 2020b). European metropolitan areas display a positive and significant correlation between the performance of the public transport network (see Definition) and labour productivity (gross value added [GVA] per worker). Such a correlation does not hold between the performance of the road network and labour productivity. While metropolitan areas with the best public transport performance in Europe,

such as Helsinki, London and Oslo, display the highest levels of labour productivity, the metropolitan areas of Athens, Nottingham and West Midlands report a low public transport performance and have the lowest labour productivity. On average, the labour productivity gap between the top and bottom metropolitan areas in terms of public transport performance in Europe is close to USD 28 000 per worker (in 2015 PPP) (Figure 3.22).

### Definition

Transport performance is the ratio between the accessibility to certain amenities (including the number of people) by a mode of transport (i.e. how many amenities can be accessed by 30 minutes of a specific mode of transport) and the proximity of these amenities (i.e. how many are located in a radius of 8 km).

### Sources

Haščič, I. and A. Mackie (2018), "Land Cover Change and Conversions: Methodology and Results for OECD and G20 Countries", *OECD Green Growth Papers*, No. 2018/04, OECD Publishing, Paris, <https://doi.org/10.1787/72a9e331-en>.

ITF (2019), "Benchmarking accessibility in cities: Measuring the impact of proximity and transport performance", *International Transport Forum Policy Papers*, No. 68, OECD Publishing, Paris, <https://doi.org/10.1787/4b1f722b-en>.

OECD (2020a), *The Future of Regional Development and Public Investment in Wales, United Kingdom*, OECD Multi-level Governance Studies, OECD Publishing, Paris, <https://doi.org/10.1787/e6f5201d-en>.

OECD (2020b), "Metropolitan areas", *OECD Regional Statistics (database)*, OECD, Paris, <http://dx.doi.org/10.1787/data-00531-en>.

OECD (2018), *Rethinking Urban Sprawl: Moving Towards Sustainable Cities*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264189881-en>.

See country metadata in Annex B.

### Further information

OECD (2017), *The Governance of Land Use in OECD Countries: Policy Analysis and Recommendations*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264268609-en>.

### Figure notes

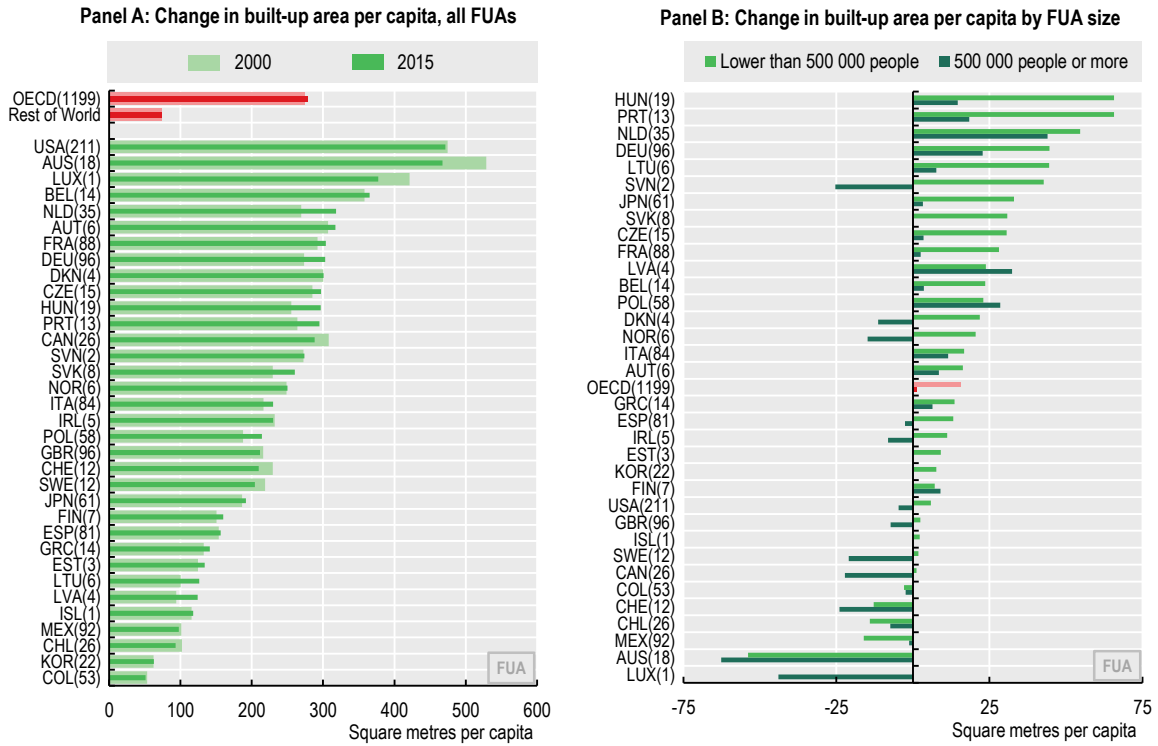
Figure 3.21: Functional urban areas of more than 50 000 people.

Figure 3.22: 79 metropolitan areas from 23 European countries.

### 3. ENVIRONMENTAL RESILIENCE AND SUSTAINABLE DEVELOPMENT

#### Efficient land use and public transport systems for sustainable cities (SDG 11)

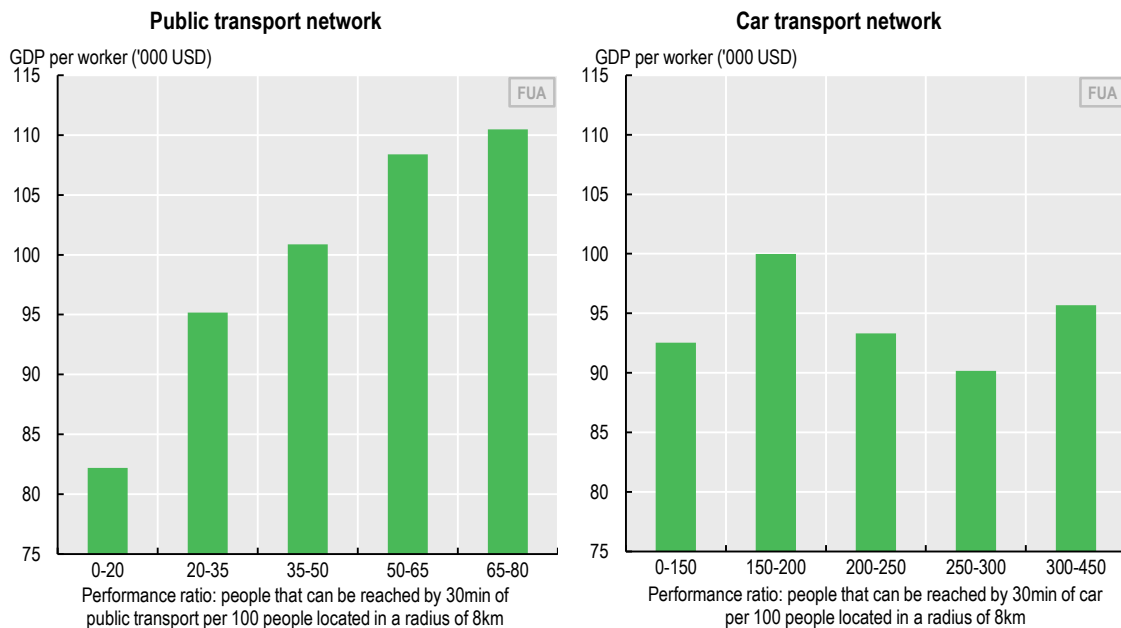
##### 3.21. Built-up area per capita in cities and their commuting zones, 2000 and 2015



StatLink <https://doi.org/10.1787/888934190419>

##### 3.22. Productivity and transport performance in European metropolitan areas, 2017

FUAs of more than 250 000 people



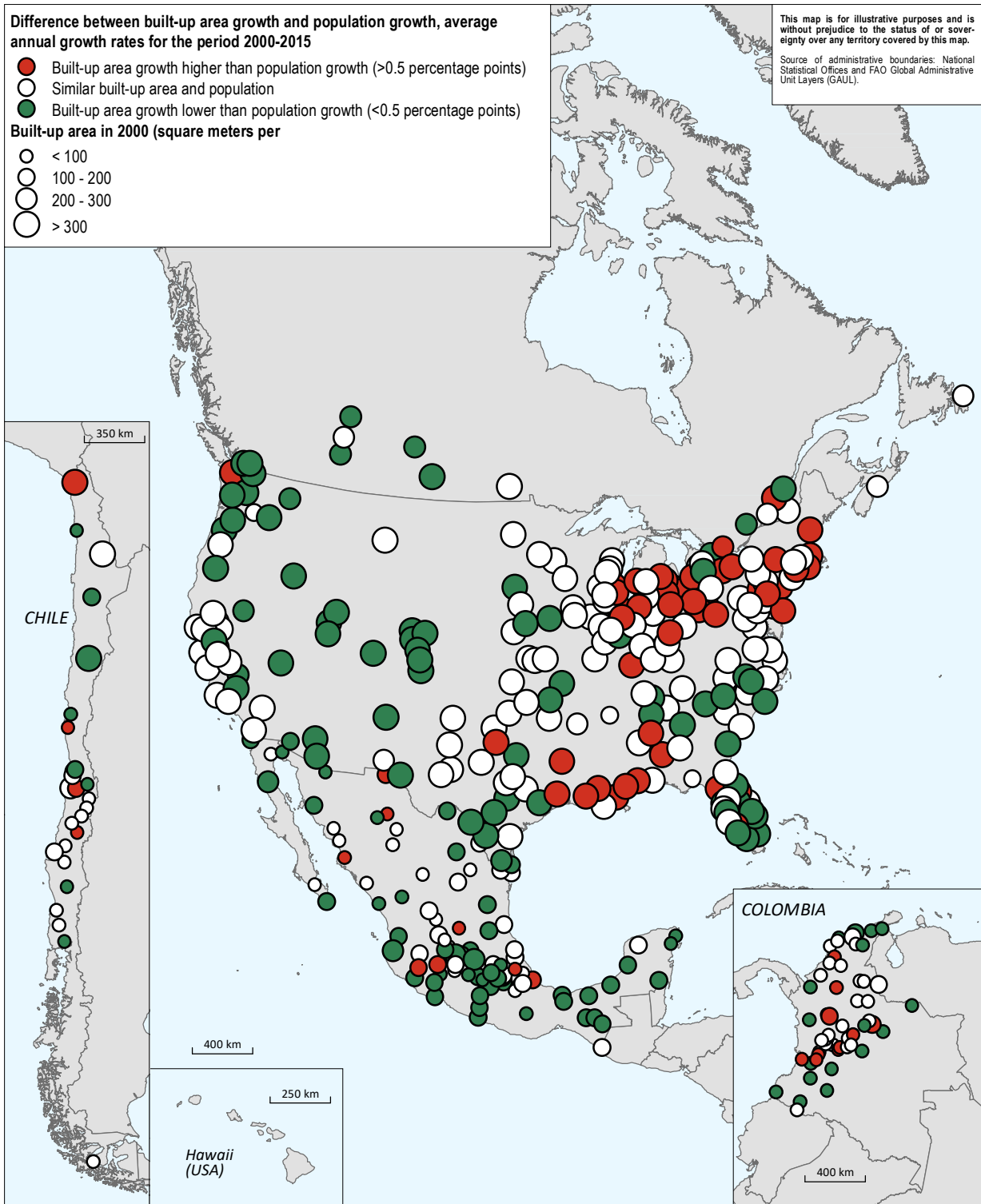
StatLink <https://doi.org/10.1787/888934190438>

### 3. ENVIRONMENTAL RESILIENCE AND SUSTAINABLE DEVELOPMENT

#### Efficient land use and public transport systems for sustainable cities (SDG 11)

#### 3.23. Difference between built-up area growth and population growth: Americas, 2000-15

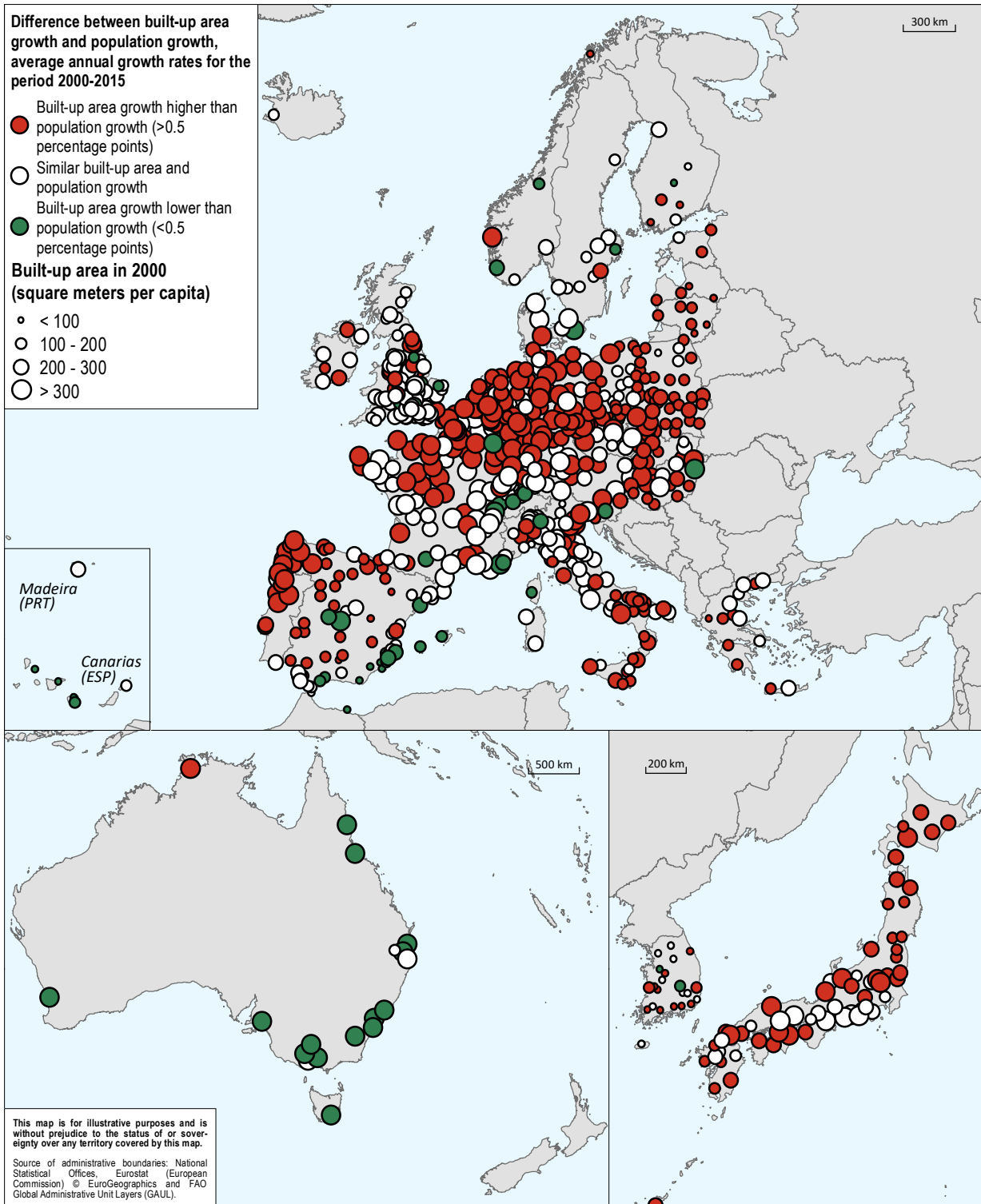
Functional urban areas



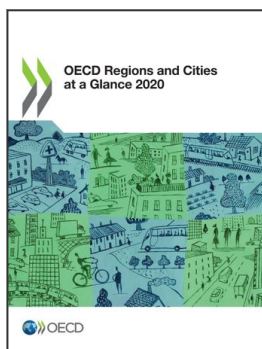
StatLink <https://doi.org/10.1787/888934190457>

#### 3.24. Difference between built-up area growth and population growth: Europe and Asia-Pacific, 2000-15

Functional urban areas



StatLink <https://doi.org/10.1787/888934190476>



**From:**  
**OECD Regions and Cities at a Glance 2020**

**Access the complete publication at:**

<https://doi.org/10.1787/959d5ba0-en>

**Please cite this chapter as:**

OECD (2020), "Efficient land use and public transport systems for sustainable cities (SDG 11)", in *OECD Regions and Cities at a Glance 2020*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/79c1e03d-en>

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.

This document, as well as any data and map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area. Extracts from publications may be subject to additional disclaimers, which are set out in the complete version of the publication, available at the link provided.

The use of this work, whether digital or print, is governed by the Terms and Conditions to be found at <http://www.oecd.org/termsandconditions>.