

1. SPECIAL FOCUS ON METROPOLITAN AREAS

Environmental sustainability in metropolitan areas

Green areas such as parks and natural vegetation contribute to reducing pollution, improving the health and quality of life of residents, and making metropolitan areas more attractive to residents and tourists.

International comparable measures of green areas can be derived by overlapping satellite-based measures of land cover with the metropolitan boundaries. According to these estimates, North American cities such as Edmonton, Des Moines and Madison are the metropolitan areas with the largest share of green area per person (higher than 5 000 square metres per person). Juarez, Bari, Anjo and Athens, on the other hand, recorded the lowest estimates of green areas, i.e. below the minimum level of 9 square metres per person recommended by the World Health Organization (Figure 1.27).

While metropolitan areas are considered large consumers of energy and producers of carbon dioxide (CO₂), high differences are observable among cities both within and across countries. The metropolitan areas with the highest levels of emissions per capita are found in Canada, Korea and the United States. Within countries, the highest differences in CO₂ emissions per capita in metropolitan areas are observed in Mexico, Italy, Korea and France (Figure 1.28). Metropolitan

areas can also be more energy efficient than the rest of the country. Evidence shows that the CO₂ emissions per capita in the metropolitan areas are lower than in less densely populated regions in half of the OECD countries, where data are available (Figure 1.28).

Source of CO₂ emissions depends on many factors, including urban form. For the United States, the high levels of CO₂ from the transport sector are the result of a continuous sprawl of cities and the intensive use of private vehicles to commute (Figure 1.29). On the other hand, in European cities, which account on average for lower levels of CO₂ emissions per capita, the share of CO₂ emissions coming from the energy production sector is relatively larger than the share of emissions coming from the transport sector (Figure 1.29).

Source

OECD (2013), "Metropolitan areas", *OECD Regional Statistics* (database), <http://dx.doi.org/10.1787/data-00531-en>.

MODIS MCD12Q1 for green areas in 2008.

CO₂ emissions: EDGAR spatial emission datasets, JRC, <http://edgar.jrc.ec.europa.eu>.

See Annexes A and B for data sources and country-related metadata.

See Annex C for details on definitions and data estimations.

Reference years and territorial level

2008; metropolitan areas.

The functional urban areas have not been identified in Australia, Iceland, Israel, New Zealand and Turkey. The FUA of Luxembourg does not appear in the figures since it has a population below 500 000 inhabitants.

Further information

OECD (2012), *Redefining "Urban": A New Way to Measure Metropolitan Areas*, OECD Publishing, <http://dx.doi.org/10.1787/9789264174108-en>.

Piacentini, M. and K. Rosina (2012), "Measuring the Environmental Performance of Metropolitan Areas with Geographic Information Sources", *OECD Regional Development Working Papers*, No. 2012/05, OECD Publishing, <http://dx.doi.org/10.1787/5k9b91tv87jf-en>.

Interactive graphs and maps: <http://rag.oecd.org>.

Figure notes

1.27: Green areas are estimates based on land cover databases (Annex C).

1.28-1.29: CO₂ emissions in metropolitan areas are estimates based on global satellite datasets (Annex C).

Definition

The metropolitan areas are defined as the functional urban areas (FUA) with population above 500 000.

The functional urban areas are defined as densely populated municipalities (urban cores) and adjacent municipalities with high levels of commuting towards the densely populated urban cores (hinterland). Functional urban areas can extend across administrative boundaries, reflecting the economic geography of where people actually live and work.

Carbon dioxide (CO₂) emissions in metropolitan areas are estimated by adjusting national emission data with population grid data and infrastructure location. They include emissions from all sources with the exception of air transport, international aviation and shipping.

CO₂ emissions from transport include road and non-road transportation.

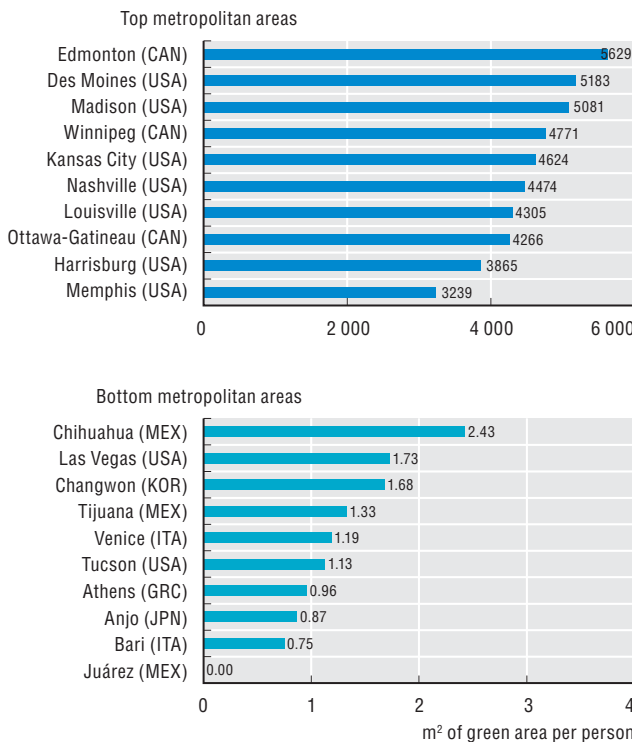
Green areas are defined as the land in metropolitan areas covered by vegetation, croplands, forests, shrub lands and grasslands.

CO₂ emissions and green areas in metropolitan areas are estimates based on global satellite datasets (Annex C).

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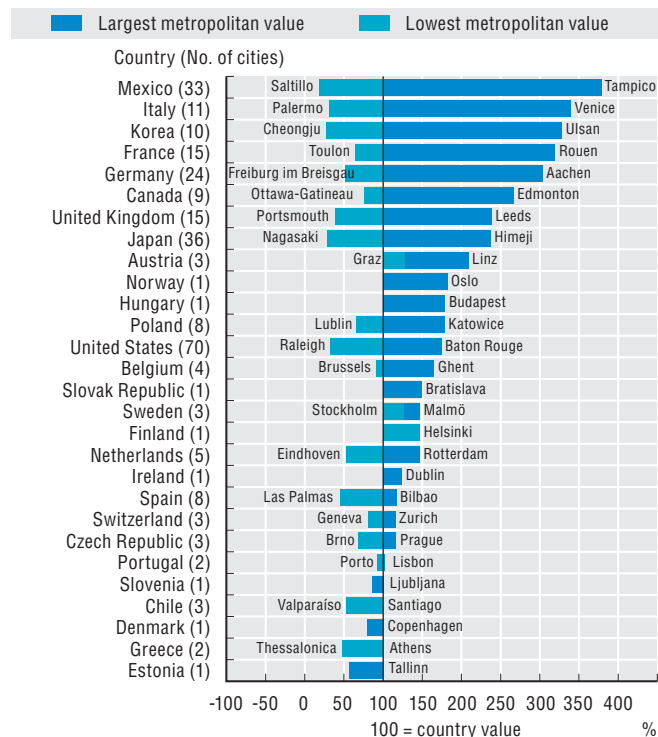
Environmental sustainability in metropolitan areas

1.27. Top and bottom 10 metropolitan areas by share of green area per person, 2008



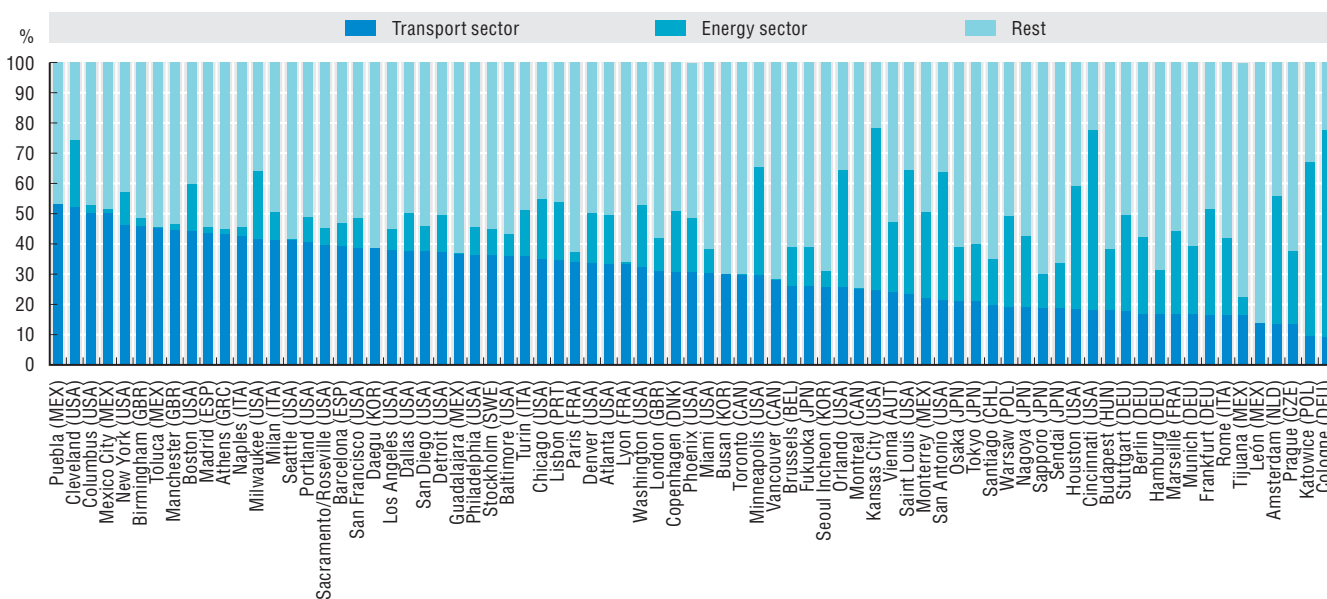
StatLink <http://dx.doi.org/10.1787/888932913114>

1.28. Metropolitan areas range in CO₂ emissions per capita, 2008 (country value = 100)



StatLink <http://dx.doi.org/10.1787/888932913133>

1.29. Share of CO₂ emissions from transport and energy sector in the metropolitan areas with more than 1.5 million people, 2008



StatLink <http://dx.doi.org/10.1787/888932913152>



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