

CITY CLIMATE LEADERSHIP AWARDS

Copenhagen Climate Close-Up

Fast Facts

- Denmark's GDP per capita was \$37,713 in 2011.
- Services contributed the most to Denmark's GDP (76.7% of the total), with industry and agriculture falling far behind (22.1% and 1.3%, respectively).
- Denmark's population in 2012 was 5.6 million people, with a density of 126 people/km². The population is growing at a rate of 0.2%.
- 87% of Denmark's population lives in urban areas.

Sources: CIA, *The World Factbook*, <https://www.cia.gov/library/publications/the-world-factbook/geos/da.html>; Denmark.dk, *Facts and Statistics*, <http://denmark.dk/en/quick-facts/facts/>

- Copenhagen's GDP per capita is roughly \$60,000.
- Copenhagen's population at 559,400 is close to 10% of Denmark's population.
- Copenhagen's metropolitan economy, measured as Gross Value Added (GVA) per capita grew by nearly 25% from 1993 to 2010. Over the same period, greenhouse gas (GHG) emissions per capita in the City of Copenhagen decreased by 40% from 7.31 tCO₂e to 4.38 tCO₂e (GHG emissions are for transport, heat, and electricity only).
- Copenhagen is 45 times denser than the Denmark average, at 5,800 people/km² versus 126 people/km².
- While Denmark's population remains stable, the population of Copenhagen is expected to grow 22% between 2010 and 2020.

Sources: LSE, *'Going Green - How cities are leading the next economy'*, http://eprints.lse.ac.uk/47834/1/_Libfile_repository_Content_Rode%2C%20P_Going%20green_Going%20green%20%28author%29.pdf; City of Copenhagen, *Facts on Copenhagen*, <https://sub-site.kk.dk/sitecore/content/Subsites/CityOfCopenhagen/SubsiteFrontpage/Press/FactsOnCopenhagen.aspx>; European Commission, *Denmark*, http://ec.europa.eu/regional_policy/archive/urban2/urban/audit/ftp/yearbook/denmark.pdf; *European Green City Index, Copenhagen*, http://www.siemens.com/entry/cc/features/greencityindex_international/all/en/pdf/copenhagen.pdf

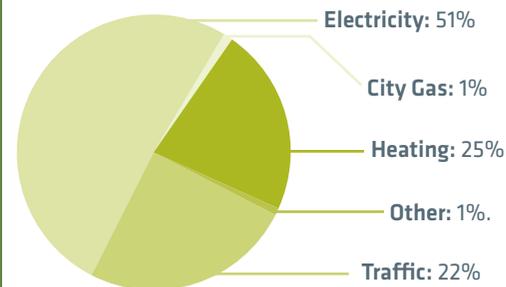
City population projections



	2013	2020	2030	2040
	559,440	636,358	715,226	755,773

Source: Statistic Denmark, *Population Projection*, <http://www.dst.dk/en/Statistik/emner/befolkning-og-befolkningsfremskrivning/befolkningsfremskrivning.aspx>

Sources of CO₂ (eq.) emissions



GHG emission of CO₂ equivalents from Copenhagen: 2.515,250 tons, (2010). Reduction target of GHG emissions from Copenhagen: reduction by 20% (in relation 2005) by 2015. Distribution of the total greenhouse gas emissions from the city of Copenhagen European Commission/ European green capital; http://ec.europa.eu/environment/europeangreencapital/wp-content/uploads/2012/07/Section-1-Local-contribution-to-climate-change_Copenhagen.pdf

CO₂ (eq.) emissions



Annual CO₂ (eq.) emissions:
2.12 million tons

Emissions reduction target: Carbon neutral by 2020

Source: C40, *C40 cities - Copenhagen*, <http://c40.org/c40cities/copenhagen/overview>

Carbon Measurement & Planning winner 2013: 2025 Climate Plan

Summary

Copenhagen won the C40 & Siemens Climate Leadership Awards' Carbon Measurement & Planning category for its 2025 Climate Plan, which lays out the path for the city to become the first carbon neutral capital city by 2025. While focusing on all sectors that comprise the city's carbon footprint, the plan sets ambitious targets and details strategies to achieve a significant reduction in building emissions – which comprise 75% of the city's total. Upon implementation of the plan, city emissions will be reduced to 400,000 tons by 2025.

Challenges

By 2025, Copenhagen will be the first capital city in the world to become carbon neutral. To reach this ambitious goal, the City Council has adopted a comprehensive and targeted carbon reduction master plan that aims to take the city's CO₂ emissions from its current level of around 2.5 million tons to under 1.2 million tons in less than two decades.

The CPH Climate Plan 2025 pays considerable attention to reducing building emissions, which are responsible for 75% of the city's CO₂ emissions. Many of Copenhagen's buildings were built in the 1960s and '70s and do not conform to new energy efficiency standards.

Actions

The Climate Plan is organized around four pillars: energy consumption, energy, mobility, and city administration. Wind farms, citywide efficient heating systems, energy efficiency and the development of public transportation networks and bike routes are some of the initiatives in the works to bring Copenhagen closer to

its carbon-neutral goal. The first “bicycle superhighway” – designed to connect outer districts and suburbs to the city centre – opened in 2012, with 27 more to be developed over the coming years. The city also aims to make district heating and cooling carbon neutral. It recently opened its first district cooling plant, using seawater, and plans as many as seven over the master plan period to meet the city's growing need for air conditioning.

Projected Outcomes

- All district heating and cooling will be carbon neutral by 2025.
- Commercial buildings are to lower energy consumption by 20%, households by 10%, and public buildings by 40%.
- Street-lighting will consume 50% less energy.
- All of the city's electricity consumption will come from renewable sources (and production will be greater than consumption).
- Copenhagengers will take 75% of trips by bicycle, on foot or by public transport (and 50% of trips to work or school will be by bike, up from 36% currently).



In detail

Retrofitting Programs

Electricity consumption and heating are responsible for approximately 75% of Copenhagen's CO₂ emissions. To reduce these impacts, the City of Copenhagen has initiated several policies and programs related to retrofitting the city's aging building stock, which is largely energy inefficient and thus a major contributor to CO₂ emissions.

The Climate Plan includes a goal of increasing the rate of retrofitting by half a percentage point. A number of initiatives support this goal, including:

- Guidelines and procedures that mandate improvement of building structure
- Government funds targeted for increased climate retrofitting
- Creation of a community of stakeholders interested in sharing knowledge and expertise about energy efficiency in buildings
- Support for new, low-energy developments and for retrofitting buildings
- Establishment of an online forum with public data on electricity and heat consumption



In detail

Cycle Superhighway

In Copenhagen 36% of trips to and from work or school are by bicycle. More than 20,000 cyclists ride through the city center at peak times. To accommodate the growing demand for cycling, Copenhagen developed the concept of the cycle superhighway, a new network of cycle lanes, which will connect commuters living in and around Copenhagen to their places of work.

The proposed network will eventually consist of 28 cycle superhighways covering a total of 300km in the city. To date, 22 municipalities surrounding Copenhagen have agreed to extend the cycle superhighway network, increasing the number of bike lanes by 15%.

The recently opened Copenhagen-Albertslund is the first of the cycle superhighways. The route connects the city center with one suburban area, Albertslund, located 22km outside the city. In addition to providing a high-quality cycle lane, the new route offers safer intersections, synchronized traffic lights, improved signage, and air pumps to increase cyclists' speed.

The cycle superhighways are estimated to reduce public expenditure on health by close to \$55 million.





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