

An aerial photograph of Copenhagen, Denmark, showing a dense urban area with numerous buildings featuring prominent red-tiled roofs. The city is situated along a large body of water, likely the harbor, with a marina filled with white sailboats and other vessels. In the background, the city extends to the waterfront, with various industrial and commercial buildings. The sky is clear and blue.

SIEMENS

Copenhagen's Big Incentive

City Performance Tool – October 2015

Global Center of Competence Cities

Copenhagen has been and continues to lead cities on climate policy globally. It ranked top of Siemens' European Green City Index in 2009, and it is making great strides meeting its 2025 target for carbon neutrality. Siemens has used the CyPT and found that the City of Copenhagen is reducing emissions from nearly all of the sources where it has significant control in energy and transport.

Maintaining its global leadership position will require delivering further building upgrades within its own public stock and incentivizing private building owners to take action to improve the efficiency of their buildings. The city will also have to stimulate a market shift towards cleaner vehicles and a modal shift towards low carbon public transportation. Should Copenhagen be able to pursue these recommendations then it will far outclass other cities in its scope of both ambition and success.

Executive Summary

Copenhagen is one of the world's most sustainable cities, and it is the first capital to publicly target carbon neutrality by 2025. The City of Copenhagen has delivered many of the initiatives it put forward in its 2025 Climate Plan. However, despite these successes the city still faces a number of challenges to meet its carbon neutrality target.

Siemens' Center for Competence Cities, has been working with the City of Copenhagen to identify additional actions that could be delivered by the city, its businesses and residents to help boost overall carbon savings and meet the 2025 targets. Siemens has used its City Performance Tool, the CyPT, to assess the relative benefits of implementing new technologies or technologies the city is already using at a greater scale. The aim of the report is to identify additional savings that could be obtained over the next ten years, rather than quantify the city's current measures. It focuses on those technologies that can technically be delivered in the next decade using a carbon accounting methodology that takes into consideration both direct and indirect emissions.

Our findings show:

1. Copenhagen is decoupling its CO₂e emissions so that despite a growing population and increasing building floorspace, carbon emissions are expected to decrease over the next 10 years. This is predominantly derived from greener national electricity and local heating mixes. Using our accounting standard that captures direct and indirect emissions, our model quantifies these savings as high as 12% of current annual emissions. These are savings achieved from the expansion of wind power and biomass for combined heat and power in the 2025 Climate Plan.
2. Despite these savings, the city now needs to incentivise its households and businesses and align national, regional and city-level policies to further accelerate emission reductions. The report gives examples of cities such as Melbourne, Tokyo and Oslo that have mobilised private sector investment in building technologies and alternative car technologies.
3. Beyond its current climate plan actions, the city can reduce emissions by an additional 26% through nine city wide technology investments – predominantly in the energy and building sector. Twelve percent of these savings are from further national investment in wind power, with ten percent and four percent from building and transport technologies. Total capital investment in these technologies would be around €3bn, 95% of which lie outside of the city budget.
4. The 10% savings in the building sector can be delivered if the 40 largest building owners in the city were to take action to improve the efficiency and sustainability of their commercial buildings. These owners own 30% of the city's total commercial floor space and could help the city achieve a further 10% CO₂e savings if each invested €5m per year over the next decade to retrofit their stock. This is within typical building renovation budgets.
5. The long term CO₂e and cost-saving benefits of investing in these building technologies are important, but the city should not ignore transport related emissions, which will gradually become even more important as buildings are plugged to an increasingly cleaner electricity and heating mix.
6. Copenhagen must also deal with its transport emissions today because of the long lead time to implement technologies in the sector. Although the transport sector's share of emissions is smaller today compared to the building sector, a gradual convergence will occur as wind takes over the country's electricity mix. Focusing on city wide tolling and electric car implementation can save the city 20% of its transport emissions. To achieve this, the city must align itself with the regional municipalities as Copenhagen's administrative boundaries only capture a small part of the city's built up area.
7. Copenhagen has been leading on climate policy globally. After it achieves its carbon neutral goal, it should continue working towards incorporating scope 3 indirect emissions in its accounting standard. The energy related scope 3 emissions alone are as high as 25% of direct emissions and are currently unaccounted in the city's carbon accounts

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