Cycle Superhighways *(Supercykelstier)*

Copenhagen, Denmark

The Cycle Superhighways project connects suburban towns with the heart of central Copenhagen. *(Copenhagen Cycle Superhighways)*

QUICK FACTS

Project Type
Connected regional bicycle paths

Location
Greater Copenhagen, Denmark

Usage
Up to 3,973 users per weekday at Hareskovvej on the Farum route; up to 3,437 users per weekday at Finsensvej on the Albertslund route

Length
10.9-mile (17.5 km) route from downtown Copenhagen west into Albertslund; 13-mile (21 km) route from Copenhagen northwest to Farum; planned 311-mile (500 km) network

Year Constructed
Two routes of 28 completed as of 2015; nine more to be finalized by the end of 2018

Project Cost
Total cost of DKK413 million (US$59.9 million) to DKK875 million (US$127 million)

Funding
23 municipal governments, the Capital Region of Denmark (regional political body responsible for health care and development funding), Danish government

Organizational Lead
Cycle Superhighways "secretariat," a partnership between the Capital Region of Denmark and the 23 municipal government members of the project

Maintenance and Upkeep
Joint agreement between local municipalities to ensure consistency along route

IN 2012, the first of a planned network of 28 "cycle superhighways" opened in Copenhagen, with a second route opening in 2013. These upgraded bike paths connect the central city with suburban areas and link residential neighborhoods, schools, and business districts.

The cycle superhighways were planned to meet the needs of commuters in outlying parts of the Copenhagen region by creating long-distance routes with consistent, high-quality design standards. The project is intended to entice thousands of daily commuters to switch from driving to bicycling, thereby decreasing traffic congestion, carbon emissions, and health care costs, while increasing the quality of life of area residents.

Project Background

Bicycling in Copenhagen. The capital of Denmark has long been recognized as an international hub for bicycle culture due to its commitment to creating safe and efficient cycling infrastructure. According to the Danish government, there are more bikes in Copenhagen than inhabitants and the city boasts nearly 249 miles (400 km) of bike lanes—including the world's busiest. Fifty percent of Copenhagen residents commute to work on a bike daily.

Pia Allerslev, mayor of Copenhagen for children and youth, explains how bicycling is part of daily life in the city, stating, "The bicycle offers a cheap, comfortable, easy, and eco-friendly way of getting around. When we ask Copenhageners why they choose their bike over the car or public transport, they simply answer, 'Because it's the fastest way of getting around in the city.' "

Connecting regional cycle routes. Even though bicycle commuting rates in Copenhagen were already significant, leaders from across the Capital Region came together in 2009 to further improve cycling infrastructure. This effort resulted in a plan to create 28 Cycle Superhighway, or "bike-bahn," routes, by connecting and improving existing bike paths. By 2015, 23 municipalities were working together to develop the cycle superhighways.

Funding for the network comes from local municipalities and the Danish government. The 23 municipalities involved in the project are each responsible for the construction, operation, and maintenance of their portion of the network and pay half of the cost of constructing paths within their borders. The remaining costs are subsidized by the national government. A regional steering committee facilitates the planning work leading to the development of the routes, ensuring consistent design.

When complete, the network will include 311 miles (500 km) of cycle superhighways, at a budget of DKK413 million (US$59.9 million) to DKK875 million (US$127 million), depending on final design decisions.

A total of 28 Cycle Superhighway routes will link surrounding towns and neighborhoods with central Copenhagen. *(Copenhagen Cycle Superhighways)*

The underlying goal of the Cycle Superhighway plan is to increase bicycle commuting for those who travel distances exceeding 3.1 miles (5 km) from home to work, with a target of an additional 15,000 people opting to bike to work rather than drive, resulting in a 30 percent increase in bike commuting across the Capital Region.

As of 2015, two of the planned 28 Cycle Superhighway routes were open to the public, with nine more scheduled for completion by 2018. One finished route connects Copenhagen to Albertslund, a suburban community 11 miles (18 km) west of the city. The second links Copenhagen with Farum, a municipality 13 miles (21 km) northwest of Copenhagen. While these routes radiate out from central Copenhagen, future routes will also form links between suburbs.

The completed paths are already reshaping transportation in the region. The Farum Route saw a 52 percent increase in the number of cyclists traveling along the corridor between 2012 and 2014. Among Farum Route commuters, 21 percent were

Top: New uniform signage provides bicyclists using the cycle superhighways with clear routes between suburban towns and central Copenhagen. *(Copenhagen Cycle Superhighways)*

Center: LED lights along the path of the cycle superhighways automatically turn on when cyclists are present. *(Copenhagen Cycle Superhighways)*

Bottom: Many Cycle Superhighway routes are adjacent to roadways, but are physically separated from automobile traffic and pedestrians. *(Copenhagen Cycle Superhighways)*

new to bike commuting and 14 percent said they used the route more often after improvements. Users of the path were also surveyed about safety concerns, ranging from lighting to the potential for collisions, and reported an 11 percent increase in perceived safety due to improvements.

Cycle superhighway design features. The cycle superhighways are being formed by patching together and improving existing cycle routes. The paths feature smooth asphalt surfaces, shelters, and innovative lighting. In some areas, light-emitting diode (LED) lights sense whether cyclists are on the route and automatically turn off when sections are empty, resulting in an 80 percent reduction of power use.

Each superhighway is equipped with a bicycle pump at every mile, as well as foot rests at intersections that prevent cyclists from having to get off bikes when stopped.

Another major innovation is "green wave" technology that times traffic lights to the average bicycling speed of 12 miles (19 km) per hour and provides riders traveling at this speed with continuous green lights.

Cycle superhighways have varying widths, with less heavily traveled routes at 8.2 feet (2.5 m) wide, and busier stretches closer to central Copenhagen at 9.8 to 13.1 feet (3 to 4 m) wide. These widths are standard for the region, yet consistently allow two people to bike side-by-side.

Development, Quality of Life, and Economic Impacts

The city of Copenhagen found in 2010 that, across Denmark, every kilometer traveled by bike earns the country DKK1.22 (US$0.18), while every kilometer traveled by car costs the nation DKK0.69 (US$0.10). Furthermore, the University of Denmark estimates that automobile traffic congestion costs the Capital Region an average of DKK10 billion (US$1.45 billion) per year.

The increase in cycling, and corresponding reduction in automobile use, produced by the opening of the cycle superhighways are expected to further contribute to the economic health of the Copenhagen region. The Capital Region predicts an economic return from the completed network of 19 percent, due to health care savings from increased physical activity, reduced air pollution levels, and fewer road fatalities. This compares favorably with the rate of return the Capital Region sees on investments in roadway projects. For example, Ring 3, a highway encircling Copenhagen, saw a rate of return of just 2.8 percent.

The Capital Region government estimates that the increase in physical activity created by the cycle superhighways will lead to 34,000 fewer sick days per year and a $60 million reduction in health care costs, as well as a decrease of 1.4 million car trips taken per year and an annual reduction in CO_2 emissions equaling 856 tons.

As the Cycle Superhighway network grows, local governments and the private sector are working together to ensure that new residential and commercial developments will be accessible by bicycle. One major initiative is the Nordhavn district, a former port area of Copenhagen that is being redeveloped as a living and working district expected to house 45,000 residents. A new cycle superhighway, along with rail transit service, will be the main forms of transportation in Nordhavn.

The Ørestad area of Copenhagen, an area of the city that has seen continuing large-scale development since the 1990s, is already connected to other parts of the city by rail service and designated bike routes, but there also are plans to further improve connectivity by incorporating the Cycle Superhighway network into the local plan for the area.

Ørestad is already home to bicycle-friendly real estate developments, including the mixed-use 8 Tallet or "Big House," the largest private development ever undertaken in Copenhagen, which is designed with exterior ramps that allow residents on all ten floors of the building to access their front door by bicycle.

The plan for the cycle superhighways builds off Copenhagen's existing network of bike lanes, trails, and other cycle-related infrastructure, which supports bicycle-friendly development projects. The completed Cycle Superhighway routes have already increased the rates of bicycling from suburban areas into central Copenhagen.

The cycle superhighways are an example of municipal coordination that has health and economic benefits for the entire region, further contributing to Copenhagen's role as a vibrant, livable city that is continuing to develop in a sustainable way.

Footrests allow users of the cycle superhighways to stop at red lights without having to get off their bikes. *(Copenhagen Cycle Superhighways)*