



Cycle Highways

A new concept from the Netherlands

In the Netherlands the expansion of cycle paths has been on the agenda for a long time. In the early 1980s, timesaving, continuous cycle paths were already being tested in Tilburg and The Hague. The Netherlands is certainly not the only country faced with the problem of congested motorways and access roads to city centres, but it was here that the new concept of cycle highways was developed first. The main purpose of cycle highways is to enable cyclists commuting within a distance range of 15 km (9 miles) to reach their destination fast and safely.

The term 'cycle highways' denotes high-quality cycle paths that offer a direct connection between home and work. They allow users to cycle at a constant speed with relatively low energy expenditure because the routes are free of intersections (under- and overpasses), consist of linear stretches and large-radius curves, have a good surface and are wide enough to allow overtaking and side-by-side cycling. The conceptual comparison with highways is intentional: Cycle highways are cycle paths separated from the rest of the traffic and on which cyclists generally have the right of way away from main roads, so as to allow them to reach higher speeds with relatively low energy expenditure. Among the various Dutch case studies, this principle has been followed in all but a few exceptional cases.

Cycle highways are normally 3 to 15 km (2 to 9 miles) long and have a system of 'slip roads' for entering and

exiting at towns and villages along the route. The objective hitherto of promoting cycling as a means of transport in particular for short journeys (up to five km/ three miles) has now been expanded to include medium-length journeys. Longer journeys by bicycle replace equally long car journeys and thus make a significant contribution to climate protection while, at the same time, offering an effective way to promote healthy exercise.

Cycle highways are now under development in other European countries as well:

Cover images: Left: Cycle street in Houten, Netherlands.

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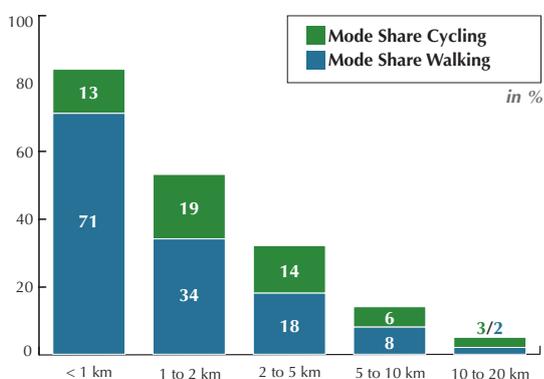
Right: Cycle bridge as part of a cycle highway in Nijmegen, Netherlands. Source: commons.wikimedia.org/wiki/File:Snelbinder.jpg

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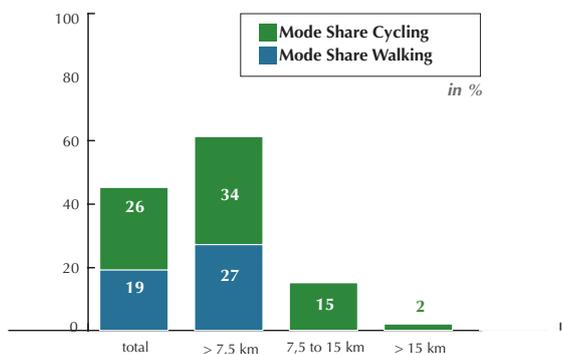
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- in Belgium the 'Velostrada', named after the Autostrada, the motorway stretching along the Mediterranean coast
- in Copenhagen, where in cooperation with 18 municipalities a programme is being developed for 26 cycle highways (several routes per year), with each route having a uniform logo and a clear 'identity', aimed at saving 7,000 t CO₂ as well as 40 million Euros in healthcare costs per year
- in London, where after extensive market research a system of 12 'Cycle Superhighways' running into the city centre is being sponsored by a bank. Routes are clearly recognisable by the blue surface of the asphalt; the aim of London's 'cycle revolution' is to increase the bicycle share by a factor of 5 until 2026.



Germany: Percentage of cycling and pedestrian traffic according to distances (MiD 2008). Graph: Difu



Netherlands: Percentage of cycling and pedestrian traffic according to distances (Cycling in the Netherlands 2009). Graph: Difu

First plans for cycle highways in Germany

Car-free waterfront promenades, such as those found in the large cities along the Rhine, are similar in character to cycle highways. Commuter cyclists enjoy using them

for longer commutes to the city centres of Mainz, Koblenz, Bonn, Cologne and Düsseldorf. The metropolitan region of Hanover-Braunschweig-Göttingen-Wolfsburg (HBGW) has defined in its city cycling strategy a city-linking cycle network that merges local cycle networks, important tourist destinations and train stations for a smooth transition to the regional public transport system. There are three pilot projects for cycle highways in place with differing requirements: a path connecting neighbouring towns (Wolfenbüttel-Braunschweig), another from the outskirts of a city to the centre (Hanover) and a 'diameter route' leading from the outskirts through the city centre and out again to the other side (Göttingen). These routes are being planned with sufficient width for fast cycling (also side by side). In public green spaces, the routes must either be separate from pedestrian walkways or wide enough to accommodate pedestrians and cyclists.



Left and bottom: Photo montage of a planned cycling highway in the Hanover region. © Planungsgemeinschaft Verkehr (PGV), SHP Ingenieure



The German guidelines for cycling facilities ERA 2010 ('Empfehlungen für Radverkehrsanlagen') demand that, with regard to route planning, path surface, gradients and the maintenance of clearance height and width in consideration of speed requirements, cycling traffic must be afforded at least the same quality standards as those that apply to road design. The guidelines also call for a maximum time loss of 15 to 35 seconds per kilo-

Further Reading

www.fietssnelwegen.nl [Dutch]

Fietsersbond (2009): Filevrij Forensen (www.fietsfilevrij.nl) [Dutch]

Ministerie van Verkeer en Waterstaat (2009): Cycling in the Netherlands.

(www.fietsberaad.nl/library/repository/bestanden/CyclingintheNetherlands2009.pdf)

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(www.provant.be/mobiliteit/fietsen/) [Dutch]

metre through stopping and waiting for different regional cycle links. In order to avoid excessively large financial challenges for individual municipalities, the metropolitan region is now working with a double standard, where the quality can be optimised at a later stage.

Arguments in favour of cycle highways

For commuters short travelling times are of utmost importance, and the average travel distances to work are increasing (at least according to statistics). Can bicycles indeed replace cars for not only short but also medium-length distances? After all, cycling already accounts for a significant proportion of commutes in the Netherlands, even for distances of 7 to 15 km (4 to 9 miles).

Cycle highways can help reduce car traffic, for example, on roads with congestion problems or avoiding the necessity for road-network expansion (for congestion avoidance). During rush hour, cycle highways can help reduce the burden on urban public transport. An increased bicycle use, also for medium-length journeys, helps back several political objectives simultaneously, promoting health and exercise, preventing accidents as well as reducing noise and CO₂ pollution. Cycle highways represent significant, high-quality infrastructure features that enhance the innovative profile of the region. Ultimately, the currently growing trend toward electric bikes, which can be used for longer commutes, boosts the need for fast connections.

Integration into supra-regional mobility concepts

Cycle highways are part of a national project known as 'FileProof' ('congestion proof') that was launched by the Dutch transport ministry. As part of the programme 'Fiets filevrij' (congestion-free cycling), cycle highways are designed in conjunction with the Dutch Cyclists' Union (Fietsersbond) and the regional and national authorities to offer solutions to traffic-congestion problems. The cycle highways are part of a comprehensive mobility strategy and its nationwide objectives (accessibility, quality of life and road safety). Named after the motorway A35 in Twente, the bicycle highway 'F35'



Logo 'Fiets Filevrij'.
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forms the backbone of a high-quality cycle route network. Just like a pearl necklace, the F35 connects various destinations in the corridor, which at the same time promotes the 'pearls' of the region: major employment hubs, city centres, train stations and leisure destinations. For longer stretches, cycle highways often follow railway lines, inland waterways and motorways. Historically, trains and main roads have always followed the shortest possible routes between city centres. Local businesses along the cycle highways benefit from new opportunities (retail and hospitality sector for the large number of cyclists). Moreover, there is also a variety of concepts that tie in with sustainable landscape management and compatibility with nature conservancy (e.g. the projects 'van A naar F' – from Motorway to Cycle Highway).



'Pearl necklace' cycle highway Twente. © regioTwente.nl

The budgets for cycle highways vary depending on whether bridges and tunnels are needed. The Netherlands calculates 0.5 to 2 million Euros in building costs per kilometre of cycle highway (including direction signing and lighting).

Design principles ('building blocks')

- Known in the Netherlands as 'red carpet', the red-asphalt path is the distinguishing feature of cycle highways. With a width of 4 to 4.5 metres, these bidirectional cycle routes offer enough space for overtaking and passing safely at higher speeds.
- Under- and overpasses help minimise at-grade intersections without right of way. In some cases special bridges for cyclists and pedestrians shorten the journey to the city centre.
- To guarantee a smooth flow of bicycle traffic, a green wave for cyclists has been established in

Regio Twente (2009): Masterplan fietssnelweg f35. (http://www.regiotwente.nl/images/stories/leefomgeving/mobiliteit/F35_brochure_engels.pdf)

CROW (2005): Fietsstraten in hoofd fietsroutes. Toepassingen in de praktijk. CROW-Publikation 216 [Dutch] (www.crow.nl)

PGV – Planungsgemeinschaft Verkehr, SHP Ingenieure (2010): Machbarkeitsstudie Radschnellwege in der Metropolregion Hannover-Braunschweig-Göttingen-Wolfsburg, Stand 3. Mai 2010, Workshop Hildesheim, Hannover (www.metropolregion.de) [German]



Ausschnitt Radschnellwegenetz Region Antwerpen.
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some areas (model project in Copenhagen, for example), as well as right-of-way rules in secondary road networks.

- Accompanying facilities increase comfort and safety (rest areas, lighting, cycle signing and information boards for destinations in the area).
- The high quality of the road surface is consistent in all weather conditions and enables safe cycling at high speeds. In consideration of the hazards posed by tree roots, trees should be planted no closer than 2.5 to 3 metres from the cycle highway.
- The maintenance and repair work is incumbent upon the municipalities (road management, winter road clearance and cleaning).

Information and marketing

The new cycle highway can be promoted through a logo and a catchy name that is comprehensible to people from the region, as well as an inauguration ceremony and special actions, such as travel-time trials involving cars, bicycles and local public transport. The logo F35 is based on the popular motorway A35 in the Dutch province of Twente. The use of the cycle highway is pro-

moted through mobility-management programmes in companies, including free city cycling maps, and by tax incentives. The project website of 'Fiets Filevrij' (congestion-free cycling), for example, informs employers of tax incentives for various measures involving cycling; the list was put together by the 'Mobility Taskforce' consisting of employers and employees, as well as government bodies.



Unterführung eines Radschnellweges in der Region Antwerpen.
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Conclusion

In Germany, as well as Denmark and other European countries, city regions are entering uncharted territory with the planning and design of top quality links. The Netherlands has been testing them for several years now as an alternative to cars and a way to relieve the burden on busses and trains during rush hour. The implementation is embedded in a national action plan with national funds. Grade separation with underpasses and overpasses instead of intersections with traffic lights and cycling traffic are particularly important for smooth and effective cycling.



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More information on signposting and orientation can be found in the following editions

CyE A-2 Pedelecs

CyE A-4 Climate Protection

"Cycling Expertise" is available online:
www.nrvp.de/en/transferstelle

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