CiViTAS
Cleaner and better transport in cities

Thematic Group discussion document

Super Cycle Highways

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1 INTRODUCTION

This document is prepared as input and discussion document for the first discussion topic for the thematic group “Demand Management Strategies”. Basically CiViTAS defines three key themes:

- Access management and road pricing
- Parking management / pricing
- Walking and Cycling enhancement services

The CiViTaS website offers numerous best practices related to these three topics. We selected a first topic based on a number of criteria (relevancy, urgency, possibility to create synergy with other CiViTAS themes, cros-cultural aspects and a number of practical criteria). Future criteria can be added based on input from thematic group members.

For the first discussion topic we focus on: “the walking and cycling enhancement services”. Cycling is hot and the European Union suggests that cycling should be an integral part of urban mobility policies[1]. The bicycle is considered an alternative to the car for trips less than 5 km and almost half of the trips are under 5 km.[1] One trend that is obviously going on in relation to cycling is electrification of the bicycle, or the introduction of the pedelec. This also makes the bicycle an alternative to cars for longer trips (>15km)[2]. A second trend that is related, to this authorities all over Europe are investing in Super Cycle Highways (SCH). Although the definition of SCH’s differ per country (of project), all SCH’s are bike routes where the needs of the cyclist are given priority.

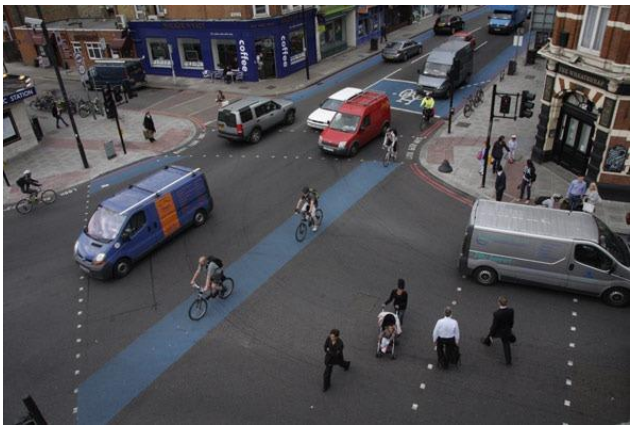
For the first CiViTAS discussion theme we want to focus on different aspects of Super Cycle Highways. First we introduce three cases: The London Case (Section 2), The Copenhagen Case (Section 3) and the Dutch Case (Section 4). The cases give a short (2-3 pages) introduction into different Super Cycle Highway practices in different countries. In the final section, Section 5, we introduce a first list of discussion topics related to the Super Cycle Highways.

[1] http://ec.europa.eu/transport/themes/urban/urban_mobility/urban_mobility_actions/cycling_en.htm

[2] http://nationaalverkeerskundecongres.nl/Uploads/2013/9/NVC-2013-4.1.10-Huib-Beets-ea-De-elektrische-fiets-vraagt-om-een-upgrade-van-het-fietsbeleid.pdf

2 Super Cycle Highways – The London case[3]

2.1 The scheme



The Barclay Cycle Superhighways are cycle routes running from outer London into central London. The Barclay Cycle Superhighways are meant to provide a safer, faster and more direct journey into the city. Four Cycle Superhighways are launched and an additional eight are to be introduced by 2015.

The target group for the Cycle Superhighways are people who already commute by bike, and to new cyclists. The Cycle Super Highways are part of the Mayor's cycle revolution the goal is to increase cycling in London by 400 per cent by 2025 (compared to 2000 levels).

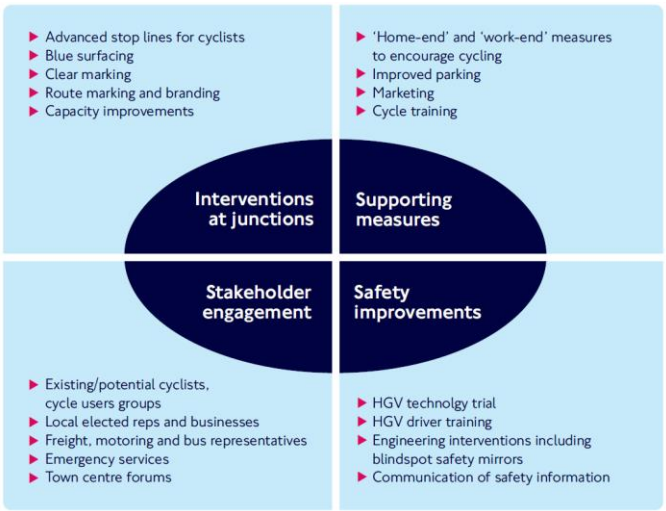
Lanes are at least 1.5 meters wide and continue through junctions. Advanced Stop Lines at traffic lights help you get ahead of traffic, and changed junction layouts give you more space.

We are also working with boroughs and businesses close to the routes to: improve cycle parking at both ends of your commute; offer additional cycle training sessions to help improve on-road cycle skills and confidence; provide cycle safety checks to ensure your bike is fit for the road

2.2 The SCH-Infrastructure

The routes are indicated using blue paint. A number of key principles were followed in the design and implementation of the Barclays Cycle Superhighways:

- Direct, routes are direct links into London city centre;
- Continuous, continuous coloured surfacing or signage along the length of the routes;
- Clear, routes are clearly marked and easy to follow;
- Comfortable, routes have comfortable surfaces and obstructions are minimized;
- Easy to find, routes are easy to find;
- Safe, routes are at least 1.5m wide. Advanced stop boxes at traffic lights help cyclists get ahead of traffic, and improved junction layouts provide more space. There was also training and education for HGV drivers, and engineering interventions such as blind spot visibility mirrors.
- Supporting measures, home and work end supporting measures are implemented to reduce barriers to cycling and increase the number of trips.



[3] Parts of this text are directly copied from the mentioned sources. The sources of the picture and figure are included as a hyperlink.

- Stakeholder engagement, A wide range of stakeholders were consulted on design and development of the Cycle Superhighways.

The design included a series of innovative safety features, such as:

- segregated cycle lane (recently added 3km's)
- bus stop bypasses: bus stop bypasses have been implemented. A bus stop bypass provides a continued, segregated cycle lane, which allows cyclists to avoid buses (as the vehicles pull in and out of a bus stop) and other traffic. (Click here for explanation)
- two-stage right turn (click here for explanation)
- cycle early start (click here for explanation)

2.3 Results

The routes were implemented in 2010. In 2011 an evaluation took place (evaluation report, 2011). Results show that the Cycle superhighways are a success. Overall the weighted increase in cycling along all count points has grown by 46 per cent along Barclays Cycle Superhighways 7 and 83 per cent along Barclays Cycle Superhighways 3. A number of sites along both routes experienced more than 100 per cent growth in the number of cyclists (up-to 209 per cent). Over three quarters of cyclists on the Barclays Cycle Superhighways use them for travelling to or from work.

27 per cent of target market research respondents identified as potential cyclists started cycling since the introduction of the Barclays Cycle Superhighways. Furthermore, 23 per cent of the scheme user survey respondents were new to cycling on the route, having previously made the trip that they were recruited on by another means of transport or not made the trip at all. Journey times have reduced on average by 5 per cent.

2.4 Critique

The main critique on the super cycle highway is that it is unsafe. The design of highway is criticized for:

- The blue painted cycle paths lead cyclists directly into confrontation with other vehicles and create a false sense of safety (The Guardian). The blue paint suggests to the cyclists that they are safe but in fact there not. a blue painted lane may induce cyclists to travel with a greater sense of safety than is warranted (BBC). In addition it also gives the drivers of other traffic the impression that cyclists will only cycle on the blue paths (Coronor Dorling) .
- Bike traffic is not segregated from other traffic. The problem of motorists driving in cycle lanes is tackled through police enforcement, branding and working with companies to ensure their drivers are not blocking the lanes during peak hours (London Cyclist).
- The 1.5m wide lanes are too small especially for beginning cyclists. (LC1 & LC2)

The Coroner that investigated deaths that occurred on the Cycle Highways concludes that actions should be taken to prevent future deaths. Some of the above mentioned issues are also recognized in the evaluation report which states that, Safety and security remains an important barrier to cycling for both existing and potential cyclists in London generally. However statistical analysis of accident data is only performed after 3 years, there was also concern identified around obstructions along the routes, such as pedestrians and parked vehicles.

2.5 Sources and directions for further reading

- Maps of the different Cycle Highways can be found here.
- The evaluation report 2011 can be found here.
- Conorer Hasell's conclusions and recommendation can be found here.
- Articles by the London Cyclist can be found here.

3 Super Cycle Highways – The Copenhagen case[4]

3.1 The scheme

Cycling is a much used means of transportation in Copenhagen. To further develop this healthy alternative to car use and public transport, Copenhagen is developing a network of 28 Super Cycle Highways. The first route (the Albertlund route) was opened in the Spring of 2012, followed by the second (the Farum route) in 2013. Between 2014 and 2018 nine more routes will be built. The initial results are promising: on the Albertlund route a ten per cent modal shift to cycling has been reported. Copenhagen has a population of 559,440 while the area of Greater Copenhagen, which consists of 18 municipalities, has a population of around 1,967,727. 150,000 people cycle each day.

Copenhagen plans to increase the modal share for bicycles from 36 per cent (in 2012) to 50 per cent in 2025. In 2012 the modal split for daily commuting consisted of cycling (36 per cent), public transport (33 per cent), car (25 per cent) and walking (6 per cent). One of the means by which Copenhagen intends to achieve a higher percentage of bicycle trips is by increasing the capacity of the cycle tracks to the city centre. The city plans to accommodate an additional 60,000 cyclists by 2025 by developing a network of Super Cycle Highways in the area around Copenhagen.

3.2 The SCH-Infrastructure

The Super Cycle Highway is part of Copenhagen's recently developed Sustainable Urban Mobility Plan (SUMP). In 2009 Copenhagen contacted the surrounding 16 municipalities on cooperating in the creation of a network of Super Cycle Highways. A Super Cycle Highway is a route that:

- Gives the highest priority to commuters' needs;
- Is fast, comfortable and safe;
- connects residential areas with places where people work or study;
- also integrates transit areas for public transport as part of the routes.
- connects relevant locations as directly as possible, cutting down on the number of times cyclists have to stop. For example, cyclists will have a green wave of traffic lights during rush hour.

[4] This text is based on an ELTIS case study that was prepared by us in an earlier phase. The case study can be found here

All municipalities were very enthusiastic to cooperate in this new and innovative idea. To formalise the cooperation and to ensure momentum, a secretariat was formed to take care of communication, application for funding, overall management and evaluation.

Together, the municipalities have developed a conceptual strategy and a plan for the network of Super Cycle Highways (in total 28 routes of about 500 km). Funding was organised in the following manner:

- For the secretariat: 22 municipalities (25 per cent), capital region of Denmark (75 per cent).
- For the Super Cycle Highways: municipalities (50-60 per cent), state funds (40-50 per cent).

The division of the funding was a political decision among the municipalities involved. The state of Denmark has a 'fund for more cycling', out of which part of the funding for this project was generated.

As soon as funding was available a close cooperation between the municipalities started, with decisions being made on the specifics for each route. Common activities included route identity, communication and evaluation. Infrastructure was divided between "basic" and "ideal". So far all municipalities managed to obtain funding to implement for at least the basic infrastructure. External consultants screened each existing cycle route and made suggestions on ways to turn them into Super Cycle Highways.

3.3 Results

The pilot project was the Albertslund route, which involved five municipalities and is 17 km long. Both the route and the process of establishment were evaluated in terms of travel speed, purpose of the trips and frequency, experienced level of safety, number of accidents, comfort (evenness of the road), experiences with services (air pumps, high bands to step on while standing still at traffic lights) and number of travelers. A number of cyclists using the route were interviewed. In addition, some of the involved municipalities were interviewed on the plan and process.

The main findings were:

- Research before and after the establishment of the route shows that the route is still mostly used primarily by commuters.
- The Albertslund route is primarily used in the morning and afternoon hours (over 40 per cent of all cyclists on weekdays were registered in one of the two periods: 7:00 – 9:00 and 15:00 – 17:00).
- Cyclists are generally very supportive of the measures taken and the overall idea and concept of the Super Cycle Highway project.
- The Albertslund route has attracted approximately ten per cent new users who previously used a car or public transport.

"Political engagement is the overall most important thing to be able to build a network of Super Cycle Highways." says Tine Brand Nielsen, project leader of the Secretariat. With a feasibility study, a socio-economic analysis and a visit from a politician, connected to the London Super Cycle Highway, arguments for a Super Cycle Highway network were collected and presented to both national and local politicians. Emphasis was put on the relative low costs compared to building regular highways and subways, benefits in terms of reducing traffic congestion as well as individual and environmental health.

Proper planning and clear definition of the project and final product are important for proper staffing by the municipalities. Evaluation with the committed municipalities showed that they considered having an

independent secretariat taking care of the communication, application for funding and overall management important. In addition, the secretariat conducted the evaluation of the different actions, which was used to improve policies. (Evaluation data is e.g. used to identify bottlenecks and room for improvement that can be addressed in future policies but also for communication regarding the success of the Super Cycle Highways). The use of independent external advisors for screening the existing infrastructure was considered to be good for the process. To ensure commitment, meetings were held alternately in all municipalities involved and the municipalities involved explicitly formally committed to the project.

A step by step approach is used for expanding the highway network, building towards 28 Super Cycle Highways. The existing highways will be carefully monitored and where needed improved. The evaluation of the Albertlund route revealed that the traffic has not noticeably improved, as there are still a significant number of stops at traffic lights. This is planned to be improved by 2015.

3.4 Critique

Despite the positive reviews there is also a little bit of critique. A test driver concluded that there is nothing super about the super cycle highway (source). A Dutch review shows that (source):

- The width of the tracks in this route is not consistent and too narrow for most of it
- There are parts that are two-directional that are just as narrow as the one-directional parts
- There are parts shared with pedestrians without proper separation
- The track disappears completely in towns and twists and winds through ordinary streets with parking on both sides.
- There is no cycle track at busy junctions
- At junctions the cycle lane is shared with right turning motorised traffic
- The underpasses lack a feeling of social safety
- big gates block the cycle path at several points
- There is no priority on crossings (what you would expect for a 'super' highway)

In addition locals indicate that (source):

- The route is not direct enough (there is a more direct route that has cycle paths all along it)
- The route is not marked well enough (one commenter got lost with some other cyclists in one of the towns)
- The green wave does not work as promised
- The surface is not smooth enough ("feels like riding a washboard" (!) says one, apparently only some potholes were finally repaired.)

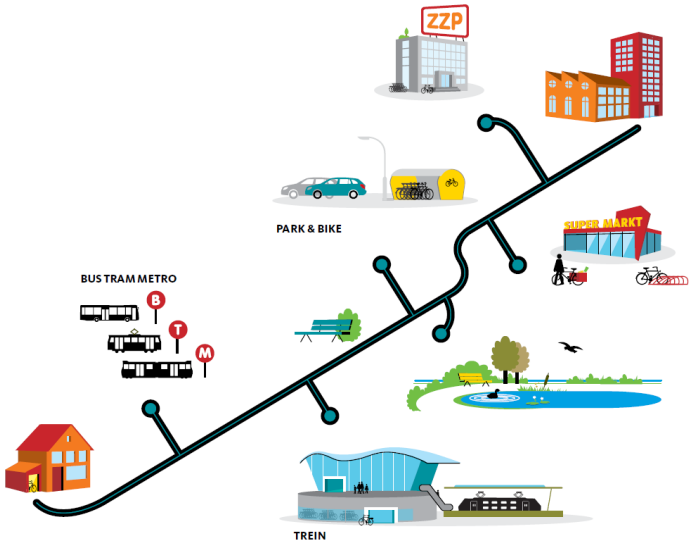
3.5 Sources and directions for further reading

More information on the Super Cycle Highway project in Copenhagen can be found: here 1, here 2 and here 3.

4 Super Cycle Highways – The Dutch case[5]

4.1 The scheme[6]

The Netherlands is truly a cycle country. Of the almost 16.8 million inhabitants one out of three uses the bike for distances shorter than 7.5 kilometres. On a yearly basis the Dutch make 4.5 billion bicycle trips travelling over 15 billion kilometres. On average a people from the Netherlands make 300 bicycle trips representing a yearly distance of 900 kilometres.



Although the Dutch have 25 Super Cycle Highways (source), the SCH's are a new phenomenon in the Dutch bicycle policy. In the Netherlands SCH's are considerd to be good and fast connections between cities and between home and work locations. The first SCH was established in 2005 between the cities of Breda and Etten-Leur, since than 24 more SCH's were introduced by local governments in order to reduce congestion. The starting point was the improvement of existing cycle routes that are an alternative to existing bottlenecks for motorized traffic. This is done by the removing barriers, increasing the quality, and active communication of the routes. The aim is to encourage people to get to work by bike. The target group is mainly bike drivers who live within cycling distance of their work. Ambition is a network of express routes that connect residential and work areas with each other, a cycling distance of 15-20 kilometers is considered realistic (based on source).

Early December 2013, the Dutch House passed a motion asking the Government to support the Future Agenda Super Cycle Highways. The Future agenda was developed by the Dutch Dutch Cyclists' Union (Fietsers Bond) developed this agenda together with six provinces and metropolitan regions. It proposes to establish a network of 675 kilometers of Super Cycle Highways before 2028. The motion was accepted by a large majority in the House. The motion asks the government to work with local authorities to support the Future Agenda Super Cycle Highways, so that measures for bicycle use may be funded as part of larger governmental funding schemes (e.g. Beter Benutten).

4.2 The SCH- Infrastructure

Although there are already a number of Super Cycle Highways in the Netherlands there is no legal description of a Super Cycle Highway. In every day practice the characteristics of SCH's lead to much debate. Especially regarding the parts of the route within urban areas (where space scarce) and along 60km/h roads. The most relevant guidelines were put forward in a document related to the design

[5] This text is based on a small number of publications (e.g. Future Agenda Super Cycle Highways)
[6] Source of picture: Future Agenda Super Cycle Highways)

requirements for SCH's (Source). The Dutch CROW[7] recently (March 2014) developed a set of requirements for SCH's.(Source). For example these requirements relate to an increased handlingspeed for bikes at trafficlights, few stops and a minimization of interaction with other motorized road users. This leads to a wider cross section profile for bikepaths. Ideally, a total width of about 7 meters is required in practice often about 4 meters is the minimum (source).

When deciding on the routing of SCH's it is of great importance to keep the overall route network of cycling routes and cross-relationships in mind. This is done using the chain concept. The newly developed SCH much link as much as possible to existing routes, train stations, and major bus, tram and Metro stations in order to make he bicycle and public transport an even better alternative to the car. In addition SCH's may also relief some of the peak pressure on public transport in the cities (source).

In addition to building the SCH's and making sure they are of sufficient quality additional measures are needed. Experience shows that bicycle parking is a necessary condition. This applies both to the origin as to the destination side. This requires investment in storage rooms at homes, neighbourhood facilities, facilities in inner cities and at companies and institutions (source).

4.3 Results

Reports show that investments in Super Cycle Highways pay off. Analyses of social costs and benefits show that the social return on investments is huge. Replacing a car trip with a bike trip in urban areas provides a social benefit that can be up to 41 cents per km and the substitution of a bus trip by a bike trip up to 51 cents per km (source).

4.4 Critique

In the Netherlands there is also criticism. This is mainly related to specific infrastructure design choices. (e.g. regarding a lane separation device (source), routing, pavement and signalling: (source)

4.5 Sources and directions for further reading

http://www.fietssnelwegen.nl/index.php?m=1

http://www.fietsersbond.nl/nieuws/tweede-kamer-steunt-toekomstagenda-snelfietsroutes#.Uz5pk53CR9B

http://www.fietssnelwegen.nl/Links/Kwaliteitseisen_snelfietsroute.pdf

http://www.zuid-holland.nl/snelfietsroutesdenhaagleiden

[7] CROW is the technology platform for transport, infrastructure and public space

5 Syntheses

In this document we provided three case studies on super Cycle Highways. Based on these case studies and the experiences with SCH in different countries we can raise the following discussion topics:

- What should be the definition of a super cycle highway?
    - What are the minimum requirements (no stops, no crossings, no special road surface, no traffic lights, minimal width, etc.)
    - What design elements are essential?
    - How do these design elements differ per Area (Urban, rural) and per country?

- Super cycle highways often routes that involve more than one road owner.
    - What does this mean for the funding?
    - What does this mean for rules and regulations?

- Is a SCH only suitable for countries with a high cycling rate and good existing cycling infra, or can other countries also benefit from its implementation?

- How do cultural differences impact political decision-making for SCH's?

The is discussion points mentioned are a start for the discussion. Of course we welcome any additional points of discussion.