

# Cyclists & Cycling Around the World

Creating Liveable & Bikeable Cities



Edited by  
Juan Carlos Dextre,  
Mike Hughes  
& Lotte Bech



**FONDO  
EDITORIAL**

PONTIFICIA UNIVERSIDAD CATÓLICA DEL PERÚ







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***Cyclists & Cycling Around the World***

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## Foreword

One evening back in April 2011, Lotte Bech, a Danish architect and urban planner, happened to meet up with Juan Carlos Dextre, a professor in the Department of Engineering at the Universidad Católica del Perú. They were both attending the conference ‘Second Meeting of Sustainable Urban Mobility: A dialogue between Europe and Latin America’ and shared the same passion —cycling against a background of sustainable urban mobility— think what this could mean for the quality of life in the cities of the world. From this chance meeting, the book whose foreword you are now reading, was born!

Juan Carlos had a dream of creating a book about cycling as an extension to his volume on ‘Pedestrian Facilities’, published in 2003. He was just waiting for the right opportunity. This he saw in a perfect match with Lotte as co-editor, with her experience from working as a cycle planner in the City of Copenhagen, one of the world’s leading cycle cities, and with a huge international network.

So, a lively email correspondence developed between Lima and Copenhagen over the next two years resulting in the exchange of thousands of mails. Lotte was following up on Juan Carlos’s dream with the vision of producing a book which would inspire people around the world to create liveable and bikeable cities. The book was to be written by authors with hands on and theoretical experience of a wide range of good practices including cycle planning and bicycle advocacy. It was to be an anthology of articles which would act as a source of inspiration to expand cycling across the continents of the world.

Lotte and Juan Carlos met up again in Lima in September of the same year, at the Seminario Internacional “Movilidad Sostenible de Lima”. It was at that point that the planning of the book really took off. Which topics should the book cover? Where could good practices from around the world be found? Who had valuable experiences which could inspire others? And who should the potential readers be?

It was decided to draft in Mike Hughes as an expert in communication in English. This was made possible through the sponsorship of 3M Peru. Mike, owner of TRIPLE A communication in English, located in Copenhagen and himself an enthusiastic supporter of the bicycle as a way of furthering sustainable urban mobility, developed the Principles of Written Communication.

These guidelines were sent to all authors and were used by the editorial team, of which Mike had now become a member, to ensure a common editorial line throughout the book. This resulted in a series of exciting and inspirational articles appealing to a wide range of readers as well as professional planners and researchers.

The book was planned as an English-Spanish publication but as a result of the quantity of the articles, we have chosen to publish two separate editions: the English one to be published in November 2013 on the occasion of the III EIMUS Conference on Sustainable Mobility in Lima and the Spanish one next year. The authors have been invited to the launch of the book at the conference, when it will be commented on by the well-known expert in sustainable urban mobility, Alfonso Sanz.

The twenty five authors have contributed on a very generous scale with their valuable experiences, their time and their expertise in various areas. This has resulted in a series of wonderful articles which contain descriptions of the results they have achieved, reports of how they have achieved them and, not least, the challenges they have overcome on the way. This now constitutes an impressive body of examples which will inspire others to emulate them in developing cycling in their own way in their own city.

As editors, we would like to thank each of the authors for their willing and fruitful cooperation. It has been a pleasure to work with all of you who are so committed to and enthusiastic about so many aspects of cycling. Thank you too, for your patience and willingness to make the changes we requested of you, whether they were on grounds of general readability, length of article or content.

We would also like to thank the consulting company Neo Urbe, Ingeniería Urbana for their financial contribution to the publication, as well as to the company 3M, who have offered financial support for the editing of the book.

Finally, we would like to offer our acknowledgements to Mikael Colville-Andersen for the design of the front and back covers of the book.

**Juan Carlos Dextre,  
Mike Hughes  
& Lotte Bech**

# Introduction

**M**any cities around the world want to develop their traffic culture with a view to more sustainable mobility and so we are seeing many public transport systems developing to achieve this goal. Strongly linked to this, there is a desire to develop a cycle culture which will increase the mobility of the citizens and reduce private car traffic in cities.

The development of bicycle policy and bicycle infrastructure is different from city to city, depending on the local tradition, legislation and political commitment. In spite of different local conditions however, there is a global, growing interest in knowing about experiences from other cities and thus learning both from their successes and the failures.

Experiences in promoting sustainable alternatives to urban traffic through cycling, reveal that the key to successful solutions consists in an optimal integration of various aspects of a technical, institutional, regulatory and especially political nature. The common theme to be found in these diverse approaches, is the concept of a cycle culture ie, when citizens or cyclists incorporate cycling into their daily life either by cycling to work, education or recreation.

Developing a cycle culture is an essential part of sustainable mobility. In the articles in this book, you will be able to read how increased cycling is improving urban life, the urban environment and the health of the citizens. You will also have the opportunity to read about how cycling has a development potential for cities in reducing poverty, developing democracy and increasing both gender equality and growth through increased mobility.

This book provides a collection of good practices from around the world in order to inspire cities either to get started, to reinvent or to develop their cycle culture and infrastructure further. The aim is to contribute to the creation of liveable and bikeable cities throughout the world.

The articles illustrate the diversity of approaches necessary to the development of a cycle culture, which is essential if the individual cities are to achieve their goals of increasing cycle traffic, and thus a more sustainable mobility. It is important to establish cycle tracks, but that is not enough to attract more cyclists. The articles illustrate that it is equally

important to ensure the safety of cyclists at intersections, to establish cycle parking, develop public bike systems and to integrate bicycles with public transport. They also describe the importance of bicycle advocacy groups that promote cycling and by their good example show the way forward and they show how the seeds of cycle culture are being planted in children and young people.

It can be a challenge for those cities that want to promote cycling to define the strategy that best serves the local conditions in the light of the social, economic, cultural and political conditions. This book is intended to serve as a source of inspiration.

The book contains 25 articles written by experts for example, local planners, active cycle advocates and researchers. It is divided into seven chapters on policies and topics important for increasing cycling in cities: 1) Cycle Culture, 2) Liveable and Bikeable Cities, 3) Cycle Infrastructure, 4) Safety for Cyclists, 5) Bicycles, 6) Cycling Policy and 7) Cycle Advocacy and Education. An introduction to the articles can be found at the beginning of each chapter containing information on the content of the articles and the main conclusions. Thus, the book can be used by the reader as a reference book in relation to his primary interests or it can be read as a whole and in this way, the experiences shared by the authors will be appreciated in their full diversity.

The book contains two Appendices, the first of which The second "Contacts and References" has references to literature and links to web-sites and blogs recommended by the authors. "Co-authors' biographies," has curriculum and contact information.

Finally, we encourage you to share your comments or suggestions, which you may send to any of the editors or authors.







**1**

# **Cycle Culture**

# Cycle Culture

# 1. Cycle Culture

This chapter covers various stages in the development of an urban cycling culture around the world. You can read four examples of good practice, written to inspire cities which are keen to start, revive or develop further a cycle culture or cities which have the potential to use the bike as a way out of poverty and as a means towards gender equality.

In his article ***How to get started***, Carlos Felipe Pardo offers ten rules that have increased cycling in Bogotá and other cities. It is an inspiring formula as to how you can contribute to the development of a growing urban cycle culture by acting as a pioneer and role model and by participating in groups that promote cycling. The rules are very concrete and down to earth, starting with how important it is that those engaged in promoting cycling as a mean of transport buy a proper bicycle designed for city use. The author adopts a hands-on approach, emphasising the need to know the infrastructure as well as stressing the need to create alliances with the media and policymakers and to work cooperatively between groups that promote cycling; and by the way, “Do not forget having fun while promoting cycling.” These rules have been effective in creating a strong agenda for cycling in Bogotá.

In other cities, for example in China, the challenge lies in saving a cycle culture which is about to disappear. In his article ***Revitalisation of a cycle culture***, Bram van Ooijen describes how this decline was arrested in the city of Guangzhou. During the preparation of the Asian Games in 2010, Guangzhou invested heavily in improving its infrastructure. Two projects especially greatly improved cycling conditions. The local authority created a large network of greenways within the city and as links to other cities, as well as creating a public bike system integrated with the public transport and safe parking. This has affected the local economy very positively in many instances, as the quotation from a local farmer explains how his own life style and those of his friends have changed as a result of the rebirth of cycling in the area. The pilot project in Guangzhou has provided valuable experience which can be used in other cities in China, as well as keeping alive the hope of maintaining a Chinese cycle culture.

Cities which already have a well developed cycle culture can draw inspiration from the article **Further development of cycle culture**, in which Ria Hilhorst tells the story of how Amsterdam became a real cycling capital and how the city continues to pave the way for cyclists. Amsterdam has a long history of cycling and has totally integrated cycling into its everyday life. There are a number of reasons for this, ranging from the scale and the topography of the city – the flat landscape and the narrow streets - to the resistance of the local population to making the city more car-friendly. Since the 70s, Amsterdam has had a strong political commitment and massive popular support for the promotion of their cycle culture. The author recounts how the city has reached the point at which the bicycle is regarded as an important part of the integrated transport system. She also writes about the need to continue encouraging the use of the bicycle and for ongoing investment in a mature cycle structure as well as the need to train children to use their bikes as much as, if not more than, the present generation.

A completely different type of challenge to the development of a cycle culture is to be found in cities in India for example, where the poorer sections of the population, especially women, have very restricted access to mobility. In her article, the **Socio-economic impact of the cycle** Anvita Arora offers a gendered social perspective of cycling in India. She explores the significance of the bicycle not only as a means of transport but also as a means of livelihood for a large segment of the population who are being enabled to climb slowly out of poverty through acquiring bicycles. There are many reasons why only few women cycle in the larger Indian cities. Among other reasons, there is a very hostile street environment with insufficient space and insecurity for the women and a culture of abuse towards women cycling. A survey shows the significance cycles can have in the economy of poor women and in gender equality. The bicycle has empowered them with increased mobility and income as well as offering better status in the families and in the community.

# How to Get Started - Ten rules that have increased cycling in Bogotá and other cities

By Carlos Felipe Pardo, Bogotá, Colombia (Mesa de la Bicicleta)

## Introduction

Getting started in moving forward a bicycle-related policy in a city is a difficult but fulfilling challenge – it implies a lot of work and takes considerable time. I will describe my experience in taking part in various activities and groups that promote bicycle policies in Bogotá and other cities where I have worked. I must clarify that I will discuss bicycle policies in the broader sense of the word, meaning that it relates to promotional activities but also regulation (i.e. modifying laws) and infrastructure interventions and projects.

Photo by Carlosfelipe Pardo (in Bogotá, Colombia)





Photo by Claudio Olivares (in Santiago, Chile)

I have organised this article into ten lessons. For more detailed descriptions of technical issues of bicycle policy, designs and regulations, I direct readers to the works of other authors, predominantly Goodefrooij, Sagaris and Pardo, eds 2009 (for specific references, see Appendix). This article relates to very specific issues that will kickstart discussions and get the agenda moving.

I am not an engineer but a psychologist and urbanist, and before getting those titles I used to ride a bicycle mainly as a competitive sport. The ten lessons below reflect my experience as a person who has ridden bicycles for many years, but also as an advocate, a policy advisor and a citizen.

## 1. Get a (proper) bicycle

In many cities across the world (including Bogotá, a city with a long history of cycling as a competitive sport), the generalised perception is that a bicycle is a vehicle for sports or recreation. Regardless, whoever wants to promote bicycle policy must have a bicycle designed for use in the city. The bicycle doesn't have to be sophisticated or expensive, it should actually be rather basic. Getting a single-speed bicycle with adequate frame design, a comfortable saddle and fenders is enough, and definitely the first step to becoming a person who understands what it means to ride a bicycle in a city and promote its use.





Photo by Carlosfelpo Pardo (in Amsterdam, Netherlands)

Helping others in getting bicycles is also a fundamental step in changing /creating a cycling culture, especially where bicycles “equal” lycra and helmets. In doing so, one must prepare suggestions, land tips, talk with local bike shop owners and convince them that city bikes must be part of their stock.

## 2. Embody your message: ride the bicycle

Someone who is promoting bicycle use must use the bicycle, and be aware of the difficulties that may arise in its use, while also knowing details of the infrastructure that exists for bicycles. Riding a bicycle makes people better aware of what needs to be changed and it literally provides a hands-on approach to understanding a problem.

It is also indispensable to have other people ride bicycles, and to do so as frequently as they can. Getting friends, family, colleagues and “influential people” to ride bicycles is a promotional activity in itself but also a way to present the issues of urban mobility in a city every day.

One must also be conscious of the fact that one represents a culture, and that one must do so adequately: not following traffic rules is not the best way to promote a bicycle policy in a city, especially because the notion of “the irresponsible cyclist” may be perpetuated.



Photo by Carlosfelipe Pardo (in Copenhagen, Denmark)

### 3. Cycling as transport

There are three reasons to ride a bicycle: for leisure, sport and/or transport. The history of bicycle use has followed a similar progression in many cities: from leisure to transport to sport and the cycle continues or stops at a practice of riding bicycles for one or more of these three reasons.

The experience in Bogotá, for instance, is one where the bicycle was identified with sports from the 1950s with its “Vuelta a Colombia” road race, and was then enhanced by an image of leisure from 1974 when it implemented its Sunday Carfree Day (an event that continues to this day).

How useful is it to promote cycling for leisure or sport as leverage to its becoming a mode of transport? Nobody has been able to answer this question completely. What is true is that the development of schemes like the Sunday carfree initiatives definitely puts bicycles on the public agenda and in people’s minds as something that actually exists and can be used.

In general, it is advisable to promote recreational or sports cycling as part of a city agenda, but with a view to promoting the bicycle as a mode of transport.

#### 4. Learn about the topic

The past indications were related to the actual practice of using a bicycle properly and embodying the issue that is being promoted. But it is also necessary to become knowledgeable about the topic and to be reliable in providing information to others.

Knowing about experiences in other countries, understanding if and how specific activities have worked, and learning how to adapt those solutions to the local context is not only strategic in terms of becoming an expert in the topic, but it is also greatly beneficial for a city that relies on one's expertise for improvements. Promoting cycling must be seen as a truly technical issue and is not an idea that emerged overnight.

In Bogotá, knowledge of bicycle policies has been enhanced by visits from technical experts from various countries in Europe, and even through training courses on cycling-inclusive infrastructure supported by international cooperation agencies. The fact that Bogotá made huge investments in bicycle infrastructure from 1998-2000 also led to a greater level of technical knowledge and awareness amongst its citizens and experts.

The good news regarding knowledge and capacity development is that there are many free and easily available resources on various websites (see Appendix) where anyone can learn a lot.



Photo by Jonas Hagen  
(in Rio de Janeiro,  
Brazil)

## 5. Work together

The experience of Bogotá is particularly useful in that, despite having various advocacy and technical groups promoting bicycle policies, there have been no strong arguments between them nor any significant conflicts or false leadership – the same cannot be said of other cities where, despite having a strong advocacy culture, bicycle policy promotion has not been particularly effective due to group clashes.

The key to arriving at this common understanding of working together despite differences was the common agreement in 2008 that, regardless of the intricacies of each group's interests and working strategies, all would agree on one thing: to promote policies that included the bicycle in a favourable manner, and to respect each other. This was mainly the work of the “Mesa de la Bicicleta”, a group of experts and advocates who worked to promote bicycles in Bogotá but invited others to do so in parallel and complementary fashion. Some basic rules of this cooperation between groups have been to respect others' views, recognize the work of others explicitly, forget antagonisms, and invite others to think in the same way (or actively indicate when someone is “crossing the line”). This has been effective in creating a strong agenda for cycling and in generating specific positive effects in bicycle policies in the city.

## 6. Get support

Working as an advocate is an interesting activity, but it needs support from strategic stakeholders. Getting interest from specific groups is very important:

Photo by Bogotá Chamber of  
Commerce (in Bogotá, Colombia)



- Government: policymakers are the ones who will enact policies, promote their implementation and create budget allocations for cycling policies. They should be approached and engaged in promoting cycling, and sometimes the only way to do this is through strong (but decent) opposition. One risk of “over-including” policymakers in the game is that they may use bicycles as a political instrument, working against one’s intentions.
- Private sector: bicycle shops, importers of bicycle brands, and any company that supports bicycle use (directly or indirectly) can be used strategically to promote a bicycle policy. The risk here would be to generate too many commercial links to bicycle use.
- International organizations: there are many organizations that can provide support, advice or just generally support the actions of a group promoting bicycle use. There is seldom an opportunity to get financial support from them, but their knowledge and advice is most useful, as well as their written support (for instance, when presenting proposals).
- Citizens: many citizens are supportive of bicycle policies, even if they are not bicycle users. They must be actively sought to support actions related to the promotion of a bicycle policy, and that support can range from “liking” a Facebook page to taking part in activities.

Clipping from  
El Tiempo newspaper  
(Bogotá, Colombia)

**EXPERIMENTO EN HORA PICO**

## La bicicleta le ganó al TransMilenio en Bogotá

Una carrera experimental realizada ayer en Bogotá evidenció que, como ocurre en otras grandes ciudades del mundo, el mejor vehículo pa-

ra moverse en una hora pico es la bicicleta.

Los viajeros que utilizaron la bicicleta tardaron 20,6 minutos, en promedio, en cubrir el trayecto entre la calle 125 con carrera 21 y la calle 72 con carrera séptima.

Entre tanto, los que optaron por buses de TransMilenio emplearon 32,1 minutos y los que iban en automóvil se demoraron 34,7 minutos, en promedio.

John Jairo Salazar, uno de los participantes de la carrera organizada por Fenalco, dice que las bicicletas son ‘campeonas’ porque aseguran una velocidad constante desde la partida hasta la llegada y en las ciclorrutas no se padecen trancones.

**1-20**

**ARMADO:  
AGUA  
LUNA**

Los datos  
El proyecto  
relló una sonda  
del Polo Sur,  
ó que el líquido  
télite natural  
hallazgo aviva la  
etomar las  
adas. **1-26**

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**César Ocam-  
po,**  
ingeniero  
colombiano  
vinculado  
a la misión,  
habla de la  
importancia  
del hallazgo.



Photo by Claudio Olivares  
(in Bogotá, Colombia)

## 7. Provide reliable information

Communicating a message (e.g. why cycling should have a more prominent role in city or transport policy) needs to have arguments, reliable statistics and in general must follow the same guidelines as a scientific report. This is especially the case when cycling is regarded as an inefficient form of transport or just neglected as a mode of transport.

If one is to promote cycling, one must provide thorough details of any example, and also be able to respond to questions that may challenge assertions. There is nothing worse for cycling promotion than someone giving the wrong statistics.

## 8. Be creative and visual

Presenting a message with enough visual appeal is one of the most effective ways to catch people's attention. Promoting a bicycle policy will involve presenting the use of the bicycle as something easy and joyful, where people can use their bicycles with normal clothes and they will not sweat when riding.

There are two champions who should be credited for bringing forward this image of cycling in a most visually appealing way. One of them is Cycle Chic, the other is Ciclismo Urbano. The first of these initiatives (Cycle Chic) was born in Denmark and has now expanded throughout the world with its Cycle Chic City model, where cities promote the use of Bicycles following the "Cycle Chic Manifesto". The second example is that of



Photo by Carlosfelipe Pardo (in Bogotá, Colombia)

Ciclismo Urbano in Chile, which are very similar to Cycle Chic but their aim is to promote cycling as part of an “urban experience”.

The lesson drawn here is that cycling has great potential to be presented visually to others, and that one can use photography and other visual aids to promote a bicycle policy adequately while persuading others to be part of that agenda and to support it.

## 9. Write, speak, ride

In order to complement visual information, one must be able to write and speak clearly. Having a good relationship with the media implies that one should also be able to deliver useful press releases, key fact sheets and give crucial information to journalists and editors so that they can support a bicycle policy in a city through their media. It is definitely “a must” to be able to communicate with people effectively in order to get them onto a bicycle or to gain their support.

## 10. Have fun while promoting cycling

Having fun while promoting cycling is something that is not so difficult to do, but I want to repeat that idea since there are times when promoting cycling is frustrating or difficult. However, it is always good to get on a bicycle and go for a ride.

**Carlos Felipe Pardo**  
pardo@despacio.org





# Revitalisation of a Cycle Culture - Biking again in Guangzhou

By Bram van Ooijen, Institute for Transportation & Development Policy (ITDP), Guangzhou, China

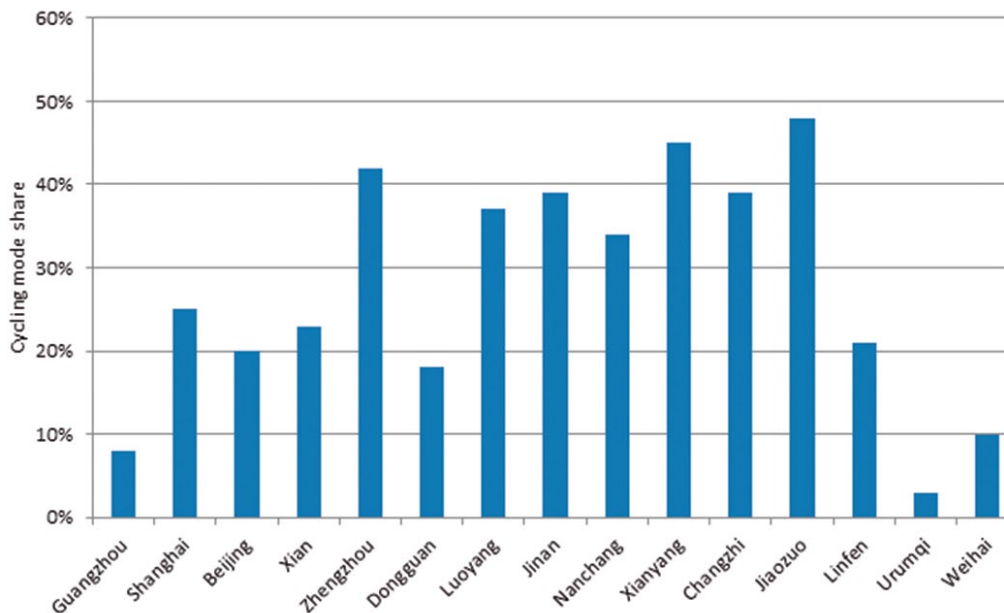
**T**his article describes the role of cycling in Chinese cities. But mostly it looks at Guangzhou, the capital and largest city of Guangdong province in south China, where cycling mode shares, as in any Chinese city, are dropping. The implementation of greenways and a public bike system are improving cycling conditions in Guangzhou though and are reversing this negative trend. This provides useful lessons to other cities in China and around the world.

This chapter is based on practical experience from a range of projects ITDP China has been involved in, as well as a number of our own surveys and related literature.

## Bicycle Kingdom?

In the last two decades, China, still known as the 'bicycle kingdom', has embraced the arrival of cars and is promoting this with a vast expansion of roads inside and between cities. In order to support and accelerate the development of Chinese cities, city governments' focus is predominantly on the implementation of inner-city (ring) roads and the widening of existing roads. The road density in Chinese cities is growing on average at a rate of 9% per year (see Appendix). China's biggest cities are also in the process of expanding their metro networks and building bus rapid transit (BRT) systems, in an effort to meet public transport demand, especially for longer trips.

In cities' transportation plans little or no attention is given to the preservation and development of bike facilities, like bike lanes and bike parking. It seems policy makers, planners and designers have forgotten how crucial the bicycle is to such a large number



Source: Darido et al., 2009

of Chinese living in cities. Even though cycling shares are dropping, the table above shows that cycling is still (one of) the most important traffic modes in many Chinese cities. Cycling mode shares vary across cities, but are generally above 20%, and even higher in less developed cities and the countryside.

Economic growth, changing cultural perceptions, rapid motorisation, spatial growth, and changes in trip patterns are seen as reasons why cities are experiencing a decline in cycling shares (see Appendix). As a result of the lack of policies for cycling and the promotion of motorised traffic, and the infrastructure these need, cycling is increasingly becoming a dangerous way to get around in Chinese cities. Bike lanes are disappearing from roads, or are being moved to the sidewalk, where cyclists are supposed to share the space with pedestrians. Where bike lanes still exist, they are often located on the kerbside of the mixed traffic roads, not physically separated from motorised traffic, and becoming blocked by cars driving or parking. Moreover, a lack of sufficient bike parking lots and stands, and a high risk of bike theft, are also discouraging cycling.

### Cycling in Guangzhou

Guangzhou, for a long time, has had lower bike shares compared to other Chinese cities. The city historically known as Canton, is the capital of China's most prosperous Guangdong Province. Located in Southern China, Guangzhou has an estimated population of 16 million people.



**Figure 1.** Guangzhou's Haizhu bridge packed with cyclists, several decades ago



**Figure 2.** Guangzhou's residents used to get around by bike

For decades, the bicycle was the main mode of transportation for Guangzhou's residents. Dedicated bike lanes were filled with cyclists making their way through the city. Dedicated bike parking areas the size of suburban shopping mall lots were located across the city. Citizens were cruising past as far as the eye could see, as cars were not available and public transport service was slow and had little coverage.

But much has changed since the Chinese economy, especially in the South, with Guangzhou as one of the main instigators, grew rapidly during the 90s and 00s. Still, images of hundreds of cyclists can be seen in some places of the city, with migrant workers pedalling to work in the early morning, but the numbers, especially in the more developed parts of the city, have dropped drastically. In thirteen years, between 1992 and 2005, the share of walking and cycling combined, dropped from 70% to 40%, with the majority of trips currently made on foot (see Appendix). Last year, only 8% of trips in Guangzhou were made by bike (see Appendix).

The main reason for the decline in cycling over the last decade is the improvement of car and public transport infrastructure. In 1949, Guangzhou had 230 kilometers of road (see Appendix). In 2010, urban roads stretched for 5519 kilometers, with another 717 kilometers planned by 2015 (see Appendix). This greatly improved conditions for driving. Also Guangzhou now has eight metro lines, with three more opening in the coming three years. There are currently around 1200 bus routes, covering the entire city, and a world-class bus rapid transit (BRT) system is linking the city centre with the Eastern districts.

But cycling is still an important part of Guangzhou's urban transport system. It serves as a favourable travel mode for short trips, for commuting as well as shopping and visiting friends and relatives. Also, cycling offers low-cost mobility for the urban poor, who often have no choice but to cycle for their trips. A survey in Guangzhou's central Tianhe district (see Appendix) shows all different types of people ride bikes for all different kinds of purposes. The average cyclist in Guangzhou though, rides a bike to get to and from work or for work (there is a high share of delivery bikers), rides a bike every day, is under 30 years old, has a lower to middle income and rides a fairly cheap bike. There is an equal amount of male and female cyclists.

Despite the negative trend for cycling, two projects have greatly improved cycling conditions in Guangzhou in the past years. Both were spurred by the Asian Games, the world's second-biggest multi-sport event in the world, that Guangzhou organized in 2010. In the run-up to the event, Guangzhou invested heavily in improving its infrastructure, public transport, public services and parks, but also in the construction of a greenway network and the implementation of a public bike system.

### **Guangzhou greenways bring bike lanes and bike parking**

In an effort to improve urban living and preserve cultural and environmental sights, Guangdong's Party Secretary Yang Wang started the development of greenways throughout cities in Guangdong province, especially Guangzhou. In 2010, right before the opening of the Asian Games, 1,000 kilometers of greenways were implemented in Guangzhou, and currently over 2,000 kilometers are open to the public. These greenways, stretched-out parks along scenic and cultural spots and large transportation corridors, are beautifully landscaped paths for pedestrians and cyclists. The greenways are separated from motorised traffic and serve both as a recreational space for people to relax, play and gather, as well as a transportation corridor for pedestrians and cyclists to get around safely and conveniently. In the first year of opening, 25 million people throughout the province visited greenways or used them on a daily basis. By 2015, a total of 8,770 kilometers of greenways will be finished, connecting city centres with suburbs and rural areas and even connecting all cities in Guangdong in a Provincial greenway network.

Guangzhou's government intends to make greenways the backbone of Guangzhou's cycling network. In the city centre and suburbs, greenways were built on the boulevards along the Pearl River, along creek banks, between parks, through residential areas, at universities and along large traffic arterials. In rural areas, the construction of greenways on scenic routes has stimulated rural development. A farmer in Guangzhou's Zhengcheng district explained how greenways have changed his life. "I used to be motorbike taxi driver in the city, but I moved back to the countryside where my parents live. I opened a restaurant, serving locally grown food to greenway visitors. I make a lot of money now. Friends have opened bike rentals, hotels and small markets, selling local vegetables and fruits" (in Yangcheng Evening Newspaper, on 2012.02.23).

Land values, both urban and rural, have risen substantially for areas around greenways, showing the economic value of building high-quality pedestrian and cycling infrastructure (see Appendix). A study showed that the rural collective economy along greenways was 54% higher than that away from greenways (see Appendix). Also in city centre areas, surveys showed an increase of 30% of land values around the most successful greenways, compared to the average increase in the district.

The Forestry and Landscaping Bureau, in charge of greenways in Guangzhou, in cooperation with district governments, are organizing events on greenways. Media cover high-level government leaders, students, school children and celebrities riding bikes on a greenway, to promote its use among ordinary citizens. Guannan Liu, a Guangzhou resident, has fond memories of cycling as a kid. "Economic development has had bad effects on the quality of life in the city and the way we travel. Greenways have given us back public green space and a chance to safely ride a bike again. This brings back the culture of cycling I remember from when I was a child. I am happy I can now share that again with my friends and my young child" (in Southern Daily newspaper, 16 January 2011).

After the initial success in Guangzhou and other cities in Guangdong's Pearl river delta, many other Chinese cities started implementing greenways. Hebei and Fujian provinces both decided to construct greenways in all their cities. Currently over 60 greenway networks are implemented or planned in China, with more cities joining every month. The Vice-minister of Housing and Urban-Rural Development of China's national government said greenways reduce PM 2.5 emissions and promote social equity, by providing leisure activities for the urban poor. He urged the implementation of greenways across Chinese cities and stressed the importance of implementing public bikes on greenways. For residents, greenways provide high-quality walking and cycling infrastructure and elevate the status of cycling, whereas politicians and city officials boost their careers with implementing high-profile projects.



**Figure 3.** Cyclists flock to a greenway along Guangzhou's Pearl river, traversing the city

**Figure 4.** Well-separated bike track on Guangzhou's renowned Shengwudao greenway (photo credit: Karl Fjellstrom)

**Figure 5.** Cyclists using high-quality, separated bike lanes in the central business district for daily commute

**Figure 6.** Shengwudao's greenway incorporates not only bike tracks, but also bike parking, pedestrian promenades, rest areas and restaurants

**Figure 7.** Cycling groups organize joint bike rides on Guangzhou's greenways

**Figure 8.** Mountainbikers coming together on a greenway in the countryside

As a result of this, greenways are now spreading throughout China, proving how successful Guangzhou's pilot project has been.

Greenways have greatly benefited cycling conditions in Guangzhou. In order to increase cycling on greenways, much work remains to be done on improving the quality of the bike lanes, and the continuity of these. Better access and connectivity with origins and destinations of cyclists, will really make greenways the backbone of the cycling network in Guangzhou.

### Public bike system connect to Bus Rapid Transit system

A public system was built in the eastern part of central Guangzhou, connecting the bus rapid transit (BRT) system with the surrounding neighbourhoods. Guangzhou's BRT corridor has bike lanes on both sides of the road. At 22 of 26 BRT stations, public bike stations are located to provide passengers with 'last-mile access'. Public bike stations are dotted in the areas within five kilometers from the corridor, mostly in residential and business areas, to provide easier access to and from the BRT station. The BRT serves as a trunk line for longer trips, with the public bike system as a feeder. "Outside my apartment I take a public bike, I ride 10 minutes to the BRT station and then take the BRT to my office building. Without the public bike I probably would drive a car", according to Lulu Wen.

The first phase of the system was implemented in June 2010 and within two months was expanded to 5000 bikes at 113 public bike stations. At BRT stations another 5500 private bike parking stands were installed to allow for convenient chain mobility for cyclists on private bikes. In the first years of operation the average number of daily trips reached 21,000, with 45,750 people registered on the system. Surveys have shown that most public bike users previously used the overcrowded bus system. More than two thirds of Guangzhou's bike sharing trips were previously made by motorized transport saving an estimated 636 tons of CO<sub>2</sub> per year. Only 10% shifted from driving a car and only 10% swapped their private bike for a public bike.

Bicycles can be rented from docks at every station by swiping the city transportation card, which is also used in bus, metro and convenience stores. The first hour of use is free, with a small fee for 2 hours (1 RMB – 0.15USD), to encourage short-term use. For longer use, mainly recreational, a fee of 3 RMB/hour (0.45USD/hour) is set. A deposit of 300RMB (50USD), when registering, prevents theft of the public bikes.

The system was initiated by the Guangzhou government and operated by a government-owned public bike company. Recently Guangzhou's bus company, also operating on the BRT, took over the public bike company, making integration and coordination much easier. Subsequently plans were announced to expand the system with more stations and bicycles in the near future.



**Figure 9.** Integrated transportation: Guangzhou public bikes, protected bike lanes and the bus rapid transit (BRT)

**Figure 10.** Cycling along Zhongshan avenue, one of Guangzhou's busy traffic arterials, has become a lot safer and more pleasant with public bikes and this greenway

**Figure 11.** A well-designed bike lane runs along this public bike station

**Figure 12.** Public and private bike users share the protected bike lane along Guangzhou's BRT corridor

**Figure 13.** Small-sized public bike station in residential area, connected to a separated bike track



In 2008, Hangzhou (Zhejiang Province) was the first Chinese city to implement a public bike system. After its success, many cities followed suit. Currently 45 cities in China operate 51 public bicycle systems with more than 220,000 bikes in total, including China's big cities Shanghai, Beijing and Guangzhou. Every month cities across China expand existing public bike systems and open new systems. The existence of public bike systems often urges city government to expand and improve existing bike lanes as well.

Guangzhou's concept of connecting to public transport system was unique, but is now being copied in other Chinese cities. Most cities have chosen stations across the entire city or certain city districts, like Paris and Barcelona, to provide coverage for trips in any direction. Both models provide sustainable transportation and greatly improve cycling conditions for its residents.

### A revitalized cycling culture

Despite government neglect in the preservation and improvement of cycling conditions in Chinese cities, some cities have started building high-quality cycling infrastructure. With greenways and a public bike system, Guangzhou has shown that cycling is an integral part of city life and urban transport. There is a long way to go to improve and expand Guangzhou's greenways and public bike system, and make them convenient for all to use. But what can be seen is the revival of a cycling culture as a result of these projects. The successive rapid dispersion of greenways and public bike systems in other Chinese cities, after Guangzhou's successful projects, gives hope for the preservation of China's cycling culture and its image as a bicycle kingdom.

**Bram van Ooijen**

bram@itdp-china.org



# Further Development of Cycle Culture - Amsterdam continues to pave the way for cyclists

By Ria Hilhorst – City of Amsterdam, Department of Traffic, Transport and Infrastructure, The Netherlands

**T**here is almost no city in the world where people cycle as much as in Amsterdam. The Amsterdam inhabitants cycle to work in the morning, they take their children to school on bicycles and do their shopping on bicycles. For the residents of Amsterdam cycling is an ordinary, everyday affair. Everywhere in the world, other cities see Amsterdam as a good example of how a city can be both mobile and pleasant to live in. What did Amsterdam's city council do to reach this point? Which factors contributed to make Amsterdam the number one cycling city? The answers are given in this article.

## Amsterdam, the cycling capital: a short introduction

Amsterdam has a population of 780,000, whereas there are over 2.2 million inhabitants in the Amsterdam Metropolitan Area. Almost half of all trips (up to 7.5 km) in Amsterdam are made by bicycle. This means that every day the cyclists cycle 2 million km.

Cyclists in Amsterdam are 50% female and 50% male. Of the cyclists, 40% are between 30 – 44 years old, 70% have a higher education and 75% have an average to high income. Please note: most inhabitants are 30-44 years old and have a higher education. So these numbers have to be seen in that context.

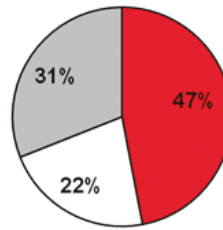
You can find more facts and figures about the bicycle in Amsterdam in the text under the pictures in this article. The pictures in this article also show how Amsterdam looks as a cycling city.



Amsterdam's residents cycle 2 million km every day.

## Modal Split

Modal Split Amsterdam



- Bicycle
- Car
- Public Transport

### Success factors for growth of bicycle use

The success of the bicycle in Amsterdam is due to several factors.

#### 1. Historic structure of Amsterdam makes cycling attractive

Amsterdam was made for horses and carriages and that seems also to be the perfect scale for cyclists. It has a very compact city centre with narrow streets, a lot of canals and narrow bridges. The city centre has many facilities and amenities within a short distances of each other. Moreover, Amsterdam is flat and has a mild climate in summer and winter like the rest of the Netherlands. All these factors make cycling agreeable.

The historic structure makes a large part of the city unsuitable for large traffic flows. Many streets offer insufficient space for parking cars. This is another reason to use the scarce space as efficiently as possible. The bicycle fits perfectly here because, compared to the car, it needs relatively little space, both when moving and when parked.



Amsterdam paves the way for cyclists: there are 500 km separated bicycle lanes, which are safe, comfortable and fast.



Bicycle parking on bridge railings

### *Change in the 1970s: from cars to bicycles and public transport*

Plans from the 1960s to realise major breakthroughs in the old city for the benefit of the strongly growing car traffic have been rarely implemented. Early 1970s increased the resistance to such plans. Residents protested because their homes had to be broken down. Others stood up for the preservation of the cultural-historic value of the monumental city. Simultaneously the environmental movement was gaining momentum. This protested strongly against the effects of the overwhelming growth of car traffic, which was affecting the quality of life, green environment and traffic safety. They regarded the bicycle as a good alternative to the car.

At the end of 1970s, a new generation of young politicians in the city council took over these ideas. They laid the basis for a different traffic and transport policy, aimed at making and keeping the city accessible, liveable, traffic safe and healthy. From that moment on, the use of public transport and bicycles was stimulated and the use of cars discouraged. That has remained the case to the present day.



Cyclists in the historic city centre of Amsterdam

## 2. Political choice of the city council for the cyclist is essential

The aims of the traffic and transport policy are – in short - to keep the city of Amsterdam accessible, liveable, traffic safe and healthy. To reach these aims an integral policy has been developed, stimulating the use of public transport and bicycles and discouraging the use of cars.

Traffic safety is priority number one for the city council of Amsterdam. Therefore it is an essential part of the bicycle policy. Since the end of the 1970s safe, separated bicycle lanes, separated from car traffic, have been built. To be able to realise this not only has the number of parking spaces on the street been reduced but also the growth of car traffic has been stopped. The introduction of paid parking in 1990 was a very effective instrument:

- parking for visitors in the city centre nowadays costs € 5 per hour;
- residents need a paid permit to park their car on the street. At this moment, there is a waiting list of four years in the historic city.

Since 1990, car use in the city has decreased by 25%, while bicycle use has increased by almost 30%. The car has been replaced by the bicycle. Choosing in favour of the bicycle means that the car has to make way for the bicycle. To take these measures requires political willingness and courage, because less space for cars is also politically sensitive in Amsterdam.

### 3. Cycling contributes significantly to achieving the aims of the traffic and transport policy

The bicycle policy is an essential part of the traffic and transport policy, because it contributes significantly to achieving the policy objectives. The population and especially the number of jobs in Amsterdam over the past 25-30 years have been growing considerably. So, mobility over long distances has also increased proportionally. Due to the growth of cycling, the traffic in the city does not get stuck and the city remains liveable. Outside the city, public transport should absorb the growth of traffic. But many commuters cycle to the railroad station over the short distance and take the train to their job over the long distance. The last 10 years, this kind of commuting by bicycle and train has increased from 10% to 50%.

Bicycle as pack mule





There are 650,000 – 700,000 bicycles in Amsterdam.  
75% of Amsterdam's residents (over the age of 12  
years old) own one or more bicycles

The municipality has adopted an active and integral bicycle policy, which currently comprises the following components:

- Traffic safety
- Bicycle network all over the city
- Bicycle parking facilities in the city and at railroad stations
- Traffic education and bicycle exams at primary school
- Campaigns and communication.

The city council considers all these components important for stimulating bicycle traffic. The municipality started the bicycle policy at the end of the 1970s with traffic safety and bicycle infrastructure. Later on, Amsterdam developed a policy for bicycle parking (including prevention of bicycle theft), education and promotion of bicycle use. In this way the bicycle policy has been developed into the integral policy it is today.



New developments require new responses. That is important in every policy field, also for bicycle policy. This is necessary to continue encouraging the use of the bicycles.

#### 4. Structural and continuous investments in bicycle facilities are necessary

Making a choice in favour of the cyclists not only requires political courage, but also structural focus on the bicycle. The 'bicycle' must be included in all new traffic and transport projects and new spatial developments. Structural and continuous investments are needed for this, not only for the realisation and construction of new infrastructure (bicycle paths, parking facilities), but also for proper management and maintenance. Realisation of one or two bicycle projects would not solve this problem. During the last decade, Amsterdam has invested structurally in bicycle facilities, but even we must continue to invest in new facilities for continuing to stimulate bicycle traffic.

Traffic education: Bicycle exam for children of 11 - 12 years old.



Bicycle Network Amsterdam: routes should be fast, traffic safe, comfortable and secure. Bicycle lanes are laid in red asphalt.

## 5. Left and right wing politicians acknowledge the importance of cycling

Cycling has many advantages in various fields, politicians from left to right endorse the importance of cycling. The bike is a fast and flexible means of transport over short distances (up to 7.5 km) and thus keeps the city accessible, liveable, safe, clean and healthy. Cycling is a local solution to a global problems. It improves the quality of life, because it produces zero emission and it is silent.

Cycling keeps people healthy. Daily cycling to work, school and shops reduces the risk of obesity and makes the gym redundant. People who cycle daily, have less stress, less illness, live longer and remain healthy longer. Absenteeism from work among cyclists is lower than among non-cyclists. And cyclists cost society less with regard to health expenses. It also contributes to overall fitness and personal wellbeing.

Furthermore a bike requires less space compared to a car. Ten to twelve bicycles can be parked in the same space as one parked car takes.

Cycling is cheap, because a bicycle is not expensive to purchase and to maintain. And cycling facilities are relatively inexpensive compared to the requirements for car and public transport. So investing in the bike is attractive to politicians.



Bicycle parking: increase of bicycle use requires investments.

In the 'boxbike' to school



## 6. Role of Dutch Cyclists Union and advocacy groups

The Amsterdam branch of the Dutch Cyclists Union (DCU) is continuously campaigning for better cycling conditions in Amsterdam. From the start of the new bicycle policy, in the late 1970s, the DCU has been involved in the development and implementation of urban cycling policy. Partly due to this Union and to other advocacy groups the new generation of politicians was inspired to change to a different policy: the bicycle in the city was considered as a good alternative to the car. Through its extensive network of volunteers the Cyclists Union still maintains its role as 'eyes and ears of the city'. The DCU advises the city council on all kinds of traffic and transport plans (like construction and reconstruction of roads). From the perspective of cyclists they evaluate those plans for road safety and flow of cyclists. They also advise on the adjustment of traffic lights for cyclists and give input to plans for major new urban projects. The council is committed to the discretion of the DCU. Sometimes there are differences in opinion between the municipality and the DCU, leading to discussion. But, by using the expertise and opinions of the DCU, the city council increases support for the bicycle policy.

The municipality also involves residents, businesses and civil society organizations in the planning process. The city council considers it important to be informed about their needs, experiences and ideas, in order to improve the plans and to get the widest possible support. Of course, it is the responsibility of the municipality to make a good balance of all interests.

Parked bicycles: 225,000 parking facilities in public space and 13,000 parking spaces in guarded bicycle garages in Amsterdam.



Priority for cyclists



Traffic safety: designated area for cyclists where trucks can see them well.



Learn to ride a bike.

## 7. Dutch bicycle culture

Bicycles are very Dutch. They are a part of the Dutch culture. In the Netherlands, one cycles almost daily. Amsterdam is not different. At the age of 3-4 years children learn to cycle. People from all classes cycle. It is part of everyday life. The bike is no 'poor man's vehicle'. Highly educated people use bikes even more. Inhabitants with a non-Dutch background do not cycle much. It is a challenge for Amsterdam to let them experience how fast, funny and healthy cycling can be.

## 8. Cycling is more than transport

The bike is a social vehicle. On the bike you are part of the city, you are approachable, easy to get in contact with, you are not disconnected from the life around you; you are not trapped in your own car. A bike is more than a vehicle. Cycling gives you a sense of freedom and joy. It makes living in a city enjoyable. Cycling is part of life in the city.

Cycling brightens  
up Amsterdam.



■ Amsterdam loves bikes

**Ria Hilhorst**  
r.hilhorst@ivv.amsterdam.nl

**Photo credits**  
Edwin van Eis  
Doriann Kransberg  
Marcel van der Meer



# Socio-Economic Impact of the Cycle - A gendered social perspective of cycling in India

By Dr. Anvita Arora, Managing Director and CEO of Innovative Transport Solutions (iTrans)

## Background

The cycle and its many variants like the three-wheel passenger cycle rickshaw and goods trolleys, and the four-wheel vendor carts are an important mode of transport in Indian cities. Bicycle use in medium and large Indian cities varies from 7-15% in large cities to 13-21% in medium and small cities. Its high ownership, low cost and easy use attributes make it a desirable mode of transport for students and low income workers. A large amount of utility cycling is present in Indian cities because the bicycle is the most affordable form of transport available to low income households.

Most of the medium and large cities in India have about 56% to 72% trips which are short trips (below 5km trip length), offering a huge potential for bicycle use. The close vicinity



Girls cycling to college in a small city of Raipur (They cover their face against the sun and pollution)  
Photo: Gerhard Menkoff



Pictures of the cyclists in India, delivering furniture, kerosene and milk!

of academic institutions (mostly 3-4 km), easy ridership, no license requirement and no fuel requirement are all factors which make it an attractive mode of travel for students. Parking facilities, safety and ease of travel are some of the most important factors which seem to govern female bicycle ridership. One of the reasons for the small share of bicycle trips in large cities is the presence of hostile conditions for cyclists.

### Who is cycling?

The picture of a cyclist in India is not of a athletic young male on two wheels weaving aggressively through the traffic in full cycling gear or going for a weekend ride through the green countryside for health. The cyclist in India is service provider from the formal sector (postman, electricity line repairman) or the informal sector (gardener, domestic worker, mason, security guard). The cyclist is a delivery man – delivering milk, restaurant food, mineral water, cooking gas cylinders; a street vendor – selling vegetables, groceries, sweets.





Conflict on the left (slow moving) lane of the road

Even the cycle is not always the two-wheeled bicycle. It is often adapted to 3 or 4 wheels to carry passengers (passenger rickshaw), to ferry goods (goods rickshaw), or to sell stuff (vending trolley). A cycle is not only a means of transport to access livelihood, it is a means of livelihood by itself.

### Conflict for space

The manner in which the road space is shared is a reflection of the power and identity struggles of the society. The fact that the big SUV is offended if a small car overtakes it, the car pushes the motorcycle, and the motorcycle runs the cyclist off the road is the kind of road user behaviour that acknowledges the marginal position of the cyclist in the order of things. The cycle is in conflict with all other modes of transport including pedestrians for space on the road, some conflicts leading to lowered speeds and abuses but some leading to the death of the cyclists.

## Gender and poverty dimensions of mobility

Understanding of gender issues in the transport context is of vital relevance, since women are estimated to account for 70% of those living in poverty worldwide (UNDP, 1995). The growing literature on women and transport has also clearly shown that they tend to have different travel needs deriving from the multiple tasks they must perform in their households and in their communities (Greico and Turner, 1997). Low-income women tend also to be much less mobile than men in the same socio-economic groups. They are more dependent on walking and tend to have less access to any bicycles or motorcycles in a household. Social restrictions hinder women's mobility in many cultures (Gopalan, 1998). Efforts to increase the mobility of poor women may face stiff resistance from those who feel threatened or offended by such direct empowerment of women (UNDP, 1998). Sexual harassment (and worse) in streets and on public transport is a common occurrence. Since many more women than men are the care-givers of frail or elderly people, people with disabilities and of children, the transport problems of these disadvantaged groups also impact disproportionately on women. Poverty, of course, compounds each of these disadvantages.

Accessibility is a major barrier to the upliftment of women, especially in a country like India where the socio-economic constructs ensure that women are the last persons to have access to the mode of transports in the households or money to travel. Added to this, the indifferent public transport services and the safety risks that women incur on the streets ensure that women are unable to travel to access their primary needs of health, education and livelihood.

Sustainability can only be achieved by preserving diversity. Development experience world-wide shows that gender based policies become all inclusive. If the mobility policies too are gender-centered they will target the mobility of the entire society. This can be equated with the UN education slogan 'educating one woman will educate the entire family'.

A research study (Singh & Anand, 2001) showed that women's greater domestic responsibilities coupled with their weaker access to household resources have significant consequences for their transport and travel status. The women of lower income households experience greater transport deprivations as compared with men. Women were to be found as the users of the less expensive and slower modes of transport when their intensive household schedules (women are time-poor as compared to the men) would be better served by access to faster modes. The survey results indicate that women spend more time traveling on slower modes – the faster and more flexible modes being more expensive. Their time-poverty forces them to look for work at shorter distances from their home thus decreasing their choices and opportunities. The survey results illustrated that women lack mobility in the city due to gender-based restrictions,

inferior access to transport means, high dependence on low quality public transport, lack of availability of affordable modes of travel, and that lack of mobility is inextricably linked to poverty of women in so much that:

- It is *caused* by their poverty (of both time and resources)
- It becomes the *indicator* of their poverty (as illustrated by their work force participation and the nature of jobs they are able to access)
- It *causes* their poverty (by becoming a disabling factor to their access to livelihood)

The study also showed that while the bicycle was the mode of transport for the poor, where distances exceeded walking limits and bus fares were too expensive in relation to their income, not one woman bicycled to work. The women constituted 25% of the working population and mostly walked to work or used buses even though the fares were too high.

### Why do the women not bicycle?

**Patriarchy:** patriarchy is an overarching concept influencing local power relationships and cultures. It is therefore directly related to the gendered division of labour in both modern and traditional societies, with the household (or family) unit as the central perpetuator of the societal system. Men, in their superior power position within the household hierarchy, tend to appropriate the most efficient means of transport for themselves. In this interpretation, cars, motorcycles, bicycles or animal carts are mainly seen as household assets and resources over which men, as the most powerful members of the household, would obviously seek to maintain control. Given the lower levels of overall motorization in less developed countries, power struggles are more likely to occur even over non-motorized forms of transport.



Woman cycling on the side of a truck on unpaved shoulder  
Photo: IDS, 2005

Young girl cycling back from work on a hot afternoon in Panjim, Goa to avoid peak hour congestion later



**No dignity for the cyclists:** bicycles, in India, are invisible modes driven by people who are invisible in the city. So government policies and plans do not provide space for cyclists on the roads. Over the last few years, however, efforts are being made by organizations such as TRIPP, IIT, Delhi to redesign road spaces to include the non-motorised. They have done a lot of work in sensitising the planners and the policy makers toward the need and importance of the non-motorised modes of transport. However, what is difficult to combat is the low image of the bicycle. Bicycles are the mode of the poor and cyclists are captive riders in India – that is, they have no choice. So issues of equity and dignity are closely linked to the bicycle use on our roads.

**No space on the road:** the reality today is that cyclists have no space on the roads, especially in the bigger cities. They are forced to compete for space with larger, high speed motor vehicles (refer figure 1) increasing their vulnerability to accidents and road rage. Since there is no legitimate space for the cyclists, some men on the bicycles may be to adapt to aggressive/defensive driving to survive (though their exposure is no less), women find it tougher to undergo this struggle on a daily basis.

**Gender biased infrastructure design:** there is very little infrastructure existing for cyclists in general in Indian cities and it is all designed for the anthropometrics of young male cyclists. Women cycling with children and shopping bags may need more width of the track and safe space at parking areas where they can unload children and bags comfortably. They would have longer acceleration times and need longer leads at green phases of the signals.

**Uncomfortable bicycles:** the male cycles, more easily available in the market, especially second-hand, are completely unsuitable for women. If they are wearing skirts or saris



Girls cycling in Alwar on an unsafe intersection. They would rather cycle than subject themselves to the harassment of bad public transport

then it is impossible for them to ride them. The cheapest ladies bicycle is more expensive than the cheapest male bicycle. If the household wants to buy bicycles they will buy the male bicycles that all the males in the house can use rather than a ladies bicycle which a man will never ride on for fear of ridicule.

**Harassment and abuse of women:** the entire transport infrastructure of our cities, be it the badly lit subways, unusable overhead bridges, absurdly high sidewalks, uncomfortable bus shelters, badly lit walkways, roads in a state of disrepair; all contribute to a very hostile street environment for the women which actively disables their mobility. Cycling in these badly lit roads with potholes is an invitation to jeering comments and abuse for the women on the road. In fact, as is with the car drivers (the behaviour of male car drivers towards their female counterparts), male cyclists will always try to overtake and ridicule female cyclists, to establish their dominance on the road.

### Experiences from the field

In 2005, with the Institute for Democracy and Sustainability (IDS), we concluded a year-long study on the bicycle users and non-users in the city of Delhi. Of the total of 2000 people interviewed across Delhi, 1000 people were interviewed from the low-income working class section of the populace, and of them only two bicycle users were women. Amongst the non-users several of the women knew how to bicycle and had bicycled in their home towns or villages, but they stopped cycling after migrating to Delhi.

This argument is borne out by the fact that there is a higher percentage of women bicycling in smaller cities and towns (which have higher share of both male and female cyclists). Alwar, a small city in North India, with a population of less than 3 million, claims

to have an 80% share of bicycling. Figure 6 shows girls cycling in an arterial street, a common sight in Alwar.

In the year 2005-2006, under the aegis of a fellowship from the Environment Equity and Justice partnership (EEJP), we conducted a small pilot study in a low-income settlement in South Delhi amongst a group of domestic workers. These women had the unique characteristic that they bicycled to work. The studies showed that they had been taught bicycling by their husbands so that they could go to more apartments and do housework rather than wasting time in walking or money in taking the public transport. The survey results showed that the increased mobility had increased their income and hence their bargaining power in the households and the community. It had given them more confidence and freedom to work and educate their children. The study tried to understand the problems and barriers these women face on the road and in the community. Box 1 is the transcription of an interview with a domestic worker, Uma Muniyan who bicycles to work. Her narrative highlight several issues raised in this paper.

### **Interview of Uma Muniyan**

Be it morning or evening or the afternoon – the major intersections in Vasant Kunj, New Delhi see a continuous stream of small groups of women – some on the bicycle and some on foot. One of these women is Uma Muniyan, a Bengali woman of 30 years. She is originally from Hoogly in Bengal. She still finds it difficult to speak Hindi fluently and rides her bicycle to work wearing her sari.

She says “I have been working for the last year as a maid-servant. I used to walk to work earlier and was very tired by the end of the day. The flats of Vasant Kunj are far from Shankar camp (the informal settlement where she lives) and there is no public transport system connecting them. We are forced to use personal vehicles. There is no option but to walk or bicycle. We do not earn enough to buy a scooter. So, for us, the best option is to buy a bicycle. That is the reason I bought a bicycle 3 months back.”

“Why did you not buy a bicycle before this?”

“Because of lack of funds. Today I work in two flats, earlier I worked in only one. My husband, Swadesh Muniyan, cleans cars belonging to the flat-owners. He also earns 1000-1500 Rupees (1USD= 55 Indian Rupees) a month. I earn 1300 rupees a month – 700 from one place and 600 from the other. So, we have to really plan our savings and expenditure”



Uma Muniyan

“What does the bicycle mean for your future?”

“Earnings increase with owning a bicycle. The bicycle makes it easy to work in 2-3 places. If the flats are located far apart, then too it is not difficult to manage. On foot, even working at one place leaves one very tired at the end of the day.”

“Do feel any hesitation or discomfort in cycling?”

No, I do not feel any hesitation. Though, men still do not like to see women cycling, but the circumstances pressurize the men to teach their women to cycle. They know that if we work at more flats, we will be able to earn more, and a bicycle is necessary for that.”

“Did you learn bicycling after coming to Delhi?”

“No, I learnt to bicycle at a very young age. The learning at that time is helping me now.”

“Being a woman, do you face any problems while bicycling?”

“No problem at all. The ladies cycles are comfortable to ride on even with saris. With regard to the safety of women on the roads, the bicycle has very little to do with it. Men who make abusive comments will keep on doing that – whether the woman is on foot or on the bicycle or on a bus. While working in these flats we have to be alert – who knows what is there in anybody’s mind.”



Domestic worker doing her household chores like fetching water on the bicycle

The increasing urbanization is leading to changes in lifestyle for the families. In traditional joint families there was always somebody staying at home, especially women. So some people went out for jobs and business and the rest helped with the household chores. Now the situation has changed completely and both men and women are so busy with their jobs and businesses, that they do not have time to do their household chores like washing clothes and utensils, getting vegetables and milk from the market etc. They then need these maid servants, who help to make their daily lives comfortable and convenient.

These maid-servants come from far-off areas of the country and often belong to the very poor and tribal sections. Some of them live in the houses they work for. However, most maid-servants (like Uma Muniyan) work part-time. They work in one or more households. Usually they work for 2-3 hours in the morning and 2-3 hours in the evening. Most of these maid servants live in the slum settlements and, according to their affordability, distance from home to work, availability of transport etc., decide on which mode to use to travel to work. The bicycle empowers them with independent mobility, freedom of choice and enables them to better their economic status. Apart from access to livelihood, the bicycle gives them efficiency in handling their daily chores too.

**Anvita Arora**

anvita@gmail.com or anvita@itrans.co.in







**2**

# **Liveable and Bikeable Cities**

**Liveable and  
Bikeable Cities**

## 2. Liveable and Bikeable Cities

This chapter deals with the local and global environmental problems confronting our world today as well as the challenges we are facing to develop our cities into places fit for the citizens to live in. The five articles illustrate a broad range of initiatives being taken to create liveable cities as well as describing the variety of benefits cycling offers in terms of city life, the environment and health.

In his article ***The benefits of cycling***, Gil Peñalosa calls for urgent action to generate global and individual well being. Gil has written an inspirational article, where he sees the global problems we are facing not only as unique challenges but also as fascinating opportunities to transform our cities into great places for people to live in a sustainable way. He emphasises the city's relentless search for quality of life, placing cycling at the centre of urban development. He calls for public engagement and political will to make riding a bicycle safe for all citizens. He mentions two key actions to increase the number of cyclists, reducing the speed limit in all residential areas and building a network of protected bikeways on all arterial roads. He also looks in some detail at the benefits of cycling as well as its political, bureaucratic and organisational aspects.

In her article ***Sustainable mobility***, Tanja Ballhorn Probstgaard describes two cases, commuter cycling and city logistics in Copenhagen. Tanja raises the question as to how we choose which form of transport we are going to use when going about our daily business. She explores how a sustainable form of transport can be implemented in Copenhagen by instituting a consultative process with various stakeholders such as local citizens, local committees, interest groups, trade associations and universities, surrounding municipalities and the state. How can more people be encouraged to cycle? The answer is to introduce Cycle Super Highways, which will ensure commuter cyclists feel safe and arrive at their places of work or study by a direct, fast and comfortable route. She looks too, at how the inner city can be made more sustainable by the introduction of an innovative logistics structure for goods delivery to reduce considerably the amount of heavy traffic in the congested city centre.

In his article **Quality of life and bicycles**, Fábio Duarte recounts how Curitiba has become one of the world's most liveable cities. Since the 1980s, Curitiba has created a vast network of bike paths in order to improve the quality of peoples' lives. Fábio adopts a statistical approach to urbanisation, cycling and quality of life. He shows how the rapidity of urbanisation in South America is posing a number of problems. The rapid rise of car ownership is producing a number of effects, both short term as well as long term. Fábio explores various aspects of the promotion of cycling, including its relationship to the public transport system. He looks at creative ways the city of Curitiba has used to develop its cycle network and ends his article by taking a historical as well as a current, positive look at the situation with regard to cycling in Curitiba.

In his article **Cities for people**, Lars Gemzøe describes the method, Copenhagen Studies in Urban Life, which was initiated 40 years ago by the architect Jan Gehl with a team of students and researchers from the School of Architecture in Copenhagen. The studies were a recording of the pattern of public life based on observations in the old main street in Copenhagen after it was changed in 1962 to a pedestrian street. These studies have been repeated every ten years and the data shows that the result of quadrupling the number of car-free square meters was almost four time more activity. City life has blossomed and is now a brand for the city "people in motion". Lars describes the significance of reliable data for urban planning and the political process and shows how the collecting of data for pedestrians and also for cyclists has influenced the transformation process from a city full of cars to a city full of people.

In his article **Cycling and health**, Philip Insall states that public health experts recommend more cycling. Philip makes an overwhelmingly strong case for the advantages of cycling with regard to public health. Pointing out the increasing obesity in England and what it will ultimately cost the government to foot the medical bill, he shows how cycling can combat this problem as well as providing many other advantages to public health. Philip has two recommendations to public health policy -1. change the physical environment, thereby making it easier to walk and cycle and restrict private motor transport -2. shift in public investment priorities from expensive road projects to walking and cycling facilities. He emphasises how important it is that professionals in transport work together with those from public health, because each can help the other. Such collaboration has been very successful in Bristol, where the Director of Public Health appointed urban planning, sustainable development and transport specialists to his team to ensure that physical activity, including cycling, is written into the city's strategies and plans.

# The Benefits of Cycling - Global and individual well being

By Gil (Guillermo) Peñalosa, Executive Director, 8-80 Cities, NGO based in Toronto, Canada

Since 1817, human beings have had a means of freedom through individual mobility, consisting of what initially began as a wooden frame with two in-line wheels. However, amidst the drive for capital and economic prosperity, this symbol of independence and joy has been transformed into one of last resort, unfortunately frequently associated with poverty. Within the last 50 years or so however, some leading global cities have come to realise the value of cycling, not only for the sake of mobility, but as a way of life. Some would argue that with the current economic crisis, there is no room for bike-oriented societies. On the contrary however, it could be argued that with the storm we are now facing, the plummeting economy, ever-growing health crises, together with global warming present not only a unique challenge, but a fascinating opportunity to transform our cities into great places for people to live in a sustainable way.

Yes, we are at a critical juncture demanding urgent action. Hundreds of cities worldwide are thinking and talking about ways in which we can create world-class, people-oriented cities by focusing on the development of adequate infrastructure to foster environments that encourage the use of bicycles. There may be a lot of talking and thinking but there is not enough doing. Almost all of the major cities in the world are being faced with rapid growth and higher urban density as larger proportions of the population leave rural areas. The US population will increase by 100 million in the next 25 years for example and the world population by 2.5 billion by 2040. During these radical changes, cities should keep one thing in mind: their citizens' wellbeing. We must grasp the opportunity to transform our cities into places where priority is given to the individual person over the car; where everybody can mobilise in an easy, efficient, and human way: by walking, by using public transport and also by using their bikes.



“Bike-pooling” kids to school in Utrecht, Holland



Ciclovía in Bogota, Colombia. Over 1 million people bike, walk, skate, “watch people” every Sunday of the year.

## We must overcome barriers, real and imaginary

Many of the “thinkers and talkers” claim that there are far too many insuperable barriers. “Our city is no Copenhagen or Paris, we don’t have a bike culture”, they say. Climates may be different, cultures may not be equal, but people are the same; we are all social animals. As for comparisons, we are not creating sim-cities on our computers - we cannot “copy and paste” but we can and should “adapt and improve”. Every city is different, with unique challenges and prospects, but *all* have the potential to be wonderful places to live in.

Before the transformation of Copenhagen, there was a lot of resistance in the city to creating cycle tracks and pedestrian streets for social mobility. In fact, the Danes used to say, socializing through means of mobility was for the Italians, as they seemed to like public spaces and spending time on streets, sidewalks and piazzas. In fact however, once the streets were transformed into pedestrian promenades, the Danes became “more Italian than the Italians” and enjoyed them seven days a week, all year long.





Riding bicycles in Copenhagen, Denmark. "There is no such thing as bad weather, it's bad clothing".



Consistency in Copenhagen, Denmark: always on the right side, always unidirectional and always physically separated from cars when car's maximum speed is above 30 kph (20mph).

Cycling and walking is great for local stores as people purchase goods for two or three days whereas people going to shop by car buy for two or three weeks and end up shopping at big out-of-town supermarkets.

So, despite the many challenges and doubts, Copenhagen is now one of the world's leading cities for cycles, where more than 36 out of every 100 trips are done by bike. In order to create cities that foster an environment where people feel safe enough to use their bicycle for daily trips, we need public engagement to demonstrate to the decision-makers how citizens want to live, what makes their people happy.

It is not surprising that the major predictors of a city's success nowadays include happiness and quality of life. Every city's main goal must be how to retain its best people as well as how to attract great people from other places. This is done through creating great quality of life.

Bike racks on buses are “visible” but do not get “non street riders” to begin riding.  
Vancouver, Canada



So, in order to overcome these barriers, we need to prioritise the general interest over the particular. Change is hard and if we want it to be accepted unanimously we need to dilute it so much that it would no longer be change. We must keep asking ourselves “how do we want to live” and then make the necessary decisions to move in that direction.

It is clear that the barriers are neither technical nor financial, they are political.

### Key actions

There are many cities who claim that they want to be “cycle friendly”. Unfortunately, most of these focus on doing things right but not on doing the right things.

There are a number of actions that actually improve conditions for existing cyclists without getting many additional cyclists on the streets even if they are “done right”; for example, signage, sharrows, education, bike parking and lockers, racks on the buses, painting lines on the pavement, etc.



Protected bike-ways in New York, USA. A painted line on the pavement is not safe enough; it needs a physical separation like the one shown in the photo.

There are however, two key actions which will increase the number of cyclists: lowering the speed below 30 kph (20 mph) on all residential streets and secondly, building a network of protected bikeways on all arterial roads which have more than 5,000 cars per day or speeds higher than 30 kph. With regard to the first action, it has been demonstrated that lowering the speed to below 30 kph (20 mph) saves lives and is not only good for cyclists but also creates great communities, walkable, safe for all. If a person is hit by a car going at 30 kph there is 5% probability of getting killed, while if the car is going at 50 kph the probability of getting killed increases to 85%. With regard to the bikeways, they must have a physical separation between the cyclists and pedestrians and especially between cyclists and motor vehicles. The message is clear; politicians need to create networks of protected bike lanes. This is not done by painting a line on the pavement; actually if they approve the difficult part by providing the space on the street for cyclists, then they should go one step further and build “enhanced bike lanes” adding the physical separator which is a must in order to attract new riders and to make it safe for all. The line by itself might make it more comfortable for existing cyclists but will not attract those who do not bike for fear of getting run over by cars. The goal is to make riding a bicycle safe for all: including children and older adults and novice riders. When bike lanes (lines) do not work, it provides politicians unfriendly to bicycling “an excuse to show that cycling is not part of their culture” and bike lanes are removed.



Vancouver, Canada has begun building great bikeways, physically separated from cars and pedestrians, safe for all.

## The benefits of cycling

Far too often, people speak about cycling as a means, focusing strictly on the precise action, as opposed to the benefits, the ends. Once we discover the benefits that cycling provides, we can begin looking at overall lifestyle in a far more desirable manner. After all, there are many reasons why, despite their high economic development, the Danes *choose* the bicycle as their *preferred* means of mobility, but let's summarise under the acronym E.A.R.T.H.

### **Environment**

Although inherently associated, the relationship between cycling and the environment deserves further attention and support. The use of a bicycle as opposed to a car, greatly reduces pollution, gas emissions, noise and traffic congestion.

### **Economic Activity**

Having citizens ride bicycles benefits the economy in many ways. For example, the cyclists can carry groceries for only two or three days while the car drivers carry for three

or four weeks; the cyclist buys local while the car driver buys at big supermarket. A second benefit is the disposable income. According to the American Automobile Association the annual cost of an economy car is \$7,500; if a household can downsize from two to one cars, all of the sudden there will be substantial savings to spend on other goods or services, thus improving local economy.

### Recreation

Cycling provides recreational opportunities for everybody, regardless of economic, social or ethnic background. This recreation is in addition to utilitarian cycling, it's just fun. Obviously the division of cycling for recreation and for transportation is not always clear; we might use the same bikeways in the morning to ride to work while in the evening to go to the movies or to visit friends.

### Transportation

Cycling plays a double role in transportation: as a way to move from points of origin to our destinations as well as a means to connect with other modes, such as public transit. Unfortunately no large or medium size city has solved the issue of mobility through the

Seville, Spain built a grid of over 150 kilometers interconnected and cycling increased from less than 1% to almost 7% share in four years. Great for cyclists and for business along the grid.



private car. The only solution is to have public transportation. Most cities are investing large sums in public transit but busses or trains will not pick us up in front of our homes or drop us off at our destination. Here is where cycling can play a key role - as a connector to and from public transit - as long as we build the proper infrastructure of safe bikeways connected into a coherent grid as well as networks of bike parking.

## Health

There is growing, global concern about public health and there is a very clear correlation between physical and mental health benefits and cycling. The obesity rates have increased geometrically over the past two decades to a point where in countries like Mexico or the USA one in three citizens is obese. The lack of physical activity along with the obesity is producing many health problems and illnesses. The key to meeting the 30 minutes a day of physical activity recommended by the World Health Organization is to make walking and cycling a normal part of everyday life. The situation is clear: countries where cycling is part of everyday life have very low levels of obesity. With heart disease being the number one cause of preventable deaths, the cycle lifestyle represents the pivotal lever between life and death. Furthermore, clear links have been cited between daily exercise and decreased levels of depression, anxiety, attention deficit disorder etc.

Thousands of bicycles parked at the main transit station in Amsterdam, Holland. Riding bicycles improve mobility by itself as well as a connector to other modes.





In New York, USA, they created a very successful Ciclovía / Open Street program called Summer Streets. It showed citizens and city staff that streets can have different uses according to the time of the day, the day of the week or season in the year.

## How to move from talking to doing

Once we realise the many benefits of cycling, we must create broad alliances to represent all those interests. This process is like a three legged stool where one leg is the elected officials from the municipal, state / provincial and national levels. The second leg is the public sector staff, including the obvious like transportation and planning as well as others directly related to benefits like public health, environment, economic development, parks and recreation.

This change process must take into consideration:

**Political will:** politicians must understand that the general interest must prevail over the particular in such actions as eliminating car parking to allow a bikeway to be safe.

**Doers in the public sector:** people working for the government must keep in mind that every week the citizens are paying them to get things done and not to have 20 reasons why they cannot be done. They must always look for solutions to the problems and not problems to the solutions.

Montreal Canada has changed many painted lines for physically separated bike ways and the rides have moved from mostly young men, to mix of gender, age, level of ability, as well as social, economic or ethnic background.



**Leadership:** hundreds of leaders are needed, in places of work, universities, schools. Some will have city-wide impact while others will just work locally.

**Citizen engagement:** citizens can no longer spectate, they must participate. If citizens are not attending public meetings, calling radio stations or writing letters to city officials, someone else will be doing so and thus setting the agenda.

**Sense of urgency:** given the storm we are facing mentioned at the beginning, including global warming, obesity crisis, traffic congestion, economic crisis, population growth, it is evident that we must act now.

There are major challenges but also fantastic opportunities. We must constantly ask ourselves “how do we want to live” and act accordingly. We - politicians, city staff and citizens - must be consistent, between what we think, say and do.

We need to improve the cities that we have today, but we also need to build great cities for 2 billion people in the next 30 years. The use of the bicycle can and should play a role in this process. In order to promote its use we should focus on the benefits instead of just talking about it. We should act to gather the necessary support to build complete networks of safe infrastructure for all cyclists regardless of age, gender, or economic, social or ethnic backgrounds.





Bogota, Colombia where Mayor Enrique Peñalosa built great bike-ways and side-walks “in part to improve safety but equally important to dignify the pedestrians and cyclists”; they should not be treated as second class citizens when they provide so many benefits to the community: health, environment, economic, mobility and more.

**Gil Peñalosa**

[gpenalosa@8-80cities.org](mailto:gpenalosa@8-80cities.org)

**Research:**

Laura Peñalosa, Psychology at McGill University, Montreal, Canada.

**Photo credit:**

Gil Peñalosa



# Sustainable Mobility - Commuter cycling and city logistics in Copenhagen

By Tanja Ballhorn Provstgaard, Traffic Department, City of Copenhagen, Denmark

**T***ransport is the life blood of a city, its development and its economy. Goods must be shipped in and out, and everyone must be able to get to work, to school or to college. All cities face the same challenges.*

All cities are growing and the more people there are, the greater is the need for mobility. This growth increases pressure on the transport that is available as well as the use of the city's public spaces. Today, cars still generally dominate the mobility picture and street space in cities. And car traffic is increasing! So, cities are unfortunately facing huge challenges with regard to congestion, road safety, barrier effects, noise and air pollution, CO2 emissions etc.

We must ask ourselves whether we will continue to use the public urban and road space as we are doing today, or will we rather begin to prioritise how urban space should be used?

## Choosing how to get to our destination

When we choose how to get to our destination, our choice depends on time, distance, cost, quality, flexibility and reliability. We also think about the availability of the different forms of transport as well as how the city's infrastructure has been built up and is at the present time.

Generally speaking, these are all parameters which can be adjusted. There is not one unique solution to the problems of the city; the solution lies in the interplay between a variety of diverse approaches. When I go to work I want to have a choice as to how I get there.



Bicycle and pedestrian bridge over the south of the harbour in Copenhagen



Approach road Nørrebrogade after rebuilding - note how wide the pavement and cycle track are.

When I take our youngest to kindergarten and our middle boy to school how can I do it in the quickest, cheapest, easiest and most reliable way?

We want Copenhagen to be the best city in the world to live in. We want it to be a city for people. Provided the physical infrastructure is in place, transport need not only be about getting from A to B. People can get some exercise by jogging or running to work, and children can walk and talk or bike and talk safely with their friends on the way to school. The older generation too, can safely and comfortably take a stroll round the streets and through the parks, sit down and have a cup of coffee, listen to some music perhaps and do a bit of shopping on the way home.

In general, working towards a sustainable city is a long, tough haul that requires discussion, planning and vision – our politicians have got to persevere, be committed, and not least, be willing to invest!

## Green mobility in Copenhagen

*Copenhagen wants to be the metropolis for green growth and at the same time the world's first carbon neutral capital by 2025. We have a high level of ambition with regard to promoting green urban mobility and this is closely intertwined with our visions for green growth. In the spring of 2012, the City of Copenhagen launched a new Action Plan for Green Mobility. Within the Copenhagen context, the concept of green mobility is defined thus:*

*"We must make mobility in Copenhagen more cost-effective and green in order to stimulate growth, contribute to a carbon neutral city and the good life in Copenhagen"*

We have got to make considerable efforts and act very concretely not only now but way out into the future to realise our vision of efficient, green mobility which both stimulates green growth, supports the quality of life and contributes to a carbon neutral capital. The way to greener mobility in Copenhagen will be about focusing on a major expansion of the road network and bicycle network as well as improvements to public transport. These initiatives require heavy investment and must additionally be complemented with a host of other innovative and communicative actions which will change peoples' behaviour. These will all contribute to making the overall green transport solutions appear attractive and competitive.

It is Copenhagen's ambition that by 2015 at least 50% of people working or studying in Copenhagen, will go to their workplace or educational institution by bike.





Traditional workshops with interested parties in City Hall, Copenhagen

## Dialogue process

Increased green mobility in Copenhagen can only succeed if many players contribute and collaborate. The Action Plan is therefore based on an extensive process of dialogue based on the following questions.

- How do we organize the city so that green mobility is the obvious and best form of transport?
- How do we optimise the available forms of green transport from the business, commuters' and citizens' perspective?
- How do we influence peoples' behaviour so that they will use green transport more when the city has been designed for green mobility, and when the green transport on offer has been improved?



Children are the future traffic users so a number of courses are held for children.

People who were invited to the workshops were primarily representatives from interest groups and branch organisations, local transport companies, local committees, companies related to environment points and researchers. But the people of Copenhagen were also consulted. An interview analysis was carried out among Copenhagensers, who were asked about their attitudes to their choice of transport and green mobility. 90% of Copenhagensers believe that green mobility is important for Copenhagen as a major city; they mainly consider the bicycle and the Metro as the best green forms of transport. When it comes to their own daily choices of transport, the environmental factor is not decisive, but the time factor. 'What is the quickest way I can get to work?' is the big question. So, the challenge is how to make green transport competitive with regard to time for Copenhagensers, who are generally not more environmentally conscious than people in other big cities.

### **Copenhagen – the world's best city for cyclists**

Copenhagen is one of the world's best cities for cyclists. It has the ambition to become the world's absolute best, and in has the goal that by 2015 at least 50% of the people working or studying in Copenhagen will cycle to work or their place of education. A lot of hard work needs to be done to achieve this goal, and so cycling must be incorporated



Safe and comfortable transport experiences for everybody.

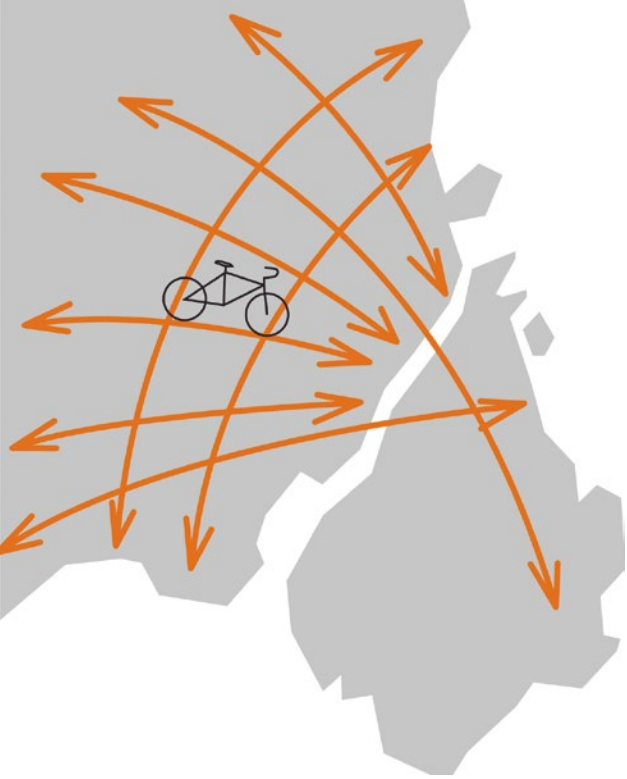
into all phases of planning and all solutions in the city. One of the newer initiatives is Cycle Super Highways, which are aimed at commuters in the metropolitan region, while a second project is City Logistics, which aims at reducing the number of heavy vehicles in the city.

### Case: Cycle Super Highways

*Torben Stentoft, Director of the National Hospital - "Cycle Super Highways is a really good project. Sixteen thousand of our employees, including myself, bike to work every day. Cycle Super Highways will make it faster, safer and easier for even more people to cycle to work - even those who live farther away. It will create healthier employees and more space in traffic for everyone."*

In 2009, Copenhagen took the initiative and set in motion a broadly based cooperative project with the surrounding municipalities to create a network of bicycle commuter routes in the metropolitan region. This cooperation between neighbouring municipalities in the region is an important foundation for the development of green growth and sustainable transport in the region. The basic idea behind the Cycle Super Highways is to create better conditions for commuter cyclists and to make more people want to choose their bike rather than their car - even over longer distances. This results in a better urban environment, less congestion and a healthier population - thus all road users derive benefit. The routes are planned so that they connect nodal points within the city, such as residential and educational areas and areas with many jobs.





■ Cycle Super Highways – as fast as possible from A to B

#### *Quality Parameters for Cycle Super Highways*

Cycle Super Highways have four overall goals with regard to quality. These have been developed so that cyclists can get the best possible experience from riding on the Cycle Super Highways and are:

1. Cycle Super Highways will connect places where there is a concentration of jobs, students and homes as well as providing access to public transport terminals.
2. Cycle Super Highways will provide commuter cyclists with the fastest possible route between their homes and their places of work or study. They must be as direct as possible and with as few obstructions and stops as possible, as well as providing enough space for people to cycle at their own speed without being delayed.
3. Cycle Super Highways should make the bike ride to and from work or study a pleasant experience for bicycle commuters. The surface of the cycle track should be smooth, there should be high quality maintenance, additional services should be offered, providing the opportunity for good cycling experiences – through for example, the provision of green spaces.
4. Cycle Super Highways must guarantee a low number of accidents as well as ensuring that commuter cyclists will feel safe both in traffic and on the less populated stretches of cycle track. This specific assessment must be based on the lighting and visibility of the cyclist in relation to the surroundings.

Cycle Super Highways are designed with as few obstacles as possible, with a strong emphasis on security, safety and high comfort. The common vision for Cycle Super Highways is that the entire capital region will develop into the world's best cycling region. A total of 26 routes have been planned, similar in structure to the expansion of both rail and road network in Greater Copenhagen ie, routes in and out of the city and ring routes across the city. The overall network will amount to about 300 km of Cycle Super Highways.

## Case: City Logistics - green goods delivery in the Medieval City in Copenhagen

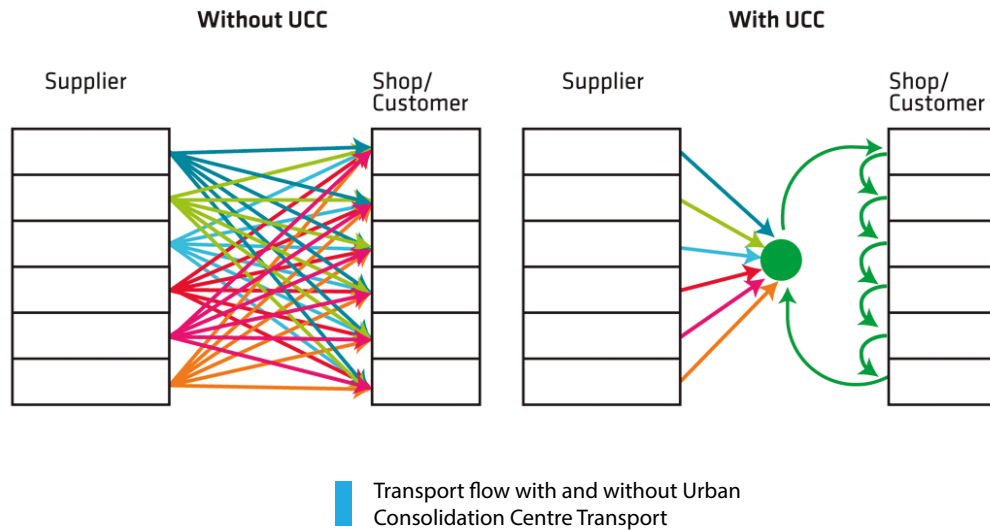
Imagine the streets of the Medieval City filled with shoppers and the hustle and bustle of city life. Picture environmentally friendly cars which have replaced the big, heavy goods vehicles in the Inner City and glide almost silently around as they fetch and deliver their goods. Not only do traders now have more time to chat to their customers but Copenhageners find it easier to get around. Everybody is happy.

City Logistics - cph will help secure the future cityscape of Copenhagen as a metropolis for people and the environment. How will they do this? By making life easier for traders, giving them the chance to save money and by salving their environmental conscience!

Goods delivery as it is carried out in the Medieval City in Copenhagen today



## Consolidation center concept



The goal of City Logistics - cph is to create a green and innovative transport and logistics solution: a solution which will reduce noise and greenhouse gases as well as making the air better to breathe: a solution which will improve road safety and create a better urban environment and urban life by reducing heavy traffic in the Inner City.

The principle of City Logistics-cph, as can be seen from the figure about transport flow, is that the city is to be serviced by a city freight terminal located outside central Copenhagen. Suppliers and carriers can deliver directly to the terminal. By consolidating multiple deliveries to stores in the same area and transferring them to more environmentally friendly cars, distribution will be optimised and the number of heavy vehicles in the City reduced.

City Logistics - cph will be able to offer a greener and more environmentally friendly transport solution by for example, using transport with better capacity utilisation and making use of intelligent routing in smaller, quieter and environmentally friendly cars. It is also important that drivers are trained in ECO-driving (fuel efficient driving).

**City Logistics – cph as an integrated, logistic solution will be able to deliver for example:**

- More flexible pickup and delivery of goods
- Delivery by drivers familiar with the locality and with the individual traders
- Possibility for unpacking and checking of new goods
- Possibility of price marking and installing alarms
- Possibility of warehousing (the trader's own external storage space on the cargo terminal), which can save space for traders
- Possibility of packing orders (Pick-Pack), mainly for operators with e-commerce
- Opportunity to include returned goods (packaging, mail, packages and much more)

Copenhagen Business School and DTU Transport have made analyses of the consequences and opportunities as a result of the introduction of the City Logistics concept and have reached the following results:

**The City Logistics-cph concept is expected to be economically viable at 150 registered stores, representing one tenth of the freight volume. It is a realistic possibility that this number can be reached during a demonstration phase of three years.**

**The 150 stores registered for the scheme can save a minimum of 40-50000 single deliveries and hence the equivalent number of stops per year in the Inner City.**

**A 10% reduction in emissions (NOX and particulates) in the Inner City and a small CO2 reduction.**

A demonstration project is expected to start in 2013 with a private operator. Similar city logistics projects can be established for the café and restaurant industry, and the construction industry.

**Tanja Ballhorn Provstgaard**

tanpro@tmf.kk.dk

**Photo credit**

City of Copenhagen

# Quality of Life and Bicycles - How Curitiba has become one of the world's most liveable cities

By Fábio Duarte, professor at the Pontifícia Universidade Católica do Paraná, in Curitiba, Brazil

## Some data: urbanisation and quality of life

Latin American cities are one of the best places to enquire about the relationship between quality of life and urban spaces, as 82% of the population live in cities. South America has an urban population of 83%, the same rate as North America, and exceeds Europe, with 73%. East Asia, with highly urbanised cities such as Tokyo and Hong Kong, had only reached an urban population of 50% in 2010 (UN, 2011). However, more than the final rate, it is the rapid urbanisation that challenges the quality of life in the cities.

Measuring the quality of life in this context is a huge challenge. Direct and causal relations between family and per capita income and quality of life have been investigated by other methods, which include more flexible concepts, such as happiness – even though happiness may vary enormously from culture to culture (Graham, 2008).

Gallup Institute (Gallup, 2007) has shown that after urban insecurity, the presence of gangs and the quality of public transportation are the most important criteria influencing the degree of satisfaction with the city. On a global scale, after Sub-Saharan Africa, it is in Latin America, with 41%, where most people are dissatisfied with public transportation.

While the quality of public transportation is unsatisfactory, private motorisation increases. The Clean Air Institute (2011, item 4) argues that “it is possible that some Latin American countries may reach [the US] level of car ownership at the current projected rate of increase”. By 2030, the annual growth rate of car ownership in Argentina, Brazil,

Chile, Dominican Republic and Ecuador will exceed 3% (Dargay; Gately; Sommer, 2007), doubling the annual population growth rate, which has been 1.2% for the last decade (UN, 2011).

The increase of motorisation has short- (deaths and injuries, stress) and long-term effects (pollution, respiratory diseases), which are negative for the collective quality of life. A coherent public policy should stimulate the use of public transportation and, most importantly, non-motorised vehicles, such as bicycles.

In order to understand the links between urban mobility, the use of public space, and quality of life, the city of Curitiba, in the south of Brazil, may be a good example. The city has gambled on creating a vast bicycle network in order to improve the quality of life of its population. It started this ongoing approach in the 1980s, when most of South American cities had virtually no concern with bicycles. In this chapter, I would like to show you how innovative this approach was. Despite some big challenges the city is still keen on embracing bicycles again as an important transport mode, both technically and politically - it is still a good case study for Latin American cities.

### **Buses, pedestrians and bicycles: towards a friendly urban mobility**

In the 1970s, Curitiba decided to face the mess of uncontrolled bus operators who were the only alternative to increasing private motorisation. The basic idea was to structure urban growth along mass transportation axes; and the highest population densities would be allowed only along these axes. The logic was putting people where transportation infrastructure is. After several studies, the municipality has chosen to use buses as the modal for mass transportation.

Bus corridors and dedicated lanes, trunk-and-feeder network of bus lines, integrated fares for the different lines, physical integration at terminals, and pre-paid fares to speed the boarding procedures became what is now known as BRT – bus rapid transit. This system has been adapted and implemented in different cities around the world. In the beginning of 2000, Bogotá, a major Latin American city, brought many innovations to this system and showed that BRT can carry as many passengers as a light rail system. Transmilenio, Bogotá's BRT, has become the new benchmark, and in recent years Curitiba has adapted some of its innovations.

Nevertheless, there is one aspect of Curitiba's BRT that remains remarkable: how to keep the pedestrian scale even along mass transportation corridors, and even when it carries more than 2 million passengers per day.

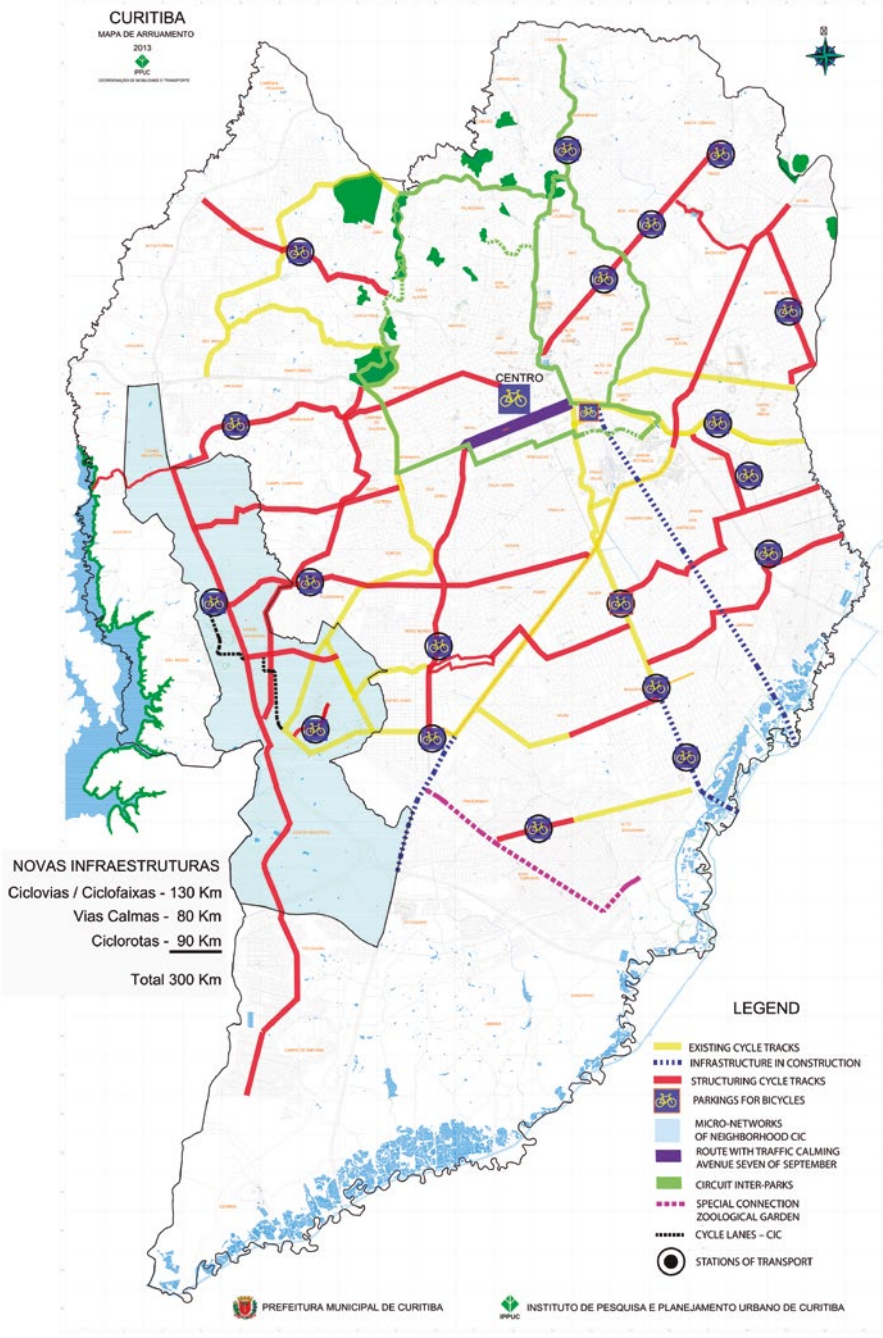


Figure 1. Bicycle network map of Curitiba. Source: JPPUC 2013

Instead of putting BRT in the middle of wide avenues, where all traffic – buses and fast car lanes – are bundled together, Curitiba has decided to split the traffic in three different roads. The peripheral roads, with three traffic lanes and no parking, are for fast traffic (up to 60km/h), with semaphoric crossings each 100 meters to 150 meters apart. The central road is divided into three parts: in the centre are the two BRT lanes, one in each direction – sometimes a third lane only for overtaking buses; this central corridor is flanked, in each direction, by a narrow walking passage, a parking lane, and one or two slow traffic lanes.

This scheme keeps the pedestrian scale. When crossing the corridor, pedestrians feel more comfortable with the slow traffic and know there is a walking passage to guarantee their safety before crossing the other segment.

Along all BRT axes a special land use zoning enforces the presence of commercial and service businesses in the basement of residential buildings. This compulsory mixed use environment keeps the street alive all day long.

In the 1980s, Curitiba started another range of improvements towards friendly urban mobility. The city created the first bicycle path in the country, in a workers' neighbourhood. Today, the city has the longest bicycle network in the country, with more than 100 kilometers of bike lanes and bike paths and another 200 km have been planned to be added as shown in figure 1.

In this chapter I would like to highlight some qualitative aspects of this network. In the 1980s, when Curitiba started the implementation of its bicycle network, the very idea of considering a bike as a vehicle was a bit awkward. The first bike paths in Curitiba shared the sidewalk space with pedestrians. This model is still used in some bike paths under construction. But in the 1980s and 1990s the city was trying to find some alternative models to expand its bicycle network. And here comes a clever idea: if bikes are more flexible than motorised vehicles, why should its planning always follow the road pattern? The municipality then found two forgotten urban spaces: free areas along railroads and along urban rivers.

In Brazil, railroads are under federal administration. For safety reasons, along the railroads, a 10 - 30-meter wide strip must be left unoccupied. Historically an important center for rail transportation in the south of the country, Curitiba still has more than 30 kilometers of railroads crossing some densely urbanised areas.





**Figures 2 and 3.** The municipality is remodeling its BRT corridors, and is implementing bike lanes along some of them, and installing bike racks near by the so called tube stations.



If, on the one hand, all the land along the railroads must be kept unoccupied for safety reasons, on the other hand, this area remains as an empty space in the very core of the city. The municipality decided to use this unoccupied area to build bicycle paths, which reach some cities in the metropolitan area.



**Figures 4 and 5.** In the 1980s Curitiba launched its bike routes project. Today the bike routes network has 120km. In its first phase, the municipality implemented the bike paths in areas with no other possible use, for example, as along the railways.



**Figures 6 and 7.** In the 1980s the city implemented its most used bike paths network along urban rivers, linking the municipal parks.



Also in the 1980s and 1990s, the city started creating several parks. Known as a rainy and cold city (by Brazilian weather standards), Curitiba did not have many public spaces and only one central park. The municipality then started creating parks, from a botanical garden to thematic parks dedicated to the major immigrant population which formed the ethnic background of the city, such as the Polish and the Ukrainian parks. More than a leisure facility, all these parks have as a primary function to control floods, in areas commonly affected by the flooding of the dozens of rivers which crisscross the city. During some decades, as in different parts of the country, the public administration decided to channel and to pave these rivers.

In this context two clever ideas were put in place. Firstly, almost as a symbolic gesture that this approach to the urban rivers ought to change, some parts of Curitiba's main river, called Belém, were kept open and a bike path was built along it.

This bike path links some of the main parks of the city. The underlying logic of it is that, as most of these parks were created to control floods, rivers should be considered part of the urban structure. The municipality built some other bike paths even over canalised rivers; and created a bicycle network linking the recently built parks. With this approach, the municipality tried to create a friendly city, where a family could bike together to visit the parks using a safe bicycle network.

## Contemporary challenges and general considerations

The first decade of this century must be seen as a dark period for bicycles in Curitiba: an abandoned bicycle network, virtually no new bikes path created, no general bike plan issued. Over the same period, Curitiba became the most motorised city in the country, with almost one vehicle for every two inhabitants. Something had to be done. And it was.

Different groups of users started pressing society to see the bicycle as a valuable form of transport, and pressed the municipality to reconsider the bicycle in its General Plan, issued in 2004. Under such social pressure, some new projects have been implemented. The first of them was the creation of a cycling circuit in the downtown area; the problem is that it was opened only on Sundays, and leads to nowhere – despite the presence of many cultural facilities nearby. Symbolic of the poor quality of this project, the new municipal administration abandoned it in the beginning of its term, in 2013. The second is the implementation of the first bike lane along the BRT corridor and bike racks in almost every bus terminal, in order to facilitate the integration between buses and bikes, and improve the quality of public transportation. By the end of 2012, the city implemented a bike share system, which has been discontinued 6 months later for a broad revision. And for the first metro line, in the project stage, all stations will have a bike park.

In 2013, a new municipal government took place. In his inauguration day, the new Mayor rode on bicycle to the City Hall. Nine months later, the Municipality presented the main guidelines of its plans to enhance the modal partition of bicycles in the city.



**Figures 8 and 9.** The bike share system



In four years, around 40 million dollars should be invested in bicycle infrastructure in the city, for remodeling the exist 100km of bike paths, and add other 200km; implementing bike parks in all bus terminals, and bike racks in all parks; and implementing micro bike networks in the industrial district. (The proposed bike network, see Appendix)

It is true that the example of Curitiba, a city with 1.8 million inhabitants, is atypical by Latin American standards. In Brazil, only 6% of the cities are over 100,000 inhabitants; and 4% in Argentina and Bolivia, according to the respective governments. However, if a city of 1.8 million inhabitants has done it, a smaller city also can do it.

**Fábio Duarte**

duarte.fabio@pucpr.br

**Photo credit**

The pictures are the authors, 2012 except where it is stated otherwise

# Cities for People - Copenhagen studies in urban life

By Architect M.A.A. Lars Gemzøe, Gehl Architects, Copenhagen, Denmark

## People make cities “softer” and friendlier

Copenhagen has changed dramatically over the last 40 years, from a city dominated by cars to a city where the majority of the citizens move around on bicycles or on foot. This is a very different type of environment than can be seen in many cities, where the cars still dominate the streets and open spaces. It is hard to see people when they are moving through the city inside cars. The reflections in the windscreens and the speed blur the impression. A city dominated by cars is a city of moving objects.

People on bicycles and on foot are a very different experience. They are fully visible as they move slowly through the streets and squares. They have time to see what goes on and others can see them at the same time. Pedestrians and cyclists can enjoy all their senses, as they are not cocooned in a car. They can easily get in contact with other people, simply stop and talk on the spot. They do not have to worry about finding a parking lot or a place to meet. People walking and cycling on the streets of Copenhagen make the city “softer” and more human. Cycling is just a simple way of getting around in daily life and not something people wear special clothing to do. Cycling is like walking - just city life: “Faces on the street”. Cycling has for too long been seen only as a mode of transportation from A to B. There is much more to cycling and walking than transport and Copenhagen is a fine example of how the urban culture has changed.



**Picture 1.** A city full of cars is a city of moving objects and very different to a city with people on foot and bicycles.

**Picture 2.** All ages and all walks of life cycle daily in Copenhagen.

**Picture 3.** Copenhagen is city full of people meeting, talking and enjoying city life.

## Data about people is one of the key elements in the transformation

Data has always been important in urban planning; it is a powerful tool because it often defines what both the problems and solutions are. The most dominant set of data applied in the planning of public spaces has normally been data about vehicular traffic with a strong focus on car traffic. Data about people on foot was normally not available and there was very little knowledge about what people do in public spaces. This often remains the case in many cities all over the world. People are invisible in the planning process due to lack of data – and subsequently ignored. When traffic data is the dominant data set, then the design solutions of public space will tend to reflect how the problems of car driving are solved and how the spaces cater to traffic flow and not to people.

Data about what people actually do, where they are and where they are not, can shift the perspective in planning. When a set of people data is established a new debate is possible. - a debate about what makes the city attractive, lively and inviting for people and not just good for driving cars.

The city of Copenhagen has published biannual studies of the development in cycling and the satisfaction among the users on the development of its cycle facilities since 1995. A similar study about people on foot was published for the first time in 2011 (*“Bylivsregnskab – Tendenser i det københavnske byliv 2010”*. Literally: *“City Life Account – Trends in the city life of Copenhagen”*).

But there is a much longer history of collecting data on pedestrian behaviour in Copenhagen and it has had an interesting impact on the planning over decades.

## Copenhagen as a case study

Copenhagen is a very interesting case of how data about people has had a significant impact on the process of transforming the city from a place full of cars to a much friendlier place full of people.

The old main street in Copenhagen, Strøget, was changed in 1962 to a street for pedestrians only. This change took place after a heated debate about all the possible impacts this might have. No one had closed a main street to traffic before anywhere, so all sorts of arguments were voiced: shopkeepers were certain that the shops would die if the cars were prohibited. Others were certain that the damp Danish climate would make it disastrous to close the street to traffic. What would it look like on a rainy Monday when the street was totally empty? Ultimately the argument was that it did not fit with Danish culture: “We are not Italians!” was the slogan. The obvious lack in Copenhagen of the kind of urban culture that can be found in the Mediterranean, where people meet,



**Picture 4.** Gammeltorv-Nytorv before 1962.  
Photo: The City Engineers Office of Copenhagen



**Picture 5.** Gammeltorv-Nytorv today

stand talking, and sit outside restaurants, was evident. None of it existed in Copenhagen at the time. So it was true, we did not have that kind of culture, time showed though that the main obstacle to this was that we had filled every open public space with parked cars.

The pedestrian street became both a success for the people as well as for the shopkeepers. The two adjacent shopping streets in the downtown area requested to become pedestrian streets as well. After the street had been transformed into a car free space a process began, which over time changed the urban culture of outdoor life in the city totally.





**Picture 6.** Strøget on any nice summer day



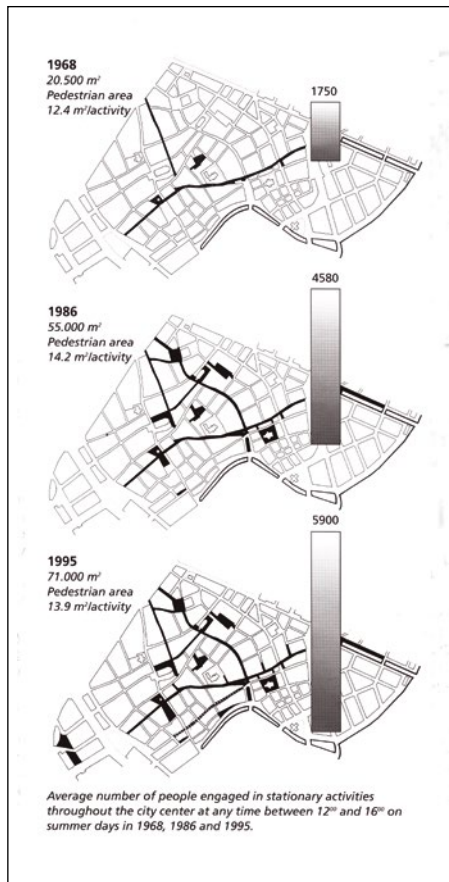
**Picture 7.** Strøget on a rainy day

## Copenhagen has data about public life over a 40-year period

In 1968, Professor Jan Gehl with a team of students and researchers, mostly from the School of Architecture in Copenhagen, studied what people were actually doing in the street after the cars had disappeared. They looked carefully at what was going on, where it happened, how much was happening and for how long it took place. The study became the first in a series of repeated studies on how the delivery of car-free spaces of good quality for people walking led to a total change in the character and quantity of public life.

Several simple methods, all based on observations at eyelevel in the public spaces, were developed. The focus was on ways of recording the patterns of public life. How many were walking, what were they doing and where were they spending time?

What was new was the way these methods were used to give a picture of the simultaneous activities in a whole city district over a whole day and evening.



**Picture 8.** The city delivered almost four times more car-free spaces from 1968 to 1996 and the result was almost four times more activity. (Graph from *Public Spaces – Public Life*, Copenhagen 1996, Jan Gehl & Lars Gemzøe, Danish Architectural Press)

## What were the results?

The changes in urban outdoor life were striking. When the data is put together over almost 40 years it shows great changes in public life from a city that was dead in the evenings to a city that was alive day and night, from a city centre almost totally absent of outdoor seating to a city full of outdoor cafes. Most of all it shows how the city centre was transformed from a place dominated by shopping and window shopping to a place with a multitude of cultural activities and opportunities. The most striking results of the data showed that while the city had increased the number of car-free square metres by almost four times from 1968 to 1995, the number of people spending time on the same squares and streets had also almost quadrupled. This was not because a lot more people came downtown, but because people spent more time doing a much wider range of activities than before. The city centre had become the most important meeting place.



**Picture 9.** A great number of festivals have emerged as the car-free spaces offered new opportunities.

**Picture 10.** Regardless of the worry about the rainy Danish weather outdoor cafés flourished and grew constantly in numbers.

**Picture 11.** Café-life extended from summer into all seasons. Blankets are now a Copenhagen standard.

## How data supported political and planning actions

The four Copenhagen studies, 1968, 1986, 1995 and 2005, were made as independent research studies, solely initiated by the researchers, who had to raise funds to pay for the students working on recording the activities and also to publish the results once complete. The publications and books were aimed at informing the people in Copenhagen, the planners and architects as well as the politicians. The books were later translated into many languages and more and more cities are applying the methods today.

Over the years, there were many indications of how useful the data was for the mayors in charge of the public spaces and for the city engineers and architects responsible for the planning. It was clear that people “voted with their feet” and used the spaces more and more the more they got! It was also clear that with more space more new activities were flourishing developed by organisations, NGOs and individuals like the Jazz Festival, the Summer Carnival, the Night of Culture, the Gay Parade and much more. With more good quality public spaces, more people found new ways of using the nice, car free spaces for new outdoor activities.

The data supported further action being taken and more and more car-spaces were changed to people-spaces. The mayors in charge of public spaces have changed quite a lot over time from the far left to centre right and back to centre left - but the interesting point is that the core of the policy has remained the same: make better conditions for people on foot and you are rewarded. People enjoyed good car free spaces in the city and they wanted more.

## Copenhagen City of Cyclists

The development of daily cycling has maybe been the most striking change in the city: a great increase in cycling has taken place over the last 40 years. Copenhagen planners have used data over many years as a useful tool in the planning of the cycle infrastructure. Since the mid-nineties, the city has also used data and intensive communication with the users as part of the strategy to make more people use the facilities. It was important to communicate that it has become safer and safer to cycle. Information about the quality of the infrastructure and the feedback from the cyclists in the form of biannual Bicycle Accounts have been important parts of the development.

The latest Bicycle Account shows, that 50% of the residents in the City of Copenhagen go to work or education on bicycles in the city (*Copenhagen City of Cyclists – Bicycle Account 2010*).

Another way to count and measure is the fairly new bicycle counters. They are visible to all users and count every cyclist that cycles down the cycle track, and show how many have passed that day and for the year so far. The signal is: it matters that you cycle and you are counted.

The city simply became much better for Copenhageners of all ages as a result of the policies. It also became much more appealing for visitors and tourists. City life is now a

**Picture 12.** With better and better conditions for cyclists, we got more and more people using bicycles as part of daily life.





**Picture 13.** Bicycle counters. Telling you how many you are and that cycling matters.

brand of the city and it is proud of its monuments, which are not imposing buildings but “people in motion” as it is described in the bicycle account.

The first four studies about pedestrians were not commissioned by the City of Copenhagen but the city supported them financially. All the data has been given to the city and the researchers have advised the city about how to conduct the research. The 5<sup>th</sup> Copenhagen study was made in 2010 by the city itself and all base data is accessible on the city's website. “Bylivsregnskab – Tendenser i det københavnske byliv 2010” (literally: “City Life Account – Trends in the city life of Copenhagen”). An English version is on the way.

This marks the fact that the city has now taken on the obligation of collecting the necessary data to study how public spaces are used, how their use relates to design and how well the spaces are perceived by the actual users. “People first,” is firmly embedded in the city's policies.

The striking results from Copenhagen have inspired other cities like Melbourne, Sydney, London, New York and many others to have similar studies done in order to make their cities more livable. Melbourne has also been inspired to make “Copenhagen style” cycle lanes and bicycle accounts.

**Lars Gemzøe**  
lars@gehlarchitects.dk

**Photo credit:**

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# Cycling and Health - Public health experts recommend more cycling

By Philip Insall, Director, Health Sustrans, England

Cycling is an active way of travelling. When you travel by bike you engage in physical activity. This directly benefits your health. Cycling is often grouped with walking under the name 'active travel', and public health experts across the world are very keen to see more people travelling actively more often.

The research evidence in favour of cycling is very strong, and each year it gets stronger. Researchers on the Copenhagen Heart Study found that *"even after adjustment for other risk factors . . . ., those who did not cycle to work experienced a 39% higher mortality rate than those who did"*.

Start them young: children should be encouraged to cycle, to help them stay healthy throughout life  
Photo: J Bewley / Sustrans



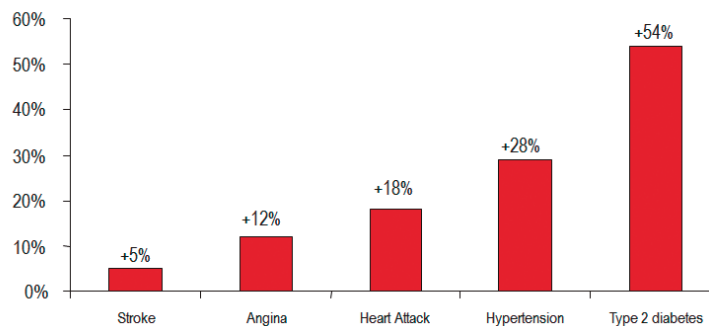
## Physical activity and health

People who lead active lifestyles, through walking and cycling, physical activity at work, gardening, dance, or sport and active recreation, are healthier. However, in the United Kingdom, two-thirds of the adult population do not get even the minimum recommended amount of physical activity. This is a critical issue for public health. In 2011, the Chief Medical Officers (CMOs) of the four UK countries jointly published a report on physical activity, saying, “regular physical activity can reduce the risk of many chronic conditions including coronary heart disease, stroke, type 2 diabetes, cancer, obesity, mental health problems and musculoskeletal conditions” (see Appendix).

Physical activity deficiency costs money: by 2050 almost 60% of the UK population could be obese, costing the UK around £50 billion (\$78 bn, €63 bn) per annum if strong action is not taken. But cycling can also deliver cost savings from improved productivity in the workplace, reduced congestion and pollution, and healthy development of children and young people.

### Predicted UK growth in obesity-related disease by 2030

From “Our health, our care, our say” white paper



Source: Living in Britain 2004: Results from the 2002 General Household Survey; National Food Survey 2000 Table B1



## Health policy recommends cycling

The four CMOs state that *“for most people, the easiest and most acceptable forms of physical activity are those that can be incorporated into everyday life. Examples include walking or cycling instead of travelling by car, bus or train”*. This recognition of active travel is now standard practice. Some other examples include:

- the British Medical Association says *“transport policy should ..... encourage a modal shift away from private motor transport towards active forms of travel which benefit health”*.
- the Toronto Charter on physical activity, now supported by over 100 countries, demands *“transport policies and services that prioritise and fund walking, cycling and public transit infrastructure”*.

## Long term healthcare cost savings

A really important argument for decision makers is that investment in physical activity, including cycling, saves money by preventing disease. Active people have lower healthcare costs throughout their lives.

In 2012, a group of researchers writing in the medical journal “The Lancet” calculated the savings achievable from growth in walking and cycling. They found that by increasing active travel England and Wales could generate savings of £17 billion (\$26 bn, €21 bn) to the National Health Service over 20 years, and that thereafter the savings would continue to mount up, year on year.

## Potential for change in travel behaviour

In the UK over two-thirds of journeys 1 - 5 miles (1.6 – 8km) long are made by car, a distance that can be cycled easily by most people. Sustrans’ own work for the UK Department for Transport has shown that in representative UK cities 47% of car trips could be replaced



Cycling is a way to remain active and healthy into later life  
Photo: J Thomsen / Sustrans

by walking, cycling or public transport, without major intervention. This potential exists in other highly motorised societies too. Of course, even greater potential exists where significant investment is made in infrastructure to support these modes.

So from a public health point of view, massive health gains and healthcare cost savings could be made very easily, simply by promoting changes in travel behaviour.

### How to do it – a cross-governmental approach

Transport has a positive side: access to employment, education, services such as healthcare, green space, social activities and so on is good for health, while physical activity from walking and cycling is health-promoting. But motor transport also has major harmful effects – road danger, death and injury, air pollution, traffic noise and the severance of communities by major roads. So the optimum – from the health point of view – is the greatest possible range of access, always reachable by walking and cycling. If you can access all the local destinations you need without ever having to drive, your health will be better and so will the health of other people.



Public health guidance recommends improvements to cycling infrastructure  
Photo: D Martin / Sustrans

Public health policy and guidance call very clearly for two things to happen:

- changes to the physical environment making it easier to walk and cycle, and restraining private motor transport
- a shift in public investment priorities from expensive road projects to smaller, better-value local schemes which facilitate walking and cycling.

In the UK, the National Institute for Health and Clinical Excellence (NICE) bases its public health guidance on intensive review of evidence from around the world. NICE recommends radical changes to the environments where people live, in favour of walking and cycling. Its guidance on 'Physical activity and environment' recommends, among other things, road space reallocation, traffic calming, road user charging and active travel infrastructure improvements. Likewise, the British government's Foresight report on obesity, assembled by 200 senior academic experts, noted that *"the top five policy responses assessed as having the greatest average impact on levels of obesity [include] increasing walkability / cyclability of the built environment"*.

This is supported across the public health sector. The British Medical Association has called for *"growth targets for walking and cycling at national and regional levels, with increased funding and resources proportional to target levels"* (see Appendix). This is in line with 'Take action on active travel', a joint policy call by a UK-wide group of over 100 transport and public health bodies in 2010, which says, *"invest at a realistic level: commit 10% of transport budgets to walking and cycling immediately, and in future ensure that transport funds are allocated proportionate to the new, ambitious target levels"*.

The health sector is an opinion leader, a major employer and a powerful economic force. Health professionals and health sector organisations should set a good example. Walking and cycling should be encouraged as the ideal ways to travel to healthcare for staff, visitors, and for the many patients who are able to travel actively. Health sector managers should ensure high quality walking and cycling routes, cycle parking at hospitals and health centres, and working practices to encourage active travel. And the chairman should no longer have a car parking space reserved at the main entrance!

Government as a whole should have a strategic plan to invest in cycling, so as to secure large long-term healthcare cost (and other) savings. This plan should be developed at



Setting a good example:  
cycle parking at the  
European Commission  
Photo: P Insall / Sustrans



Pont y Werin (The People's Bridge) in Cardiff – high quality new walking and cycling infrastructure enables people to change their travel habits  
Photo: J Bewley / Sustrans

the level of the national Treasury or Finance Ministry, and locally at the level of the city Mayor or local government finance director. The financial allocation to transport should set targets for travel behaviour change towards cycling.

## Examples

### **The Active Travel (Wales) Bill**

In 2007, Sustrans Cymru (Wales), together with a range of Welsh organisations including the British Medical Association, called on the Welsh Government for legislation to develop and maintain a network of walking and cycling routes, to match their existing obligation regarding roads.



Sustrans “Bike It” school projects form part of Bristol’s strategic approach  
Photo: J Bewley / Sustrans

Among the strongest arguments for the new legislation was the potential for public health. Sustrans therefore convened a group of influential public health organisations and experts, which offered strong support to the proposals.

In July 2012, the Active Travel (Wales) Bill formed part of the Welsh Government’s legislative programme announced. There has been a very positive response to the White Paper, and it now seems likely that the Bill may become law, radically increasing levels of walking and cycling across Wales.

This legislative approach may be useful in other countries too. Further information can be found on the Welsh Government website (see Appendix).

### **Bristol**

It may be difficult for professionals in transport to work together with those from public health. The two professions think differently, use different methods for policy development or impact analysis, and even speak a different technical language. But it is important to make the effort, because each can help the other.

Bristol is an English city with a population of close to 400,000. The city's Director of Public Health appointed urban planning, sustainable development, and transport specialists into his team, and agreed with the city council to place these staff within the relevant council teams. They ensure physical activity, including cycling, is written into city strategies and plans, give day-to-day advice and help, and over time the whole city administration becomes more expert in transport and health.

The strong public health arguments helped Bristol to win a major government grant competition, securing £11 million (\$17 m, €14 m) for cycling improvements. The local Member of Parliament Dawn Primarolo said, *"For most people, a great way to keep healthy is by building physical activity into everyday life, such as cycling to work or school"*.

Bristol now publishes a useful series of evidence briefings on transport and health issues (see Appendix).

### **Good for Business**

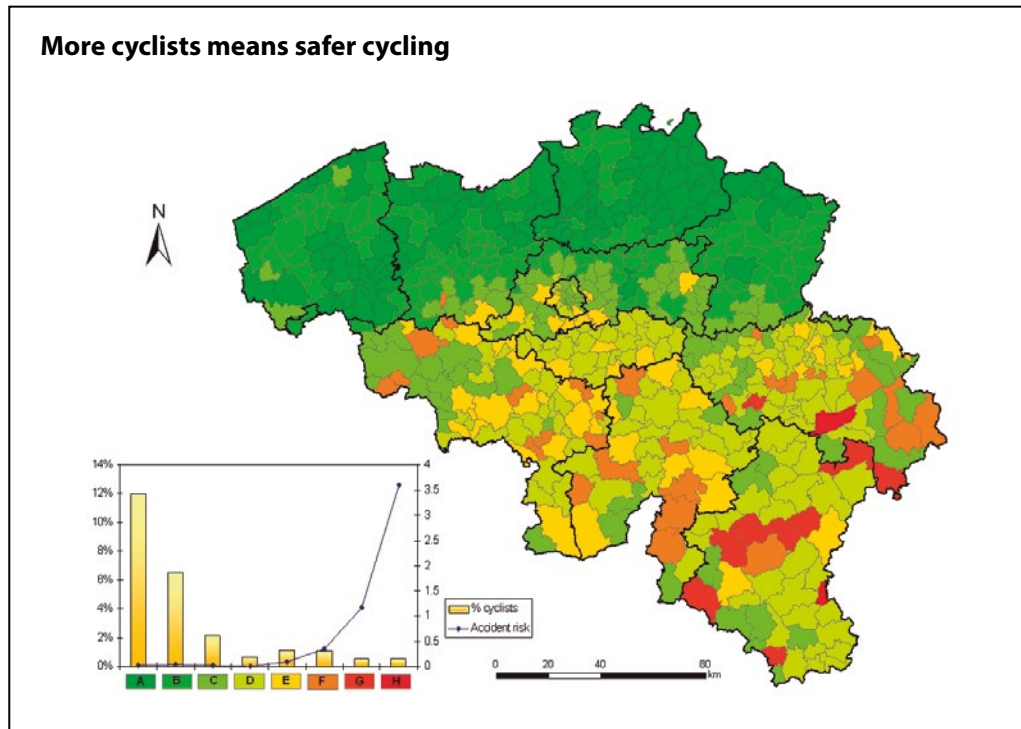
A good example of a public health body leading a campaign for active travel is 'Good for Busine\$\$', an initiative of the Heart Foundation, South Australia. This is a review of the evidence for the financial benefits to local businesses from more active travel. Heart health bodies around the world recognise the health potential of cycling, and as in this case they can take the lead in policy campaigning. Cycling groups should seek to collaborate with them, and with other major disease-specific bodies in fields where active travel is protective, such as cancer, diabetes and mental health.

### **Road danger and health promotion: the balance of advantage**

In some countries, such as the UK, it became accepted that people travelling by car were more important than walkers and cyclists. Large volumes of fast-moving traffic were invited into town centres, and rural roads re-engineered for higher speeds and volumes of traffic. Streets and roads became more dangerous, and road safety policies discouraged pedestrians and cyclists from making the trips they wanted to make.

Today, road safety professionals generally take a more sophisticated approach, which is often called 'road danger reduction'. This seeks to reduce the risks that motor vehicles impose on other road users by reducing vehicle speeds, improving driver behaviour, and sometimes by reducing the volume of motor traffic.

However campaigners still sometimes call for legislation to make cycle helmets compulsory. This is unfortunate: a more analytical approach to the question shows that the health impact of such legislation would be negative. It would save some life-years



The Belgian communes with highest levels of cycling have the lowest accident risk for cyclists  
(Vandenbulcke et al., Transport Policy, March 2009)

across the population by mitigating head injuries in some road crashes, but by raising fears among existing and potential cyclists and deterring them from cycling it would cost many more, by dissuading physical activity.

Work done in the Netherlands in 2010 modelled what would happen if 500,000 Dutch people changed their behaviour to become regular cyclists. Air pollution and road crashes might cost between 6 and 49 days of life per person, but the health gains from the increased physical activity would be much greater – between 3 and 14 months per person (see Appendix)!

It is also becoming clear that more people cycling makes cycling safer, an effect known as 'safety in numbers'. This is well illustrated by a Belgian study in 2009.



Innovative cycle counter in Odense, Denmark, motivates people to cycle  
Photo: P Osborne / Sustrans

## Measuring and valuing the benefits

Public health professionals all agree that cycling is important and valuable as a way of promoting health. No tool has yet been developed which calculates the total health economic benefit of cycling, because it generates gains in so many areas of health, but the World Health Organisation has created a tool called Health Economic Assessment Tool (HEAT), which uses values for reduction in mortality from three main forms of disease, arising from any increase in cycling. HEAT is easy to use, and available free on the internet, at [www.euro.who.int/HEAT](http://www.euro.who.int/HEAT).

A good illustration of the economic value of cycling can be seen with the UK National Cycle Network, coordinated by Sustrans. Usage of the Network has increased every year since 2000, showing how a long-term programme of infrastructure development can encourage and support more people to cycle more often. Using HEAT, Sustrans calculated that the cycle journeys made on the Network in 2011 had a health value of £286 million (\$445m, €360m) – this does not of course include the economic gains in other areas, such as road safety, carbon reduction and social gains.



## Further reading

**Government Office South West, 2010** Value for Money: An Economic Assessment of Investment in Walking and Cycling

**Transport, Health and Environment Pan-European Programme** – see website for documents

**Philip Insall**

philip.insall@sustrans.org.uk



**3**

**Cycle  
Infrastructure**

# Cycle Infrastructure

## 3. Cycle Infrastructure

This chapter contains three articles dealing with various aspects of cycle infrastructure. They describe in detail various experiences of the planning process, the forming of a cycle infrastructure and the significance of citizen involvement in the planning. There are no universal solutions but this chapter can serve as an inspiration as to how to promote cycling by creating safe and attractive facilities for cyclists, both in cities that are just about to take the first steps as well as those which already have a long tradition for cycle infrastructure behind them.

In his article ***Planning a cycling infrastructure***, Niels Jensen describes the 100-year long development of Copenhagen's cycle infrastructure right up to the present day, when the city's brand is "Copenhagen - City of Cyclists". Niels takes a historical approach, telling the reader about the car boom which hit Copenhagen in the late 60s and made cyclists the losers for decades. Huge demonstrations by cyclists around 1980, together with the oil crisis created the political will to revitalise cycling in Denmark. Niels goes on to describe how the interrelation between politicians, municipal planners and the Danish Cyclists' Federation has influenced the development of cycle strategies and plans for cycle tracks. The design of cycle tracks and intersections and road standards for cycling infrastructure is touched on, as well as the need to acquire a 'critical mass' of cyclists. Niels goes on to recount how ambitious goals for modal share in commuting have been developed and followed up by "The Bicycle Account," which presents citizens' views on cycling conditions and key figures on infrastructure and accidents. The political ambition is that Copenhagen should aim at being the world's best city for cyclists.

In his article ***The first step in developing a cycle infrastructure***, Virginio Moreno tells his readers about the choice of Seville to go by bike. The development of cycling infrastructure in Seville has taken place over a very short period, from the time when the first recreational cycle track was laid in 1995 until urban bikeways were built during the period 2006-2010. Seville is a wonderful example of how the bicycle can be introduced as a serious means of transport and a change of mobility behavior can be stimulated in the public provided there are goal-directed initiatives in the right direction. Virginio describes how the building of urban bikeways at the same time as a new large-scale system of public bikes was being introduced, together with the involvement of citizen in

the process, have had a significant influence in the spectacular rise in the use of bicycles in Seville. The guidelines for a network of urban bikeways with a total length of 77 km covering the city were laid down in a General Plan of Urban Planning and financial resources allocated for a complete implementation in less than 12 months. Today, the total length of the bikeway network has reached 142 km. The design of the cycle network is based on the connectivity of major facilities and neighbourhoods.

In his article ***Cycle route networks***, Tony Russell describe how Sustrans creates popular routes through public involvement. Tony tells the story of the development of the National Cycle Network (NCN) in the UK since 1995 up until today, when it is over 21,000 km long. He takes a fascinating look at the role public participation has played in developing cycle routes in England. One of the main goals became to encourage families and children to take up cycling. Guidelines were developed with this in mind. Another inspirational move to popularise cycling was to enable works of art to be displayed along the routes, thereby generating an insight into a feeling of local identity and ownership among local communities. The aim has been to have local authorities build onto the National Cycle Network and so make it into a truly integrated network. A range of strategies has been developed to fit different scenarios. The author recounts how former railway routes in particular provide valuable space for biodiversity to flourish. Sustrans set up a programme of volunteer rangers who undertake practical activities to help to maintain and increase usage of the Network and to encourage the community to walk and cycle more.

# Planning a Cycling Infrastructure - Copenhagen - city of cyclists

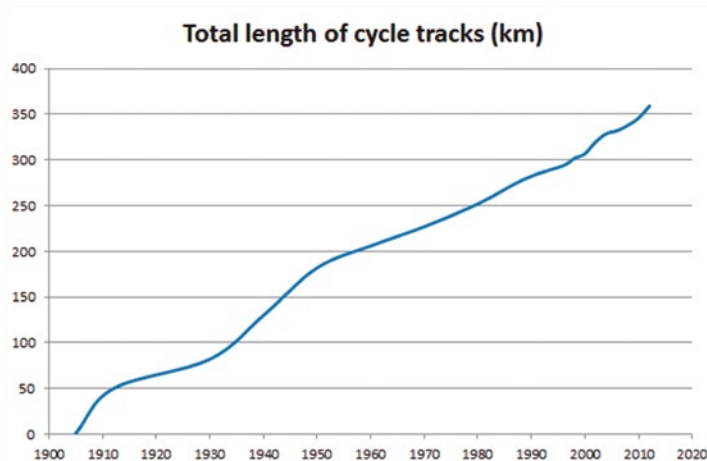
By Niels Jensen, planner, Cycle Secretariat, City of Copenhagen, Denmark

The simple principle for Copenhagen cycling infrastructure for more than 100 years has been to establish one-way cycle tracks on both sides of all major roads. Cyclists are allotted their own high standard area next to the pavement/sidewalk. Cars are parked on the outside of the tracks (in opposition to what is common in US cities). With a growing interest in cycle planning, this design principle has internationally been baptised "Copenhagenize".

The cycle tracks are the backbone of our cycling infrastructure. In recent years, the emphasis has been on developing safe and secure solutions for cyclists which allow them ease of passage in the intersections.



Traditional Copenhagen cycle track, showing the two kerbs which separate cyclists from both pedestrians and cars.



Development of cycle tracks in Copenhagen. New tracks have been added at a surprisingly consistent speed for 100 years.

The very first cycle track in Copenhagen was established in 1905. In the beginning, the main purpose was to offer the cyclists an even surface (in contrast to the cobblestones on the road). A decade later it served as protection from “our new enemy, the car”, as the Danish Cyclist Federation put it.

Here, I’ll concentrate on what happened with cycle tracks (using the street Nørrebrogade as an example), planning and policies from the 1950s when cycling peaked in Copenhagen, during the car boom in the 1960s hitting an absolute minimum in bicycle traffic in the 1970s up to the present situation with a new bicycle boom in Copenhagen.

Encouragement of cycling in Copenhagen includes carrots, sticks and tambourines. The Copenhagen cycle tracks are the backbone of the cycling infrastructure and thus the biggest carrot. The green cycle routes offer an alternative to cycling along the major roads. The possibility of taking your bicycle for free any time on the local S-trains supports a car free lifestyle. The most recent initiative is “Cycle Super Highways” linking Copenhagen cycling infrastructure with surrounding suburbs.

### A flashback to the 1950s

Nearly half of the present cycle tracks in Copenhagen had already been established as early as sometime between 1945 and 1950, as cycle traffic peaked.

On the busiest streets in downtown Copenhagen, like Nørrebrogade, there were no cycle tracks, as the cyclists were so numerous that, in the 50s, they more or less filled the road and dictated the speed of the few cars.



## When the car boom hit Copenhagen

In contrast to many other European and especially American cities, the car boom came late to Copenhagen, not really arriving until the 60s. I remember how people in our street in downtown Copenhagen bought cars and proudly polished them every Sunday! My street was changed into a one-way street and I had to make detours when moving around on my bicycle.

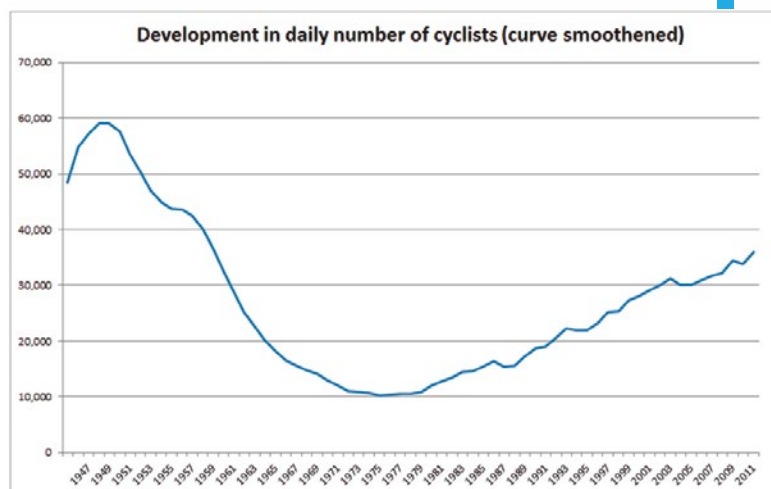
Eventually, all traffic planning in Copenhagen was about car traffic. Many minor streets became one-way streets not only for cars, but also for cyclists. Cycle tracks were shortened at intersections to increase intersection capacity for car traffic. Fortunately, the cycle tracks on the sections were not removed in Copenhagen. And luckily, the shortened cycle tracks proved to be relatively safe.

All this and heavy car traffic meant that cyclists felt unsafe and not welcome. Even though cycling lost a lot of 'street cred' and social acceptance, many Copenhageners quietly kept on cycling and tried to survive in a dangerous traffic environment dominated by cars. Many who could afford a house in the suburbs – including my family – moved out of town.

Nørrebrogade in the 1950s. Lots of cyclists, no cycle tracks, very few cars. The trams and the cyclists ruled the pace of traffic.  
Photo: City Engineers Archive, Copenhagen



Cycling in Copenhagen peaked between 1945 and 1950. Numbers from Nørrebrogade.



Traffic congestion increased. Roads were widened and plans for motorways into the very centre were made.

The oil crisis in 1973 was a wake-up-call, which resulted in car free Sundays. This demonstrated how pleasant Copenhagen could be without cars. There were many protests against the motorway plans – and maybe more influential – a financial crisis, both of which meant that neither the national government nor the City of Copenhagen could afford the huge expense. That rescued Copenhagen from being completely destroyed by cars.

### **Huge cyclists' demonstrations around 1980**

In the late 1970s, The Danish Cyclist Federation woke up and arranged demonstrations – basically demanding more cycle tracks. The success was overwhelming and the support from ordinary citizens was massive. Even my parents participated.

The demonstrations addressed both the City Hall and the national parliament, the latter resulting in an investigation into the possibilities of a revitalisation of cycling in Denmark. The point was made very strongly in a film ("Bikepower") which the chairman of the cycling committee created in his spare time: if Amsterdam could provide a bicycle friendly environment, why couldn't Copenhagen also?

Even though Copenhagen politicians were forced into realising that something had to be done, the engineers in the Copenhagen Road Office did what they could to avoid any changes. The head of the Road Office stated that the administration would not work out a plan for cycle tracks for which there was no use! Therefore the Cyclist Federation itself developed a plan for cycle tracks. The municipal planners reluctantly developed it further after pressure from a cycling friendly deputy traffic mayor. But in the end the political majority dropped it, for reasons which were not very clear.

The cycle track plan ended its life in a drawer in the Road Office. But for a couple of decades, it showed that this "drawer plan" was much better than no plan!

### **Mainstreaming cycling including Nørrebrogade cycle tracks**

After massive pressure, cycle tracks were established along Nørrebrogade for the first time in 1982. This was a very difficult task and a turning point in how to address cyclists' problems. Room for two cycle tracks (2 x 2m) was taken from car parking on one side of the street and another 1m was taken from the pavement on both sides of the street. So pedestrians partly paid the price to make room for cyclists!



Cyclist demonstration in Copenhagen around 1980. Tens of thousands of citizens confronting the mayor, ringing their bells and demanding better conditions for cyclists.

Photo: Søren Svendsen

Nørrebrogade first generation cycle tracks being established in 1982.



In the City Council, everyone was now in favour of new cycle tracks, at least in principle. Consensus had gradually developed into an understanding that Copenhagen should be a “city of cyclists”. Cycling had again become socially acceptable and cycle planning was mainstreamed.

The first official Cycle Track Priority Plan was agreed upon in 1997. Very sparse financing was available for establishing new infrastructure. In the long run however, it showed once again that planning paid off.

The cycling initiatives now however, were being promoted by the civil servants – not so much by the politicians in the Council – who of course approved both concrete plans and even a “Cycle Policy 2002–12”. It took three internal drafts until the Road Office dared



The Cycle Track Priority Plan in Cycle Policy 2002–12, planning for 51 km of cycle tracks. In 2002, 307km of cycle tracks and 9km of cycle lanes were already in place.

to send it to the politicians. The main reason was that it included an ambitious goal of 40 % bicycle modal share in commuting by 2012. However, it was passed in the Council without comments!

Shortly afterwards, a delegation of some eight Copenhagen cycle planners visited colleagues in Dutch cities, some of whom had recently given up quantitative goals for cycling modal share – a bit worrying!

### **The Bicycle Account:**

In 1996, the Bicycle Account for 1995 was introduced as part of the material participants received at the 1996 Car Free Cities conference in Copenhagen. It is believed to be the world's first bicycle account.

The next account was for 1996 and since then it was never discussed internally whether or not the biannual series of accounts should be continued. It proved very useful to citizens, politicians and the press. Somewhat surprisingly, it gave a positive focus on cycling internally in the administration. The Account presented citizens' and cyclists' view on cycling conditions, facts on the development of cycling infrastructure, accidents and other key figures. Later, it also followed up on the goals from the Cycle Policy and other policy blueprints.

The series of Bicycle Accounts shows that the bicycle share in commuting developed from an initial 30% in 1996 to 36% in 2010. Whether or not we will reach the original goal of 40% in 2012 we will not know until the end of 2012. We now have a current, politically ambitious goal of a 50% cycling share by 2015. The former goal of a 40% cycling share in Copenhagen commuting may be possible to reach using "carrots" only, but this is probably not the case with the present goal of a 50% share. In my opinion, you need "sticks/whips" as well to reach that goal – not to forget the tambourines!

By the way, our definition of cycling share of commuting is a little tricky, since we are focussing especially on reducing rush hour car traffic: commuting to workplaces and educational institutions situated within the borders of the City of Copenhagen. An alternative focus on what the Copenhagen citizens do, would present a much higher cycling share in the modal split for commuting.

It was a goal in the Cycle Policy to increase cycling travelling speed by 10%. The idea was to focus on the competitiveness of the bicycle as a form of transport, as opposed to always talking about accidents! At the time when the goal was set, the initial travelling speed was not known and a method was developed for measuring it using GPS technique. In the Bicycle Account the development in travelling speed can be followed from 15.3 km/h in 2004, through 16.0 and a promising 16.2 in 2008, to a disappointing 15.8 in 2010, heading towards 16.8 km/h in 2012. Hopefully, you can see what we achieved in the next Bicycle Account which will be published in 2013.

The Bicycle Account has always included the cyclists' feeling of safety. Recently, safety as such has also been included as a goal – an important one, but not the only one.

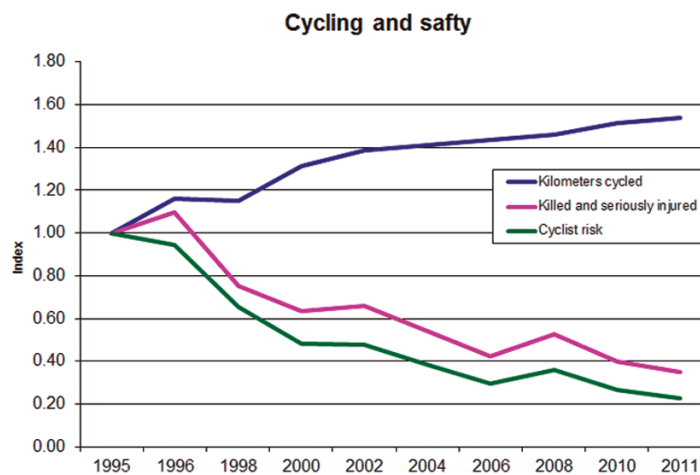
## Why establish more cycle tracks?

During the 1990s and the beginning of 00s, cycle tracks were established slowly in Copenhagen, as financing was scarce. I always disliked cycle lanes, as they only mark the cycle area with a white line. Nevertheless I ended up suggesting we tried them out. My bosses were against it in the beginning, but on the other hand lanes are cheap, and in the end it was backed up by the administration and decided by the politicians to mark cycle lanes along five major roads in the inner city. I think the lanes proved better than nothing. These days we are updating the original cycle lanes to proper cycle tracks on most of the five roads.



Safe and secure intersections in Copenhagen also allow easy passage for cyclists. This design shown uses a 1.5m wide cycle lane while another design takes the cycle track right to the stopline.

Development in risk for cyclists in Copenhagen, the more cyclists the lower the individual risk (and even fewer accidents).



The overwhelming demand is still for more cycle tracks. Ask the citizens, the planners and the politicians. Experience has shown that you can't kill the cycle track, even though a couple of Danish accident analyses have shown that establishing cycle tracks may be dangerous to cyclists. If the narrow sighted premises for these investigations were accepted, the result would be that cycle tracks should not be established or at least be shortened at intersections; the philosophy being that "planning by fear" will keep cyclists on their toes in the intersections so to speak.

Cycle tracks, designed so cyclists are safe, feel safe and can maintain a high travelling speed, are what is necessary to convince more citizens to cycle. Experience in Copenhagen has shown, that the more cyclists there are, the higher the safety. Therefore we continue to build more cycle tracks.

It is only true that cycle tracks may be dangerous if you do nothing to prevent accidents in the intersections. These design problems can be solved with a toolbox of solutions including blue cycle crossings, withdrawn stoplines for cars and pre-green for cyclists.

My conclusion, based on my experience in Copenhagen, is that cycle tracks are necessary to encourage cycling and when a "critical mass" of cyclists has been achieved, it makes car drivers realise that they may expect cyclists to be around any time. A win-win situation for cycling.

### **New and stronger political focus on cycling from 2006**

In late 2005, for the first time, an election campaign for the Copenhagen City Council was run partly on better conditions for cyclists. The two politicians mostly involved in the cycling campaigns were elected as Lord Mayor and Deputy Mayor for the Technical and Environmental Administration.

When in office, the deputy mayor invented the "Eco-Metropolis. Our vision for Copenhagen 2015". It included 11 goals, 3 of which affect cycling. The vision focuses on environmental issues and city quality issues and acknowledges that cycling contributes to the city qualities of Copenhagen.

One of the cycling goals was that Copenhagen should aim at getting a 50% bicycle share in commuting to workplaces and educational institutions in Copenhagen. This is very ambitious, as compared to the former goal of 40%. The other two goals were about safety and cyclists' feeling of safety. We should aim at a 50% reduction in accidents to reduce Killed and Seriously Injured cyclists to 59 in 2015 (KSI was 92 in 2010, according to the Bicycle Account). Also 80% of cyclists should feel safe in traffic in 2015 (as compared to 67% in 2010).

The Eco-Metropolis was driven by politicians (in contrast to the earlier civil servant driven policies). It was followed up by substantial financing of new cycling infrastructure – more “carrots” if you like.

## Focus on cycle infrastructure and wider cycle tracks on Nørrebrogade

One remarkable example of better cycling infrastructure is the complete redesign of Nørrebrogade. It is not just a project which, by widening the cycle tracks, solved the cycling capacity problems with a growing number of cyclists on the narrow, first-generation cycle tracks. Pedestrians have got their space back and pavements have been widened even more on the sunny side of the street. Also buses got better conditions. No thoroughfare for cars resulted in a 50% reduction in the number of cars. The busiest part of Nørrebrogade now has 40,000 cyclists per day passing through. The first phase was finalised in the beginning of 2012 and the second phase will be realised in a couple of years.

## Cycling strategy 2015

In 2009, it was decided that the intensive political focus on cycling issues and a fast growing number of projects e.g. cycle tracks and other cycling infrastructure, should be handled in a new Cycle Secretariat. Besides, the softer cycling issues too, like nursing the Copenhagen cycle culture, running campaigns etc. needed attention. Simultaneously, cycling issues are an integral part of what is dealt with in the Department of Traffic.

On the political level, a new cycling strategy 2011–25, “Good, Better, Best”, decided unanimously by the Copenhagen politicians, has replaced the outdated “Cycle Policy 2002–12”. This strategy further develops the goals from both the Cycle Policy and the Eco-Metropolis, specifically the goal that 80 % of cyclists should feel safe riding in traffic, and is still what we are aiming for by 2015. However, by 2025 it should be 90 %!

A so called “PLUSnet,” with higher standards than the existing cycle tracks is intended to update the major infrastructure and especially the cycle tracks from two to three lanes. This implies widening many existing 2.0–2.2–2.5 m wide tracks to 2.8–3.0 m. This will in time allow “social cycling” on 80 % of the PLUSnet, meaning that two can cycle abreast while a third is overtaking. Cycle tracks even wider than 3.0 m are sometimes necessary from a capacity point of view, resulting e.g. in 4.0 m width on sections of Nørrebrogade.

## No city is an island

Study trips to Dutch cities especially, visitors coming to Copenhagen, conferences etc. have given a broader perspective and enabled us to better understand how Copenhagen in some respect is similar to some cities and different to others.





Nørrebrogade second generation cycle tracks (3-4m wide) established in 2011 and 12. As the blue cycle crossing indicates, the cycle tracks have been widened from the first generation standard of 2m up to the present 3-4m.

Cities are very dependent on government initiatives, economic incentives and bicycle friendly legislation, Road Standards etc. In Denmark, Road Standards for cycling infrastructure is fully integrated in the overall standards. But Road Standards are by nature conservative. It takes years to change them, even in bicycle friendly Denmark!

National Road Standards are the framework for how bicycle friendly cities are allowed to be. I believe that Road Standards are a national issue and they should not be the same all over, not even in Europe. An example illustrating this is a rule in the Danish Traffic Act, regulating how cyclist must turn left; first go to the opposite corner and then stop before continuing to the left. This of course influences the Danish Road Standards when it comes to intersection design. Therefore we don't use bike boxes in Copenhagen – we won't tempt cyclists to make left turns where they end up in the middle of the road in a signalized intersection.

Bicycle friendly American cities recommend more bicycle friendly solutions, challenging the national road standards in the 2011 "Urban Bikeway Design Guide". So does the Danish Cycling Embassy in the recently updated publication "Collection of Cycle Concepts 2012".



Danish left turning rule keeps cyclist to the right before turning left.

The recent Finnish publication “Best European Practices in Promoting Cycling and Walking” also offers a lot of inspiration. The “CROW Design Manual for Bicycle Traffic” (regularly updated even in English) presents Dutch style cycling infrastructure as an inspiration to others. To conclude, I suggest that you can’t just copy-paste solutions but you can be inspired by others.

The ambition of the Copenhagen Cycling Strategy is to make Copenhagen the world’s best cycling city. Join the friendly competition!

**Niels Jensen**

niejen@tmf.kk.dk

**Photo credit**

All illustrations are the authors except where it is stated otherwise

# The First Step in Developing a Bicycle Infrastructure - The choice of Seville by bike

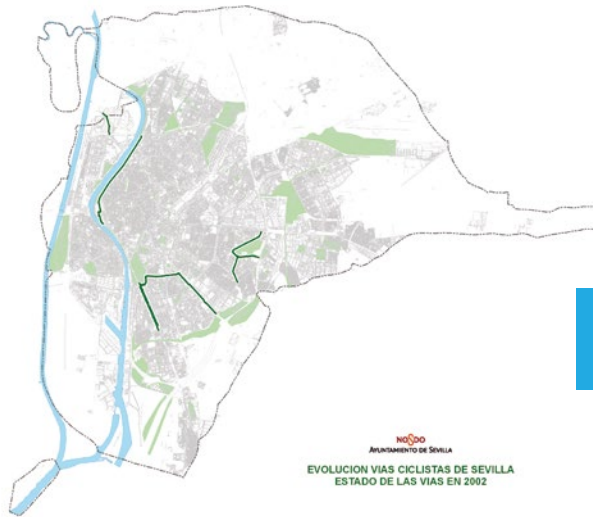
Virginio Moreno, Planning Department, Head of Projects and Works,  
City of Seville, Spain

## Introduction

The first project for the implementation of a traffic lane specifically dedicated to cyclists in the city of Seville was developed in 1994-95. Its route runs along the riverside walk on the left bank of the Guadalquivir River Basin, from the Triana bridge to the Alamillo Bridge, a distance of 3.5km, and its function was essentially for leisure and recreation. During the next ten years, more sections were built, reaching a total of about 12 km, representing less than 1% of the length of public, municipally owned road.

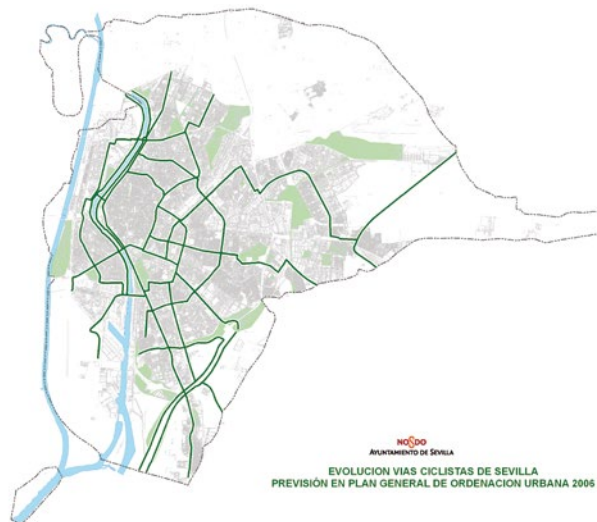
A new General Plan of Urban Planning of Seville has been under way since 2001, in which a regional strategy for urban mobility will be formulated based on the development and integration of all systems and modes of public transport in the city, already existing or planned: railroad, subway, urban and metropolitan reserved platforms, the bikeway network and the pedestrian network, including strengthening non-motorised forms of transport (pedestrian and bicycle).

The concept that the bike should have its own space, segregated from other modes is a fundamental key to make it a real and effective form of transport in the city, and to gain the support and trust of citizens.



**Graphic 1.**  
Cycle routes in  
Seville - 2002

**Graphic 2.**  
Network of Cycle  
Routes proposed  
in the PGOU of  
Seville - 2006



## The design of the main network of cycle routes in Seville

The next step in specifically developing the actions relating to the bicycle was the elaboration of the Bicycle Master Plan, which set out the main measures to be adopted by the city of Seville during the period 2006-2010. This document defined the policy programme to promote the bicycle as transportation to service the new system of access



**Photo 1.** Rondas del Centro Histórico

**Photo 2.** Paseo de las Delicias



and mobility designed for the city of Seville. In regard to the construction of specific infrastructure, it envisages a network of urban bikeways with a total length of 77 km for the exclusive passage of bikes through eight urban routes, which cover the entire city connecting suburbs with the centre. As a general design criteria, it has been proposed to adopt two-way lanes of 2.5 m average width, physically separated, except for those stretches that are specifically designated otherwise. Their route for the most part follows the platform sidewalk, at the expense of reduced parking spaces or driveways occupied by illegal parking on double lines. The necessary elements to ensure functionality and safety will be installed as well as specific signalling and traffic lights.

**Photo 3.** Portugal Avenue  
- Maria Luisa's park



**Photo 4.** Intercity bus  
station: Plaza de Armas



The existence of cycling infrastructure in the cities is always an important incentive for the use of bicycles in certain urban travel. However, the selection of a particular mode of transport for a city trip depends largely on a general policy for ensuring accessibility and largely on the chances of finding parking at a moderate distance from the destination. It also depends on cultural factors and lifestyle prevailing in the city, and may be conditioned by the need to access various activities throughout the day. The chain of reasons for daily travel may also be an ally of pedestrian movement and the bicycle, if the city centre, neighbourhood centres and axes have an urban quality that makes sure these movements are carried out effectively, comfortably and enjoyably. A large number of trips is concentrated precisely in these areas for various reasons: work, trade, service, study, culture and entertainment in general.

The definition of the network of bikeways from Seville took shape on a few main routes from the analysis of urban components and functionality of a wide road, and information gathered in field work. The intention was that this network would not only serve to channel the demands of initial trips into some form of common patterns, but also to generate other patterns that previously were very difficult, either due in some cases to the risk resulting from the movement in some places, or in other cases by the excessive length or shortness of the trips. We began the analysis with the design of a theoretical network based on the main relationships between neighbourhoods and the historic centre, major facilities and public spaces, elements of transportation and city-level services and especially intermodal centres. These routes were then adjusted, depending on the location of other equipment of lower rank (schools, markets etc), shopping streets, neighbourhood centres and other nodes of attraction / generation of trips. We also considered the information on the use of the bicycle and the possibilities for future developments. This allowed a programme to be defined to develop the cycle network based on a territorial balancing that takes the form of providing all the neighbourhoods of Seville with bicycle infrastructure within the district, and with easy connectivity with the local road network.

Based on these considerations and analysis, a network of eight main routes was organised that comprises the network of urban structure of bikeways. For this strategy to succeed, it was considered important that this principal network was operational in most of the sections in the shortest time. This was made possible by its classification in the General Plan of Urban Planning as a basic infrastructure of the city, which has allowed accurate economic backgrounds for its complete implementation in less than 12 months.

Also, we established a series of measures to support the development of bikeways and a set of complementary programmes for this strategy. Citizens must perceive the bicycle as an alternative form of transport - effective, safe, useful and beneficial to the entire city. The new infrastructure did however, cause inevitable conflicts in the beginning.

## Cycle parking

One of the essential measures was the installation of bike racks in strategic and accessible points of the city. The bicycle, as a means of transport, needs to be parked in a safe place and near the point of destination.

The location of these parking spaces is a specific task to be developed over the short and medium term. It is linked to the network management, to be developed in parallel with the extension of the neighbourhood network, so that the construction of a lane on a street or the signalling of a route priority should be associated with a location study of bicycle parking, and thus satisfy the demands generated by the possible existence of infrastructure.



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**Photo 5.** New Plaza Town Hall

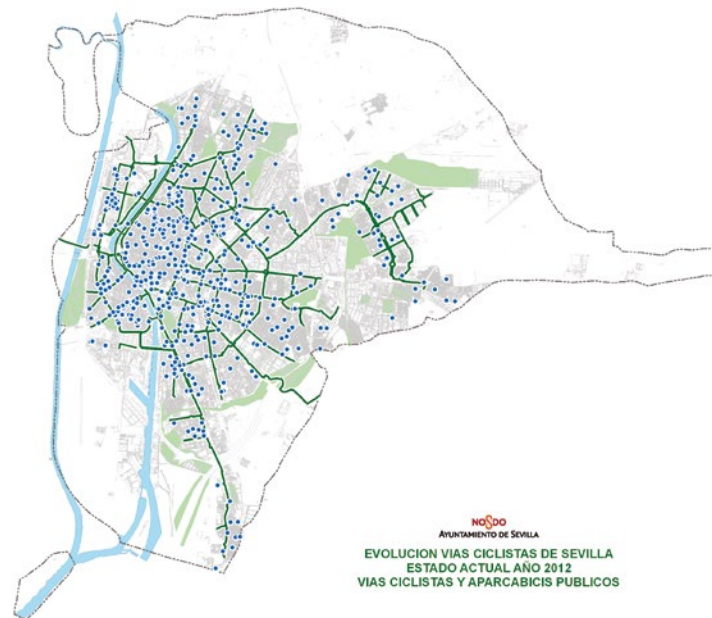
**Photo 6.** Central railway station of Santa Justa

**Photo 7.** Central railway station of Santa Justa

In both the location of bikes parks and the planning and management of the network of neighbourhood routes, it is important to have the involvement of local sectors supporting non-motorised modes of transport. It's a less expensive measure than the construction of lanes and allows the citizens to recognize the cycling infrastructure and the value of using a bike to have access to the centre of attractions that has this service.

In this first phase, 120 modules of cycle parking were installed, with 1,200 places distributed in public spaces in areas of high concentration of users (schools, libraries, institutions and public services in general). A list of financial allocations, equipment and public spaces located within 300 meters from the main network of bikeways was developed, in order that the installation of parking around town should be evenly distributed. According to the new regulations in the General Plan of Urban Planning of Seville, there is an obligation to provide places for bikes in the new parking garages to be built in the city at a ratio of one for every ten places for motor vehicles. Urbanisation projects in new areas such as redevelopment of roads must also include exclusive spaces for parking bicycles, including proper supports.





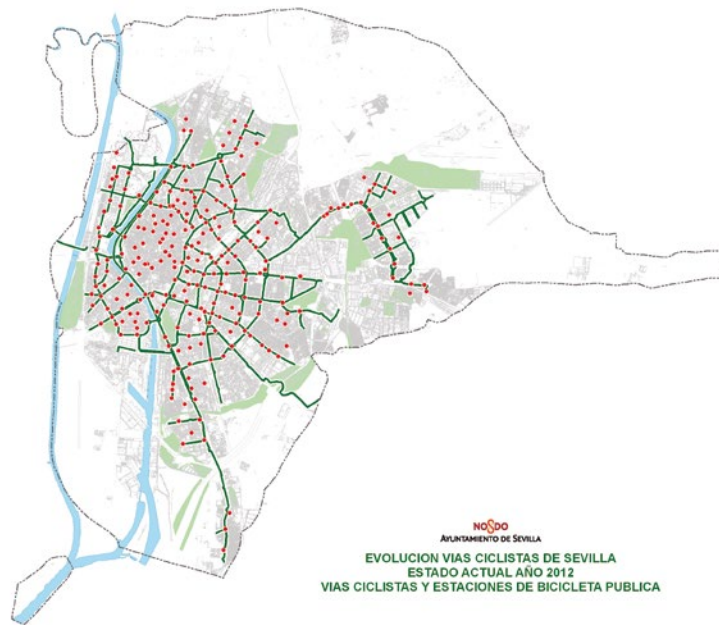
**Graphic 3.** Network of Cycle Routes in Seville and location of cycle parking in public spaces - 2012.

In this section, special mention should also be made of the contribution of the University of Seville, which has been increasing the supply of safe parking for bicycles inside their facilities, exceeding the 2,500 places, which are used heavily by the university community.

The construction of new sections of the bikeway network has continued in subsequent years, reaching a total length of 142 km, which is its implementation in 9.4% of the roads of the city. It has also continued with the installation programme modules for private cycle parking across the city, and there are now 434 modules and a total of 2,160 places.

### The system of public bike rental

The spectacular rise in the use of bicycles in Seville would probably not have occurred if the development of this ambitious first phase of construction of connected bikeways which serve most of the equipment and the central city areas had not been accompanied at the same time by a new, large-scale system of public bikes.



**Graphic 4.** Network of Cycle Routes in Seville and location of SEVICI's stations - 2012.

The chances of success of a system with these characteristics were analysed according to both the levels of use in other cities where it had already been implemented, and the responses of the citizens of Seville when asked if they would use a system of this type. Indeed, in research studies, 39% of the population responded positively to the possibility of using this system, which could mean up to 275,000 potential users. In addition, 29% of respondents who were not yet bicycle users answered in the affirmative, indicating that this service could also serve to encourage people to become regular bike users to get around in the city.

The procedure selected for implementation was the holding of a public competition for a special contract for the installation, management and maintenance of an individualised, public cycle transport system. Financing was to be through a mixed system: through revenue from commercial use of a limited number of advertising media located in the public spaces of the city and direct revenue from fees paid by users. With regards to the service, there are 2,600 bikes distributed in 260 stations dotted across the city that have a total of 4,857 parking points (bornetas), which are accessible to any citizen for travel around town a short distance and usually over short periods of time (20-25 minutes). From each station, the user can get a bike and return it to the same or another station.



**Photo 8.** New Plaza Town Hall

The public response at the operational start of this new system, called SEVICI, in July 2007, was very positive, rapidly increasing the number of annual subscribers to reach a peak of 60,000 in 2009. It has now stabilised at around 52,000. The main reasons for using this system are its comfort, price and effectiveness.

The main features are the following:

- The service operates continuously 24 hours a day, 365 days a year.
- The location and number of stations are located in such a way that the user has the impression that there is a station both near both his start and the destination. The plan and design of the station furniture is such that it does not create urban barriers for pedestrians nor does it have a negative impact on the landscape.



**Photo 9.** San Bernardo intermodal station (suburban rail network, metro, streetcar, intercity buses, city buses, taxis, bicycles)



**Photo 10.** San Bernardo intermodal station

- The system facilitates intermodality. In fact, this is one of its essential characteristics as it allows users who use other means of transport to also use a bike, which would be difficult to transport inside the bus, subway or commuter train.
- The system offers two types of subscription (long-term and weekly). Payment is by credit card. The first half hour is free.
- Bikes have unique components of brakes, locks on the wheels, handlebars, etc., to make stealing them useless because they cannot be used on conventional bicycles.

**Virginio A. Moreno López**  
vml@urbanismo-sevilla.org

**Photo credit**  
Municipality of Seville

# Cycle Route Networks - Sustrans creates popular cycle routes through public involvement

By Tony Russell, Sustrans, England

## Introduction

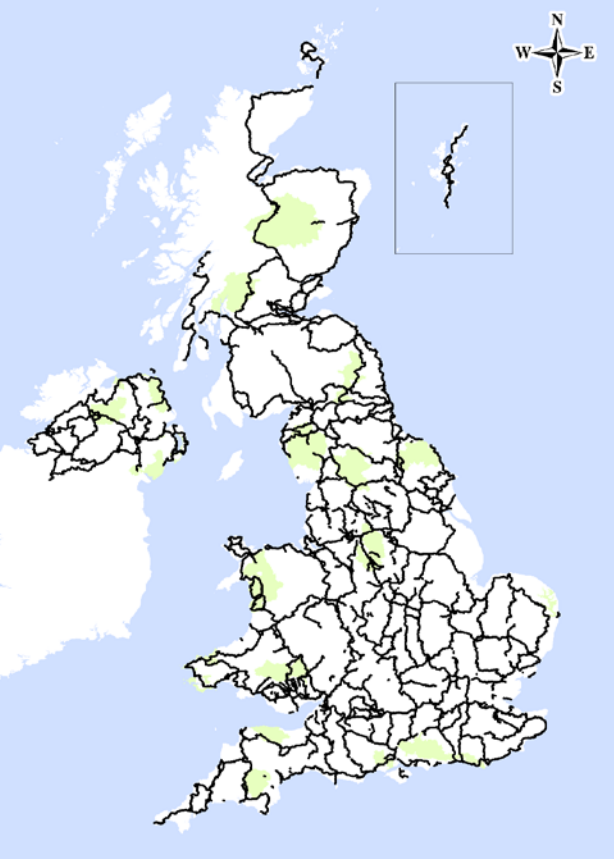
For many years, cycling in the UK declined as car traffic increased and the government saw no reason to attempt to reverse this trend. It was only in the mid-1990s that the many benefits of cycling were recognised by the government and steps taken to encourage it.

Even so, since then provision for cyclists in most of the UK has been largely piecemeal and opportunistic and, with some notable exceptions, has attracted low levels of investment. This has resulted in routes being discontinuous with gaps where satisfactory provision could not be easily achieved, and levels of cycling remaining low – at around 2% of journeys.

In this context, the development of a National Cycle Network (NCN), coordinated by Sustrans (a sustainable transport non-governmental organisation), was seen as a catalyst to promote more cycling – as a strategic initiative to raise the profile of cycling at the national level and to demonstrate the quality of provision required at the local level.

For experienced cyclists, almost all the highway network is available for use. However, many roads are not suitable for the less confident cyclist due to the speed or volume of motor traffic unless a degree of segregation is provided. Thus, whilst many quieter roads are suitable for cycling, considerable investment and political will is required to link these into a coherent network of routes that are safe, convenient, direct, continuous and attractive.

In discussing cycle route networks, this chapter briefly outlines the development of the NCN and its importance for route development at the local level. It then focuses on some particular features of the NCN that are seen to have contributed to its success.



A strategic intervention:  
National Cycle Network map of UK  
Graphic: Sustrans

## The national network as an exemplar project

In 1995, the National Cycle Network was launched in the UK and is now over 21,000 km in length; about 30% of it is along routes free from motor traffic, with the remainder being on public highways. Its heaviest use is within urban areas, where it is generally signed through the town / city centre - passing within 1.6km of 55% of the population. Several of the NCN routes are also designated as EuroVelo routes, part of a network of long distance cycle routes across Europe.

From its earliest days, the NCN was always conceived as a strategic initiative to raise the profile of cycling at the national and local level, as well as providing a place where both adults and children could learn to cycle. As such it has provided an important mechanism to engage with government more widely than just transport departments, in particular with health and education.

The NCN has been developed through several hundred separate projects under the coordination of Sustrans. Partnership working has been fundamental to this, embracing local and central government along with a wide range of other public sector, private sector and non-governmental bodies.

Within built up areas, national routes provide direct access to residential, commercial, retail, education and employment areas forming part of the local cycle network.

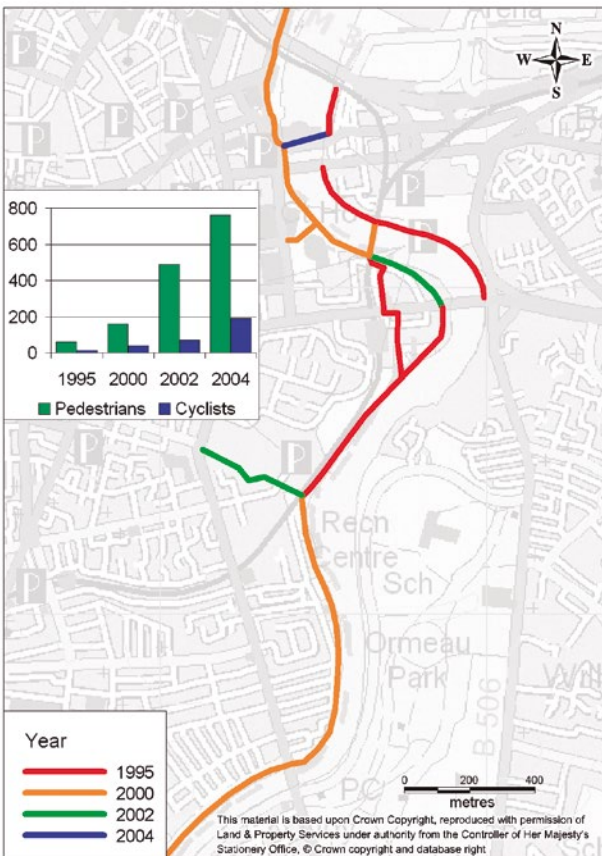
Outside these areas routes are aimed mainly at touring cyclists with others linking small rural settlements to each other. Some of the recreational routes bring substantial economic benefits to the areas they pass through.

In order to provide the appropriate physical environment to achieve the goal of encouraging more cycling, Sustrans published design guidelines (Sustrans 1997). These call for NCN routes to be suitable for use by a less confident adult cyclist, a family with young children or a sensible, unaccompanied twelve-year-old. Routes should be of a particularly high quality and be:

- safe, continuous and attractive to encourage new cyclists
- useful for all manner of routine journeys for local people and existing cyclists
- so memorable for visitors and tourists that people starting with a recreational trip are persuaded to cycle more

Longer sections of traffic free route can serve as an attraction in their own right, providing a safe environment where novices can develop confidence before cycling in a highway environment.

Developing links onto an NCN route is seen as critical for increasing its level of use. The graphic below illustrates how, in the city of Belfast, usage of the NCN has increased as more connections have been provided into the surrounding areas.



Added value of local networks: use of the NCN in Belfast has increased as a local cycle network has been developed around it  
Graphic: Sustrans

Total usage of the NCN has increased year on year, and in 2011 Sustrans recorded its biggest ever growth in the number of people cycling on the NCN – an 18% increase.

## Art and the travelling landscape

A key aim of the NCN is to popularise cycling in the UK, and the Art and the Travelling Landscape programme enhances the experience of using the route, through artwork and careful design. The programme is based on 20 years of experience in pioneering and commissioning innovative art in public places across the UK, and reflects the enthusiasm, interest and commitment to enhance the Network. Sustrans works with local partners and communities to enrich the walking and cycling travelling experience, making the journey as memorable as the destination.

Many projects have involved working with local children on a series of practical art workshops, perhaps taking them to visit the path and the artist's workshop during the fabrication process. The children may collect information to highlight the significance of a new feature on an important local walking and cycling route, and also to nurture a sense of care and ownership for the surrounding area. They learn to value the experience of slower travel – “when walking or cycling you get to see more. It all just zooms by when you're in a car”.

During one evaluation of artworks along a route by a group of young people, they were especially attracted to works that were interactive, large scale, and colourful and also works that had meaning and references:

- (I like art you can) “play with and learn stuff”
- (it was) “huge, massive, go under it so you're involved”
- (to question about what would attract from a website) “would go and see fish and pencils because they're big”
- (it) “had deep meaning, gives insight into what it used to be here”

In developing the Network, Sustrans has worked with around 100 artists to create over 90 artworks along 14 unique and memorable outdoor linear art galleries that tell people something about the areas they are passing through as they travel along the Network.

## Local networks as part of an integrated strategy

Sustrans has always intended that the NCN should stimulate local authorities into creating their own local networks. Indeed, more recent Sustrans programmes focus on completing local links of comparable standards (Sustrans, 2009).





A "travelling landscape": public art can enhance the experience of using a route  
Photo: Kai / Sustrans

Local cycle network development took a step forward when, in 2005, the government established Cycling England, a non-governmental public body set up to support cycling with the aim of getting more people cycling, more safely, more often. Between 2005 and 2011, Cycling England funded a programme of Cycling Demonstration Towns. The underlying principle of this programme was to demonstrate that, with funding levels of between £10 and £20 per head per year – not untypical in countries with high levels of cycling – substantial sustained year on year growth in levels of cycling could be achieved. Monitoring of the programme has shown encouraging results, with growth rates comparable to other places that have achieved large increases in cycling.

The bulk of this funding went in to improving and extending the existing cycle networks in each town, which in many cases had been little more than the NCN routes. From the outset, Cycling England recognised that this should form part of a much wider strategy that integrated these infrastructure improvements with a wider range of complementary, or "smarter choices", interventions backed up by a strong commitment by senior officers and elected members.



Improved permeability: contraflow cycling  
in a one-way street, Bristol  
Photo: J. Bewley / Sustrans

## Development of local networks

Both demand (existing and potential cyclists) and supply (the quality of existing routes and opportunities for improvements) need to be considered in the development of a local cycle network. Sometimes a useful first stage is to grade the whole of the existing road network to identify which roads are suitable for the less confident cyclist.

There is no standard methodology on how to develop a local cycle network. In some situations, particularly in smaller urban areas, it may be satisfactory to draw up a network plan using local knowledge of the main trip attractors within the area and of the existing and potential routes that could be developed for cyclists. Elsewhere, a more sophisticated approach may be appropriate, assembling data, analysing the potential market, engaging with stakeholders and auditing existing provision, to develop a network development plan and an associated marketing / public engagement strategy, as is being done in Cardiff (Cardiff Council, 2011).



Raising the profile: highly visible cycle parking at key attractors, European Parliament  
Photo: P. Insall / Sustrans

Effective public engagement increases the sense of community ownership of a route  
Photo: J. Bewley / Sustrans



Central to the successful development of a cycle network will be an effective programme for public engagement. Sustrans has developed a range of engagement strategies for different scenarios, the most sophisticated being the DIY Streets project that brings communities together to help them redesign their streets, putting people at their heart and making them safer and more attractive places to live. It's an affordable, community-led alternative to the home zones design concept. DIY Streets was successfully piloted in eleven communities in England and Wales and is now being trialled as a larger neighbourhood-wide scheme in a London Borough.

"As a residents group, DIY Streets helped us to listen to each other. We researched, discussed, disagreed and proposed all sorts of ideas. We held our first ever street party when the project was completed and we plan to keep on celebrating our street." - local resident

## Management and maintenance

The traffic free sections of cycle route, and those using former railway routes in particular, provide valuable space for biodiversity to flourish. Managing these corridors has been shown to attract greater biodiversity as a result of opening up areas that had become dark and thickly wooded strips of land especially in previously neglected urban areas. The NCN passes through some carefully managed land, to which the public now has access and can enjoy the biodiversity present.

The proper maintenance of cycle routes is essential if they are to be attractive, but poses many challenges. Sustrans set up a volunteer ranger programme as a means of maintaining the NCN and liaising with the local community along a route, in particular where Sustrans had a management responsibility or local authorities were reluctant to look after the routes. That programme now has about 3000 rangers.

Rangers are assigned a section of the NCN and undertake practical activities to help to maintain and increase usage of the Network and to encourage the community to walk and cycle more. These include basic path maintenance such as litter picking, vegetation cut backs and ensuring signing is clear and well maintained. They report any issues that they are unable to deal with so they get sorted quickly. Some Rangers act as signing champions and have a particular responsibility for ensuring that routes are adequately signed. Rangers are looked after by a Group Coordinator in each region

As one ranger says “we are especially keen to take the Sustrans message into workplaces since most work journeys are so short and could easily be made by bike or even on foot. But I will also be doing my bit to make sure the routes are well signed and looked



Volunteer rangers undertake minor route maintenance  
Photo: Robert Ashby/Sustrans

after so more people can use them. I have also been encouraging our friends and family members to dust off their bikes and rediscover the road. It's taken time but I think they are beginning to take me seriously and think about the way they choose to travel in their daily routines."

The role offers challenges and rewards, as one group co-ordinator says "it's marvellous to see people out on their bikes on routes I've helped to create but there's still plenty to do. You have to try and think laterally and maybe my career has helped me do that. When you see a problem, you try and solve it."

**Tony Russell**

tony.russell@sustrans.org.uk



# 4

## Safety for Cyclists

**Safety for  
Cyclists**



## 4. Safety for Cyclists

This chapter contains two articles dealing with different aspects of traffic safety. The first article covers analyses of traffic safety for cyclists and contains concrete recommendations for the prevention of accidents through better traffic behavior combined with physical changes to the infrastructure. The second article deals with traffic safety at school, describing the Safe Routes to School projects. It contains concrete recommendations for the development of similar projects as part of a sustainable urban mobility policy.

In her article **Traffic safety and perceived safety**, Anne Eriksson illustrates how to cycle and survive. The main topic is how to promote traffic safety for cyclists covering both driver/cyclist behaviour and the cycle/vehicle itself as well as the road infrastructure. Anne starts with her daily work with traffic safety in the City of Copenhagen, where the main political goal is to increase the share of cyclists while at the same time reducing the number of cyclists injured. She makes the important and fascinating distinction between safety and perceived safety, pointing out that some intersections that are perceived as dangerous are the most secure intersections according to statistics, which shows that safety and perceived safety are not always aligned. The cyclist's behavior is important for safety and this is taught to children and young people. It is equally important with car driver training to assess the risk related to cars and cyclists. In her article, she uses statistics to examine the causes of accidents involving cyclists. High speed is the main cause of accidents resulting in serious injury or death. She also highlights accidents with heavy vehicles. Anne also describes typical accidents involving cyclists which occur at intersections, illustrating some of the measures taken to improve traffic safety in Copenhagen for example, separate traffic signals with pre-green for cyclists and withdrawn stop line for cars. Her main advice is to put safety first if you want to improve conditions for cyclists.

In their article **Safe routes to schools**, Pau Avellaneda and Esther Anaya describe the development in the concept of safe routes to school from road safety to community building. They trace the historical development of the projects from road safety initiatives focusing mainly on encouraging active travel to school, up to the present day, when they see it being a part of a global policy covering the recovery of urban space,

traffic calming and promotion of walking and cycling. The projects have many other valuable benefits such as education and engagement of school children and their families in the participative process and also community building. Although there is focus on Barcelona and Spain in general, the article also moves outside these areas, citing examples from UK and Italy amongst others. The authors describe the different stages in the development of a Safe Routes to School project. Although each case will be different, the Action Plan they outline, contains broad categories of action which will be applicable everywhere, such as: "Public space interventions," "Educational and formative actions," "Communication actions," and "Accompanying actions." They see the possibility of using Safe Routes to School as a starting point to reexamine many aspects of mobility, urban space etc, or of integrating it as an important part of a global, sustainable, urban mobility policy.

# Traffic Safety and Perceived Safety - How to cycle and survive

By Anne Eriksson, civil engineer, traffic safety specialist, Copenhagen Municipality, Denmark

Every day in the Traffic Department in Copenhagen we receive many mails and phone calls from cyclists and other road users. It is one of my many tasks to answer their questions concerning traffic safety. I have access to a data base with all traffic accidents in the city that the police register and when I examine the accidents at the intersections I often find that places that are perceived as dangerous by the drivers/cyclists are some of our safest intersections. How can this be?

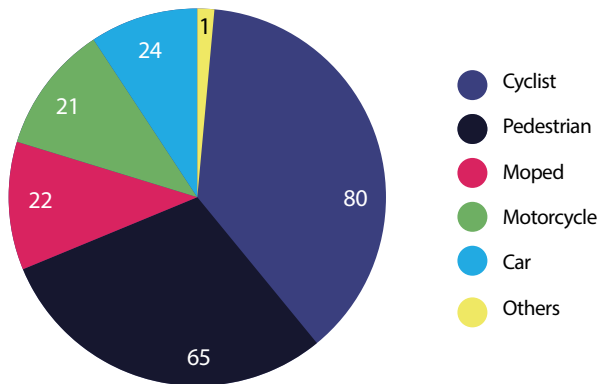
In traffic safety work we make a distinction between safety and “perceived safety”.

**Traffic safety** is related to objectively registered problems with traffic accidents. In Copenhagen a major part of this work is dedicated to the safety of cyclists as they make up a large part of the injured in traffic. This is shown in figure 1.

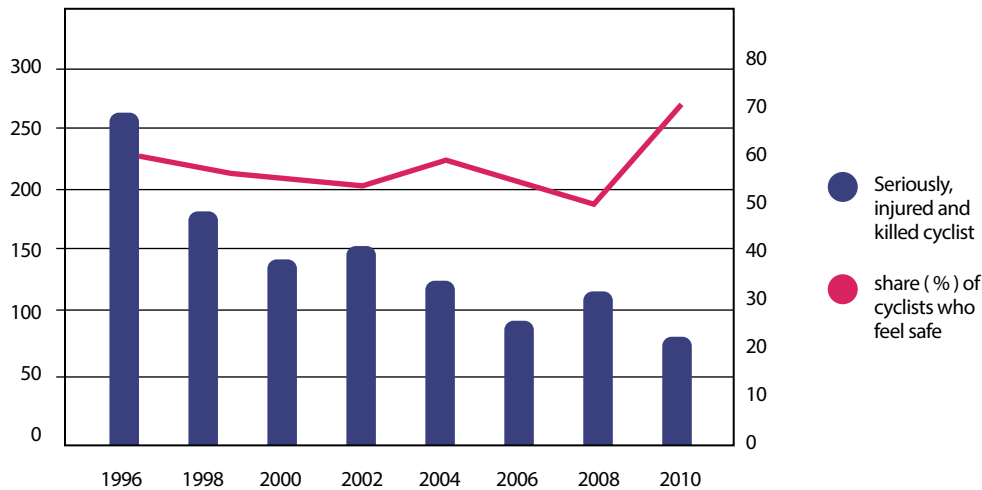
Our political goal is to increase the share of cyclists and at the same time reduce the number of cyclists injured; and we are doing well. Traffic injuries and fatalities are a great cost for society and cause pain and grief for the victims, so cycling safety is important for us.

**Perceived safety** is the subjective feeling that is created when the road user interacts with the traffic environment and with the other road users. Different people perceive a traffic situation differently, whether you are old, young, have experience or not.

Cycling has always been considered an important means of transport in Denmark, also outside the cities. The Danish Road Standards (Danish road design guidelines. See Appendix) treats safety for cyclists with great importance and relies on Danish and



**Figure 1.** Seriously injured (209) and killed (4) in traffic in Copenhagen 2011. Source: Danish Accident Data Base

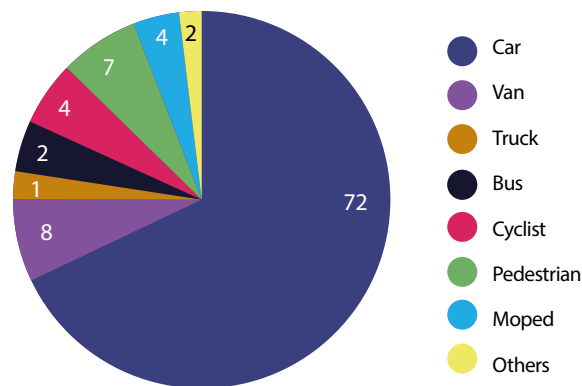


**Figure 2.** Seriously injured and killed Cyclists and Cyclists perceived safety. As can be seen, safety and perceived safety does not always follows each other. Source: Copenhagen bicycle account 2010 and Danish Accident Data Base

international experience regarding effective traffic safety measures. In Copenhagen we use these recommendations and we conduct our own experiments as to what improves safety for cyclists and at the same time provides a good cyclist flow.

### Accidents with cyclists

We know little about single vehicle (= bicycle) accidents and we know more about accidents involving the cyclist and another road user.



**Figure 3.** Other party in accidents with cyclists in Copenhagen, 2009.  
Source: Danish Accident Data Base

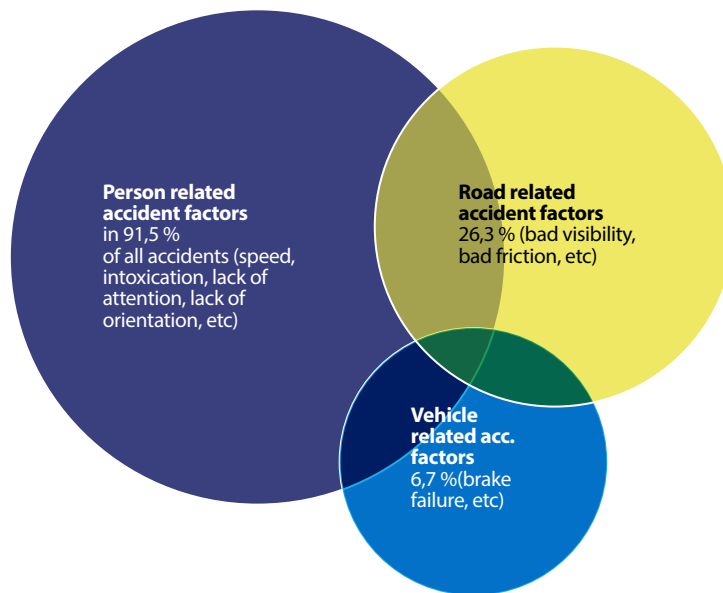
The information on accidents with single cyclists comes from hospital reports, as they are rarely reported to the police. Some accident circumstances are; slippery road surface (snow, ice, wet leaves etc), holes in the road, stones, loose belongings, like shopping bags or clothes, getting stuck in the wheel or chain. Transporting small children without a child seat can result in accidents when the child's foot gets stuck in the wheel.

Surfaces for cyclists require high quality maintenance, higher than the road surface, as even a small crack or pot hole can have very serious consequences.

The pie chart shows the other party in accidents with seriously injured or killed cyclists in Copenhagen. Not surprisingly, the most common is the car as it is the most frequent motorised vehicle. But accidents with heavy vehicles like busses and trucks more often result in more serious injuries and a higher share of killed.

### Accident prevention and injury reduction

This paragraph will give an overview of measures that reduce the risk for accidents and injury, and also I will touch upon how the measures affect perceived safety.



**Figure 4.** Accident factors.  
Source: Transport Research Laboratory 2003

Figure 4 shows the factors that contribute to accidents and it can be seen that the person (the road user = driver/pedestrian/cyclist) plays an important role in accidents. Accidents can be prevented by using measures that change the behavior of the road user towards more safe behavior. Some safety measures also increases perceived safety but not all.

### The cyclist and the bike

Cyclist behavior is important for safety. As a cyclist you need to know the basic rules in traffic and the basic signs. In Denmark, safe cycling is taught to children and young people. It is a discipline in the municipal and private schools. It includes cycle tests, checks of safety features like brakes and lights, and police visits where the children learn about traffic rules and signs. When you are competent and your bicycle is safe you feel safer in traffic.

Accidents between a vulnerable road user (cyclist or pedestrian) and a motorised vehicle are not always caused by the driver of the motorised vehicle. The Danish Accident Investigation Board<sup>2</sup> has concluded in several in-depth analyses of cycling accidents that



**Figure 5.** Courses for adult immigrants increase the participants' feeling of safety. Photo: The City of Copenhagen

**Figure 6.** Safety features on a bicycle can be: brakes, chain protector, child seat (if you are transporting children), reflectors, lights, skirt guard, bicycle basket. A helmet reduces head injury. The municipality gives free bike checks, hand out reflectors and helmets etc. Photo: Troels Heien



the car driver could not have avoided the accident. This includes for example, accidents where cyclists made left hand turns in front of cars without looking first.

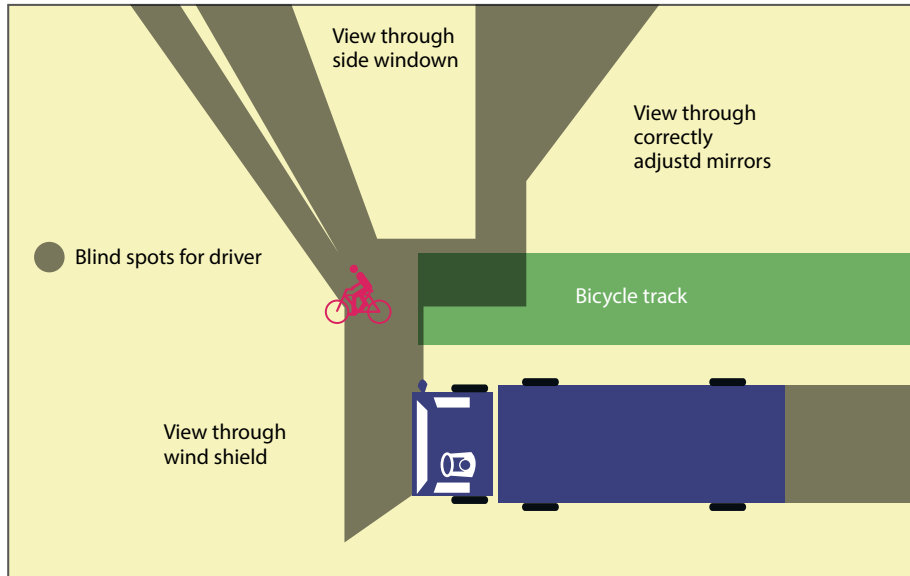
### The car and the driver

As I mentioned before, motorised vehicles are by far the most common “protagonist” in collisions where cyclists are injured or killed. To avoid accidents and reduce injury, a lot can be done to improve driver behavior and to ensure that cars are designed to be safe.

Driver training needs to be adapted so that drivers can assess the accident risks related to cars and cyclists. In Denmark, you know that in order to pass the drivers’ test you have to glance over your right shoulder so you can see the cyclists when turning right. All Danes know how to cycle. This makes them safer drivers. Maybe a trip by bike could be made compulsory for everyone who is training for a drivers’ license?

Rear view mirrors for pickups and trucks are very important as the drivers’ visibility through rear windows is little or nothing, see figure 6. The Danish Road Accident Investigation Board (HVU) analysed 25 serious accidents between right turning trucks and cyclists going straight ahead. Their findings indicated that in all the accidents the driver had failed to see the cyclist at the crucial moments when turning. The majority of the cyclists had been run over by the front wheels.

### View from lorry driver to cyclist



**Figure 7.** Blind spots (grey) for lorry drivers. Visibility can be improved by glass doors and low cabins.  
Source: HVU, Danish Accident Investigation Board 2006

The report came up with many recommendations for vehicles and drivers and for the road design. Front and side underrun protection can reduce the risk of cyclists getting caught under the truck. Badges and other decorations on the car windows reduce the visibility: they should be of limited use or prohibited.

After the report was published, the Danish police intensified the control of badly adjusted mirrors. Several transport companies also gave better instructions to their drivers on how to adjust mirrors.

Better safety can be achieved by cooperation or agreements between the actors when buying transport. When the contract for garbage collection in the City of Copenhagen was renewed for a 5-year period it included requirements for safer trucks with low cabins and glass doors.

Cars and their design is big business and the safety of the cyclist or pedestrian can be forgotten in the search for a flashy design. Some features like front guards (bull bars) can be fatal for cyclists even at low speeds. In Europe, the Euro NCAP institution gives



stars to car models for safety. The Euro NCAP now assesses cars' safety in collisions with pedestrian. The next step should be the car's safety in crashes with cyclists.

## Road design and cycle safety

In road design, the principles for safety are to minimise the number of potential conflicts between road users, to inform the road user of possible conflicts and finally to ensure that the drivers drive at a suitably low speed when there is a possible conflict. Speed is the single most important factor when it comes to being the cause of accidents which result in serious injury or death. Also, the higher the speed, the more serious the accident gets. So low speed is good both for safety and it is also good for perceived safety for cyclists.

An aspect in road design where safety and perceived safety go in opposite directions is space. More space around you and your vehicle is often perceived as safer. But when a traffic area is designed in a very spacious way with large radii in curves and wide car lanes, the car drivers increase their speed and this increases accidents and injuries.



**Figure 8.** "Catch the cyclists at a glance - not with the door", campaign to prevent accidents with cyclists and open car doors. These accidents are frequent in shopping streets.  
Photo: Gottlieb&Co

## Road sections

There are principally three different layouts for cyclists on road sections; cyclists and other vehicles share the road, cyclists go on a separate cycle track or cycle lane, sometimes mixed or shared with pedestrians, or cyclists go on separate paths, at a distance from or independent of the road.

## Cyclists on the road

If the cyclists and cars are mixed it is important to ensure low speeds, preferably lower than 50 km/h. This can be done by using speed reducing measures, but avoid the type that can cause cyclists to fall, like plant boxes, poles, kerb stones etc. The simplest speed hump, made of asphalt across the whole width of the road, is the best for cyclist safety. Speed cameras are also effective for reducing car speed.

## Cyclists on cycle tracks or cycle lanes

In Denmark, the cyclist is considered to be a vehicle and therefore the cycle tracks are mostly placed next to the car lanes and are unidirectional. If the road has car parking lanes these should be between the car lanes and the cycle tracks/lanes to reduce the possible conflicts between parking cars and cyclists. This also gives the cyclist a feeling of safety but accidents between cyclists and car passengers who open doors still present a risk.

## Cyclists on separate paths

When cyclists are separated totally from car traffic they are safe from crashes with cars. But still safety needs to be taken seriously when designing a separate path. A narrow, badly lit cycle path with sharp turns in combination with slippery surface presents a serious risk and cannot be used if you take cycling seriously.

Separate cycle paths can be perceived as insecure, especially at night, and this can make cyclists avoid a path and choose the road. In some neighborhoods or areas it might be better to make good cycle infrastructure next to the road instead of paths that won't be used.

## Intersections

Low speed and good visibility are important in intersections, small and large. In Denmark we use blue thermoplastic or marking with "sugar cubes" (dotted line markings 30X50 CM) to mark the cycle track through the intersection. In smaller, non-signalized intersections we continue the kerb stone bordering the cycle track on the main street to lower the car speed when crossing the cycle track.



**Figures 9 and 10.** "Capture island" Gyldenløvesgade - Nørre Søgade, Copenhagen. The island and the signals omit the conflict between right turnings cars and ongoing cyclists. Photo: Copenhagen Municipality

To reduce the risk of accidents between right turning cars and cyclists going straight ahead the cyclists should be close to the cars before the turn. To be close to cars makes cyclists feel unsafe but it makes the driver and the cyclist more aware of each other. Close to the intersection there should be no parking, no bushes or other barriers between cyclist and driver. Even mixing turning cars and cyclists in the same lane has proven safe.

### Signalized intersections

When the cycle tracks continue up to the intersection the cyclists can have their own traffic signals. This allows for two seconds pre-green for the cyclists and gives them a head start which makes them more visible. This can also be done by withdrawing the stop line for the cars 5 meters.

A high degree of separation in signals makes the cyclists feel safer and can also reduce the risk of accidents. This is true however, on condition that the red light is respected, both by cyclists and cars. Signals have to be clear and very visible to reduce the risk of being overlooked or misinterpreted.

### **Final advice**

Put safety first if you want to improve conditions for cyclists. As I have mentioned, most safety features also improve the feeling of safety for the cyclist. Traffic is a risky business and when you feel a bit unsafe in a traffic situation you also pay more attention and so you act in a safer way. Information about safe behavior makes cyclists more competent and thus increases the feeling of safety.

**Anne Eriksson**  
anneri@tmf.kk.dk

# Safe Routes to School - From road safety to community building

By Pau Avellaneda, UAB and MSc. Esther Anaya, BACC, Barcelona, Spain

## A sustainable mobility and road safety project

Safe Routes to School projects aim to encourage and facilitate children and young people travelling to school independently and actively (by walking or cycling), through signalled and adapted routes that make this activity safe and appealing.

The first Safe Routes to School projects were born in the first half of the 1970s, but it wasn't until the 1990s that they were broadly disseminated. The emergence of the car in the urban scene, with the subsequent loss of public space, the increase of insecurity on the roads - especially for vulnerable users - environmental pollution and a general decrease in the quality of life, were the main reasons for the creation and dissemination of these projects. Road safety is the core of these early initiatives, and the situation lead to Safe Routes to School focussing mainly on encouraging active travel to school.



“Muévete en bicicleta” (Getting around by bike). A planning instrument with the aim of promoting bicycle use for transport in the Safe Routes to Schools. Palau-solità i Plegamans (Barcelona)  
Source: City Council of Palau-solità i Plegamans

As the years have gone by, the initial concept of Safe Routes to School has been broadened to include other aspects that had not been considered at the beginning. The idea that actions should not only be aimed at the protection of vulnerable users (cyclists and pedestrians) but also at changing the behaviour of those who make them vulnerable, has become more relevant. Therefore, current initiatives are framed in a global policy aimed at the recovery of public space, traffic calming and promotion of walking and cycling. Efforts are made to achieve these policies through *push & pull* measures, that is, measures that benefit the mobility modes that are intended to be promoted at the same time as they discourage those mobility modes causing damage to the people and the environment.

When Lenore Skenazy was called “America’s worst mother” for allowing her 9-year-old son take the metro on his own, she decided to launch the blog “Free range kids” and created a whole **movement for children’s independence**. This concept is used in mobility campaigns such as the homonymous one in the UK, designed by Sustrans organization.

### A cross-cutting, education, participation and community building project

The concept of Safe Routes to School broadens and improves with more aspects. Although the key aspect for its analysis is the route that children and young people take every day from home to school, the project has a great potential to create a change of behaviour if it is also designed with educational purposes in mind. In this sense, Safe Routes to School should be seen also as an educational tool for training in involvement in participation processes, ethical values and critical capacity. All these will be aimed at producing more committed, respectful, responsible, independent and caring citizens.

Image of the exhibition  
“Caperucita camina sola.  
The re-introduction of  
children in the city”  
Source: CENEAM



Furthermore, it must be taken into account that Safe Routes to School is a participative process involving different stakeholders. This means that the feasibility and success of the project will greatly depend on the capacity of these stakeholders for team work and their ability to coordinate the measures to implement. In order to achieve this, a commitment must be established by three main communities of stakeholders. Firstly, there must be a commitment from the *local administration*, through the coordination between the municipal services to avoid isolated public policies and improve efficiency in the management of resources. Secondly, there must be a commitment from the *teaching staff*, who must propose alternatives and promote changes from the participation of the teachers, executive managers, non-teaching staff and, above all, with the participation of the schoolchildren and their families. Thirdly, the commitment of the *neighbourhood* is a key aspect. They can support the project with their active involvement, following basic rules for a good rapport, behaving respectfully with public space and offering help and improving safety for the children that may need it.

In the projects of Safe Routes to School it is necessary to draft a pre-participation plan starting with interviews with the staff in order to help define the relevant stakeholders and the relations between them.

## Action plan

The development of a project of Safe Routes to School has a crucial stage for its success in the execution of the actions planned. Although this action plan will be tailored to each case, in general, it will have to be developed in each of the following fields:

*Public space interventions.* Improvement of public space is a key issue in achieving the minimum levels of safety on the students' routes. Safety should not only be guaranteed but also communicated to children, young people and their parents so that they feel less vulnerable. In this field, actions include traffic management, road interventions, safe crossings and crossroads, street signalisation and improvement of infrastructures and services for the bicycle.

In the city of Barcelona, more than 60 schools have implemented a **Safe Route to School** plan with an important impact on the urban landscape. Changes in behaviour result from changes in the design, readability and interpretation of the streets. All the street users show a more responsible use of the public space and feel safer.



Signalisation of Safe Routes to School in Barcelona.  
Source: P. Avellaneda

*Educational and formative actions.* It's important to tackle the actions aimed at promoting a critical response to the environment. This will allow, on the one hand, a change of behaviour in public space users and, on the other hand, the involvement of all stakeholders with the project. Actions in this field can be addressed to teachers, students, families and city council officers. These actions range from teaching guidance, support in educational actions for the students, production of didactic materials, use of the project for pedagogy, conferences and forums for teachers, families and officers, etc.

Bikeability is a cycling safety training program for children. There are three levels of training to achieve the necessary skills to cycle to school independently and safely. This is certified at a national level (UK). The project is managed by the Department of Transport of the United Kingdom government, which has also delivered a national standard for cycle training.



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Bicicleta Club de Catalunya

Spain.  
Pedagogic projects for primary and secondary.  
Sources: Conbici and BACC

*Communication actions.* All the above mentioned actions would have a low impact if they were not supplemented by communication actions in order to show and disseminate the goals and benefits accomplished. Such actions can be addressed to either participant stakeholders of the project or to the rest of the citizenship. These actions include information about the project in the schools web page or/and in the city council web page, the publishing of leaflets and an electronic magazine, the opening up of party, press and media appearances as well as other possible activities.

In the United Kingdom, city councils hire Sustrans organization. This includes the services of the cycling officers who help dynamise cycling by designing and executing action plans tailored for each school within the "Bike it" program for the promotion of cycling mobility in schools. Once a year "**The Big Pedal**" is organized which is a national competition in which all the "Bike it" schools participate. Schools organize activities during several weeks all over the country in order to get the highest number of students on their bicycles and scooters.

In Italy there is also a national campaign to celebrate cycling to school: it is a series of routes and parades called Bimbibici.



The Big Pedal. Activity of all the “Bike it” project schools at a national level in the UK.  
Source: E. Anaya

*Accompanying actions.* The organization of “bike buses” or cycling routes to school can be a valuable complement to the rest of the actions. The concept is similar to the “pedibus” or walking routes to school, it is about cycling in groups to the school, picking up the children at several “stops” along the route.

In **Italy**, cycling promotion to travel from home to school is included in the national regulations (Legge 19 ottobre 1998, n. 366, “Norme per il finanziamento della mobilità ciclistica”, art. 10). Thus, FIAB (Federación Italiana de Amigos de la Bicicleta) manages the project “**Progetto Scuola**” to promote, amongst other measures, the “Bicibus” (i.e. in Reggio Emilia). In **Belgium**, the organization Pro Velo helps with the organization of the “Velobus”, with the project “**Ramassage scolaire**” (picking up of schoolchildren). In Spain, bike bus projects (“Bicibús”) have been working during recent years in more and more cities. Zarautz is possibly the most significant case, with a high number of children cycling to school trips. The national cycling organization Conbici, launched the project “**Con bici al cole**”, which is still being followed by several schools all around the Spain with bike buses. These are the examples of the school Jorge Guillén en Málaga or the secondary school Rufino Blanco in Madrid, amongst others.



Bicibus of the school Rufino Blanco in the neighbourhood of Chamberí, Madrid.  
Source: Asociación cicloturista de usuarios de la bicicleta, Pedalibre.

## Results

In places where a global vision of the city does not exist or the initial framework is not solid, the project of Safe Routes to School becomes an interesting opportunity to rethink mobility, road safety and public space policies, contributing with new arguments to the decision making processes in these fields. Including children in the evaluation of different aspects of the management or design of the road network or public space in general, usually brings about a change in the perception of planners and managers which, at the same time, modifies their definition of mobility, road safety and public space policies. In places where the global vision of the city does already exist, this initiative will sum up the actions undertaken in the framework of a wider policy about sustainability and the recovery of public space. In either case, the integration of a Safe Routes to School project with the rest of the projects in shared fields of action or/and objectives is a key element for its success and to achieve synergies.

**“Civitas Archimedes”** programme’s 1/2 main objective is to help cities adopt ambitious measures and policies towards sustainable urban mobility. In San Sebastián-Donostia, Safe Routes to School is one of its integrated 18 measures.



Activity “En la calle todos pintamos” (In the street, we all paint) developed in the frame of the Sustainable Mobility Week in Lleida (Spain).  
Source: City Council of Lleida

Such an initiative contributes to building a citywide participative project which promotes and facilitates students’ safe trips between home and school, supports an education strategy based on values such as respect, responsibility, solidarity and independence. At the same time as it implements an awareness raising tool where families and societies are reached through the work with schools, it disseminates sustainable and safe mobility messages while also shaping the strategy to recover the public space for the use of pedestrians and cyclists

From a systemic approach and beyond physical safety improvements, the project also allows building a participation model of great educational value, for it builds an extra bridge between the school and the city, and generates participation frameworks where children and young people can experiment and build their own independence, generate better communication and debate channels between the different stakeholders, and bring to light a collective work with a great potential.

### **Critical aspects (and how to solve them)**

It could be said that the strong points of the project are also its weak points. One of the most common barriers in the development of a project like this is the difficulty of the stakeholders in understanding the timing of the measures defined in the action plan, especially those that require an intervention in the public space. To avoid the anxiety that this situation can generate, it is necessary to clarify from the beginning that the project is a long-term one, that it includes different stages of intervention, and that some are more active than others. This can also be solved by accelerating the action plans of the public administration or programming specific actions to be developed during periods of low activity.



In a school in the district of Poble Nou in Barcelona.  
Source: P. Avellaneda

Another critical element is the participation process. These processes should be integrated, particularly by the promoters of the project, so that all stakeholders are aware of the difficulties implied in this kind of processes. To reach an agreement between all stakeholders involved and the lack of coordination in cooperation can be important barriers. But at the same time, they should be faced as challenges that may turn into incentives for working towards an education on mobility and fellowship resulting from this integral approach. In this sense, another difficulty is to include those who have the true leading roles in the process - children and young people! To achieve this, specific mechanisms must be established in order to ensure their participation with an active role by involving them both in the state of the art analysis and in the proposals for solving the identified problems and barriers.

Finally, the problem of what to do once the action plan has been executed is quite common. On some occasions this leads to a loss of interest from some stakeholders, turning the project into a plain road safety project. To avoid this, activities related to the aims of the project should be programmed periodically, and continue to strengthen pedagogic and education activities. The main stakeholders of the project can work as promoters or advisors of new projects that may arise in the same environment.

Whereas the “Cycling officer” was a professional worker from the “Bike it” programme by Sustrans organization, it’s important to mention that this role must be complemented by the “**Champion**”, the person responsible for the project inside the school. Once the promotion and guidance tasks of the officer are over, it is the “Champion” (frequently a teacher) who must continue the tasks and keep on working and developing the bicycle mobility plan of the school.

**Pau Avellaneda**

pau.avellaneda@uab.cat

**Esther Anaya**

estheranaya@gmail.com







**5**

**Bicycles**

**B**icycles

## 5. Bicycles

This chapter contains two articles about special bicycles that are now on the increase as a means of urban transport, public self-service bikes and cargo bikes. The first article covers experiences with the development of a bike share system in Paris with its accompanying challenges and the decisive influence it has had on the very large increase in the number of cyclists. The other article explores the use of the cargo bike in widely different societies and shows how many different criteria determine peoples' choice of transport and underlines the fact that cargo bikes will play an important role in urban mobility in the future.

In his article **Public bike share system**, Alexandre Fremiot characterises public bikes as a key to urban mobility. Alexandre gives the reader a historical glance over the development of shared self-service bikes of the 60s and examines the two main models of self-service bike systems that exist today, the privately financed system based on advertising revenue "advertising for bikes" and a non-advertising system for example, a government-type financing system with recourse to sponsoring. The system implemented in Paris, Vélib, has resulted in a very large increase in the number of cyclists in Paris, both commuters using the service on a daily basis and more casual users, including large numbers of foreign tourists. The service was handed over to a private company, which, on the launch day in 2007, provided more than 11,000 bikes. The author goes into the key figures of the development but also looks at the numerous problems, such as vandalism and distribution of bikes that had to be overcome. The Vélib success factors involve a very dense network of stations and a large number of bikes, simple, understandable tariffs and ease of subscription as well as the mass effect by making bikes highly visible. Alexandre states that the self-service bike is a formidable tool for re-legitimising bikes in the city, and an essential link in the urban mobility chain. He argues that it is complementary to other means of public transport and therefore cycling policy should be the responsibility of the transport authorities.

In the article **Choosing the cargo bike**, Jeppe Mikél Jensen tells the readers about experiences from Kisumu and Copenhagen in using cargo bikes. Jeppe explores the use of the cargo bike in widely different societies and backgrounds and concludes that cargo bikes can provide new solutions and opportunities for commuters in both developing

and developed countries. The author makes a fascinating analysis of the ever changing popularity of the cargo bike in relation to the economic background prevailing in the country at the time. Cargo bikes enter into a “mobility battle,” competing with vehicles capable of carrying goods. Jeppe focuses on cases from two very contrasting cities: Kisumu in Kenya and Copenhagen in Denmark. He gives concrete examples of one family from each city who benefit from using their cargo bike: one provides a low-cost solution for waste collection and is empowered to earn a better income while the other a family with children choose a low-cost urban mobility solution, maintaining a more sustainable and flexible life style. The organisation “Cycling out of Poverty” has developed the project Bike2Clean, which comprises the design of a converted bicycle that allows small and medium sized enterprises to carry double the amount of cargo, which can double their income. Jeppe also cites a case from Copenhagen where the cargo bike is used by a local craftsman to carry his tools around quickly, easily, cheaply and using a green form of mobility which fits in with the overall company policy. In both cases the cargo bike provides an alternative to a car.

# Public Bike Share System - A key to urban mobility

By Alexandre Fremiot, City of Paris, Head of Mobility Agency Paris, France

The growth of self-service bike rental systems is one of the most noticeable elements of urban development witnessed in a number of large cities over the last decade. It has not only been an environmental challenge, a way of finally turning this universal ambition of adapting the city to sustainable development into reality; there has also been an urban evolution, or even revolution at stake. Bikes are a great way of travelling, just like the metro, the bus or the car, and are one of the keys to rethinking urban mobility.



Different self-service bikes  
Source: Mairie de Paris/DVD

## The growth of self-service mobility

The concept of the shared self-service bike is not a new idea. It first appeared in the community context, for example in the 1960s in Amsterdam, when several militant associations made bikes freely available to residents. This approach often went even further, as the bikes in question were in fact former bicycles abandoned by their owners on street corners and then recovered and repaired by the associations.

Later, in the 1970s, public authorities began to take over this type of service. In 1976 in La Rochelle, France, for example, 300 municipal bikes were made available to residents and visitors to facilitate their movement around the city.

And now, finally, we are witnessing a third phase with the arrival of large private urban services groups in this self-service mobility niche. This has allowed the introduction of innovations such as the automation of the system.

Changes have been made at each stage, but the concept of the self-service bike remains essentially the same, namely the organisation of a bicycle rental system from stations or fixed spots and covering a defined area. The principle of new “individual public transport” has been born.

## Two main models coexist today

Two major models of self-service bike service exist today.

On the one hand there is the model used by street furniture operators. In exchange for the installation of a shared bike system, the public authority allows the operator to use advertising. In general, this takes the form of advertising which is located in public space, without special link to the implementation of self-service bike stations. With revenues from these ads, the operator finances investment and operating costs of the self-service bike system, and often even pays a share of advertising revenues to the public authority. This “advertising for bikes” exchange has the advantage for the authorities of offering their residents a new service with no need to spend the several million or even tens of millions of Euros investment necessary for its installation at the outset. In France alone, this type of legal and financial arrangement has already won over more than thirty authorities. However, there are some disadvantages: first and foremost the lack of clarity regarding the real cost of the service, which considerably complicates any desire by the authorities to develop the service and thereby destroys any idea of being able to control costs.

Other authorities have thus chosen not to partner this type of bike rental service with the advertising market. There can be many different types of contract: public service provision contracts, para-public management with a public transport operator or public



Extent of London bikes

service delegation contract. However, they all have the advantage for the authorities of having a perfect knowledge of what the service costs. Barclays Cycle Hire in London, for example, is part of this second category, with a governance-type financing system, with no recourse to advertising revenue but with recourse to sponsoring.

Moving on to the costs, the bracket for the overall cost price (initial investment + operation + maintenance), per bike and per year, is considered to be between 1,500 and 4,500 Euros. This depends on the legal model chosen, the duration of the contract and of course the size of the service (number of bikes, density of the network of stations, population covered). If we compare them with other means of public transport such as the bus, self-service bikes are generally less expensive for the authorities. In France, a journey by bike costs an average of 3 Euros, but can be as little as 1 Euro in some very dense urban areas such as Paris and Lyon.

### **The example of the Paris Vélib'**

As soon as Bertrand Delanoë arrived at the head of the Paris municipality, he embarked on an ambitious transport policy with the aim of improving mobility for all with a view to



A Vélib' station in a Paris street.  
Source: Mairie de Paris/DVD

sustainable development. The first years of his mandate were guided by the principle of the improved sharing of public space between its different users, allowing the spectacular increase in the number of cycling facilities and thus providing the essential foundations for the implementation of an innovative, large-scale bike rental system. It was in this context that the Vélib' service was launched on 15 July 2007. This marked a major step for cycling policy and more broadly speaking for urban mobility in Paris and had major repercussions on the image of the French capital.

### **Details of the service and key figures**

The Mairie de Paris (Paris City Hall) entrusted the Vélib' service, a contraction of the words *Vélo* (bike) and *Liberté* (freedom) to the company JC Decaux. On its launch day, more than 11,000 bikes were available in 750 stations. Six months later, the number of stations had doubled. Originally located only within Paris, the service was extended to the 30 outlying communes of the capital in 2009, creating a network of over 1,800 stations, with a stock of almost 20,000 bikes.



The principle of its use is simple: you take a bike from one of the stations, enjoy half an hour of free use and then you put it back in any other station. The bikes have been designed to be strong and discrete. They have three gears, permanent lights and a basket attached to the handlebars. Each station has a terminal which is equipped with a bank card reader and provides the necessary information in five languages, as well as several small terminals, each one constituting a point of attachment for a bike.

Around 30 million Vélib' journeys are made each year. Up to 130,000 bike journeys can be made on the most beautiful summer days. More than 220,000 people have a long-term (1-year) subscription to the service, with other users having weekly or daily subscriptions.

The use of Velib' by annual subscribers is more rooted in the everyday, especially to make commuting between home and work or school easier, while casual users, with a significant proportion of foreign tourists, reported using Velib' for getting around Paris.

Since the Vélib' service started, bike riding has increased by over 40% and Vélib' users currently represent one third of cyclists in Paris.

### Problems overcome and success factors

When the service started, vandalism was unfortunately the main problem encountered. This problem was overcome thanks to awareness campaigns and technical modifications to the equipment.

Example of awareness campaign "Break a Velib' is easy, it can't defend itself!".  
Source: Mairie de Paris/DICOM & Cabu

A new calm means visiting Paris.  
Source: Mairie de Paris/DICOM





A V+ station : gain 15 extra free minutes each time you return your bike to one of the V+ elevated stations.  
Source: Mairie de Paris/DICOM

It was also necessary to learn how to manage and regulate the number of bikes in a station. To solve the problem of stations which were empty or congested at the start of the service, the operator JC Decaux had to put in place the technical means and teams to resupply empty stations and to remove and repair damaged or broken bikes at any time of the day or night.

Commercial developments also made it possible to gradually improve the overall operation of the service, for example by installing a bonus system for people who took their bikes back to stations which were located on high ground (named “V+ station”) and therefore tended to be empty rather than full. Each time long-term subscribers return their bike to one of the V+ elevated stations, they gain 15 extra free minutes for later use, which will allow them for example, to enjoy free journey for 45 minutes instead of 30 minutes during their next trip.

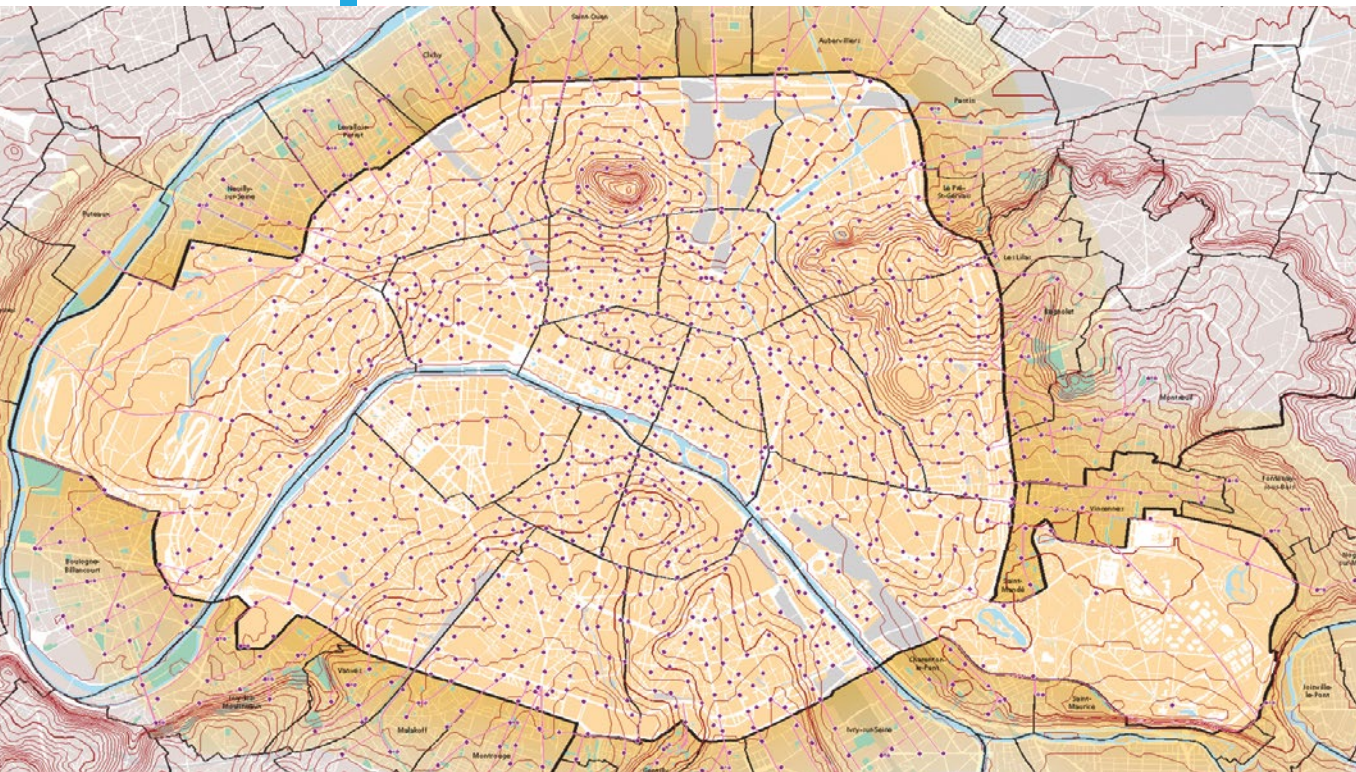
The Vélib’ success factors involve first and foremost the quality of the service proposed, based on the principle of a very dense, homogenous urban network of stations, together with a large number of bikes (four times more than in Lyon, Barcelona or London). The simple, easily understandable tariffs are also a decisive factor, as is the ease of subscription (by bank card, for example). Finally, the mass effect has also played an important role by making bikes highly visible in the city and thereby helping cycling to be better respected by other transport users.

Finally, the launch and success of Vélib' have been a formidable catalyst in the promotion and growth of calm means of travel in Paris. Through Vélib', bike use in the city has been given a new boost and more broadly speaking the idea has emerged that new practical, inexpensive and ecological means of travel are possible.

Three reasons for satisfaction are regularly given by users :

- The feeling of freedom that comes with the use of a Velib': "Velib', it's fun, it gives a sense of freedom"
- The convenience of self-service system: "there are stations all over town and everyone can enjoy it easily".
- The fact that it is good for health: "it can be used for all ages ; for me, it's my little exercise and I have good conscience".

Map of Vélib' stations.  
Source: Mairie de Paris/DVD



## Conclusion

Shared bike systems are currently a relevant response to the urban, ecological and metropolitan challenges facing cities and large urban areas.

They are characterised by the diversity of possible legal means and financing arrangements, whether advertising, payment by the user, public subsidies or other means.

In any event, it is important that the choice reflects the local context and the aims being pursued, without merely reproducing what already exists elsewhere because it is the fashionable thing to do.

Provided that it is well thought-out, the self-service bike is a formidable tool for re-legitimising bikes in the city. It is an essential link in the urban mobility chain, but it cannot constitute an entire sustainable mobility policy on its own.

In this respect, it must also be part of a system of complementarity with other means of public transport, as an argument in favour of cycling policies coming fully under the responsibility of the transport-organising authorities.

**Alexandre Fremiot**

alexandre.fremiot@paris.fr

# Choosing the Cargo Bike - Experiences from Kisumu and Copenhagen

Jeppe Mikél Jensen, Sustainability and Mobility Consultant for the Union of the Baltic Cities Commission on Environment

## Introduction:

People travel every day, using different means of transportation. Mobility is key to generating income, whether the journey leads to the stock market in an expensive automobile or to the local market on bare feet. Our different choices of mobility are guided by various incentives depending on the contextual opportunities for the traveller. This article focuses on the use and potential of cargo bikes as an alternative to more traditional means when transporting people and cargo from A to B. In most cases cargo bikes provide new solutions and opportunities for commuters in both developing and developed countries. In developing countries, the incentives are often the result of restraints, whereas the incentives in developed countries are more often the result of rationality and lifestyle.

The conventional bicycle was primarily invented for carrying people and was upgraded later on with a storage carrier mounted as rack above the back wheel as known today.

The baggage carrier has in itself a great potential to carry both people and cargo, depending on need and alternative modes of transport. However, in this article cargo bikes are defined as non-motorized vehicles designed with the designated purpose of carrying *more* goods or people than conventional bicycles.

## Choosing the cargo bike

When we choose our means of transport e.g. car, bicycle, walking etc. we also choose not to use the other available options. This can be described as a competition of different



■ The conventional bicycle have in itself great potentials of carrying goods and people.

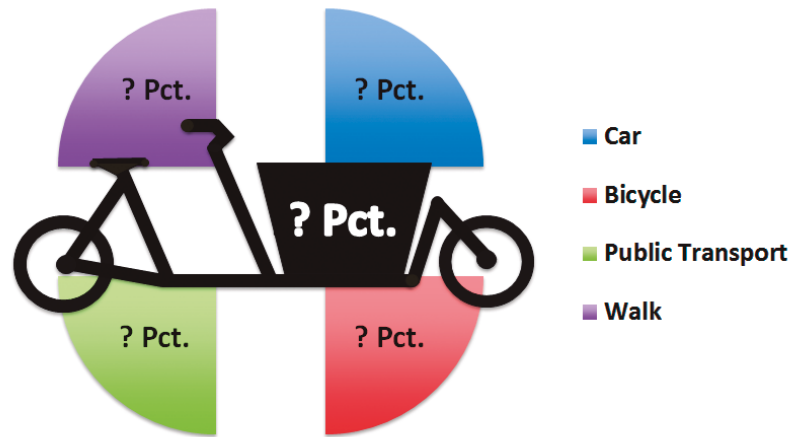
mobility providers or a 'mobility battle', where all possible means of transportation offer a certain solution to our transport needs. (Cycling and society -see Appendix)

Our decision of choosing the car, taxi, helicopter, matatu, bicycle or our feet is based on a personal analysis of availability, costs and benefits of each means of transportation. Cargo bikes enter this "mobility battle" competing with vehicles capable of carrying goods and more than one passenger, which historically has been dominated by buses, lorries and other motorized vehicles. Despite a general rise in their use through time, cargo bikes have historically experienced both success and failure. The success of the cargo bike can be linked directly to an increase in disincentives to motorized transport e.g. scarcity of resources, congestion, a green agenda and economic recession.

### Catalysed by historical recessions

It wasn't long after the conventional bicycle was invented in 1880 that the cargo bike appeared in the streets. Before the car became the dominant actor in the mobility battle,

## The cargo bike entering the mobility battle



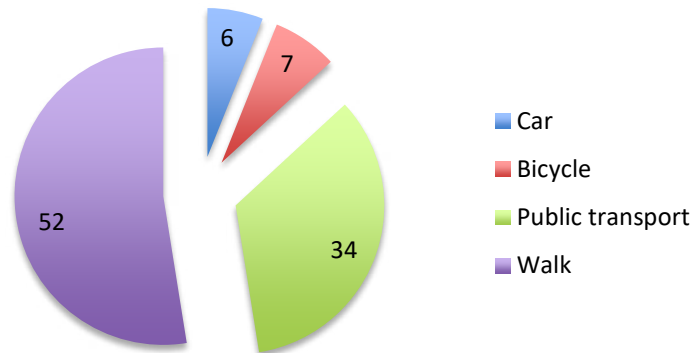
The cargo bike enters the modal split and challenges the existing allocation of commuters between the current means of transportation.

cargo bikes became a common sight and were named after the jobs of people who used the bikes. In Germany the cargo bikes were named a 'Bakers Bike', in United Kingdom the 'Butchers Bike' and Denmark 'Chimney Sweep Bike'.

Following the boom of the automobile in the 20<sup>th</sup> century starting in North America and currently taking off in Asian and African countries, the usage and number of cargo bikes has decreased. Economic incentives for motorised transport of goods increased due to cheaper production beginning with Henry Fords assembly lines up to the Ulsan car factory in Korea that produce a new car every 13 seconds. The economic incentives for choosing a particular means of transport become evident in wartime, when scarce resources provide incentives for alternatives e.g. non-motorized cargo transport. During the Balkan Wars (1912-1913) Bulgaria catalyzed an extensive use of cargo bikes. In Denmark, the scarcity caused by the Second World War created a market for non-motorized cargo transport, where cargo bikes known as "Svejer bikes" were a common site during 1940s and 1950s. The same occurred in countries like Italy and The Netherlands with a rise and fall of cargo bikes between 1920-1960 linked to economic restraints.

The incentives for cargo bikes vary from city to city, nevertheless it is interesting to see how the cargo bikes have proven to be a great asset for commuters. In the following sections

## Modal split of Kisumu



The modal split shows that more than every second trip in the city of Kisumu is done by foot.  
Source: Journal of Civil Engineering 2010

the cargo bike is presented in Kisumu, Kenya and Copenhagen, Denmark as shown below. Despite different geographical contexts, the cargo bike plays a major role and serves the needs for current urban dwellers both north and south of the equator. (Cyclelogistics - See appendix)

### Creating income and a cleaner environment in Kisumu

Dickons is the founder of Gasiapoa Waste Management Services in Kisumu, Kenya where cargo bikes recently have been introduced.

*"Gasiapoa collects waste from households in the informal settlements and the city centre of Kisumu city. Gasiapoa works with a number of Landlords in the informal settlements to keep their compounds clean"*

The waste is collected in a customized cargo bicycle and sorted for different usages. The waste is either sold for recycling or sold directly by Dickons or the other waste-collectors. Along with providing a low-cost solution for waste collection, the job also provides an important income for Dickons and his family in a country with an unemployment rate of 30 %. Based on the above facts, Cycling out of Poverty have developed the project



Bike2Clean to accommodate both the city of Kisumu and Dickon's everyday challenges. The project comprises the design of a converted bicycle that allows small and medium sized enterprises like Dickons to carry double the amount of cargo than before.

*"Now I can collect double as much waste as before. Thanks to that also my income doubled!"*

By introducing the Bike2Clean cargo bikes into the modal split of Kisumu, small and medium sized enterprises are given a low-cost opportunity to increase the range of mobility considerably. This leads to increased opportunities for income generation and the quantity of goods to be carried without the use of motorized vehicles. The cargo bikes provide an alternative to the different means of transport and cover mobility needs for both goods and people. Cargo bikes provide a sustainable alternative to motorized transport, which is rising rapidly in Kenya and most non-OECD countries.

An increased focus on cargo bikes can play a major role on the modal splits of developing cities. Future economic development is predicted to create a rapid increase in motorized



The cargo bike increases the range of mobility and thus increases business opportunities for the informal workforce in Kisumu.

Photo: Coop-Africa, Bike2Clean project



The Cargo bike doubled Dickons income  
Photo: CooP-Africa, Bike2Clean project

transportation, in particular in developing cities. Providing the opportunities for cargo bikes in Kisumu and similar developing cities give the opportunities to develop multimodal mobility systems resilient and adaptable to future conditions, while also being less dependent on fluctuating fossil fuel prices. The cargo bike provides an alternative to following the American mobility trajectory, which is highly dependent on private motorized vehicles. In this regard cargo-bikes meet the requirements for increased mobility solutions leading to the combination of prosperity with a sustained low carbon emission modal split.

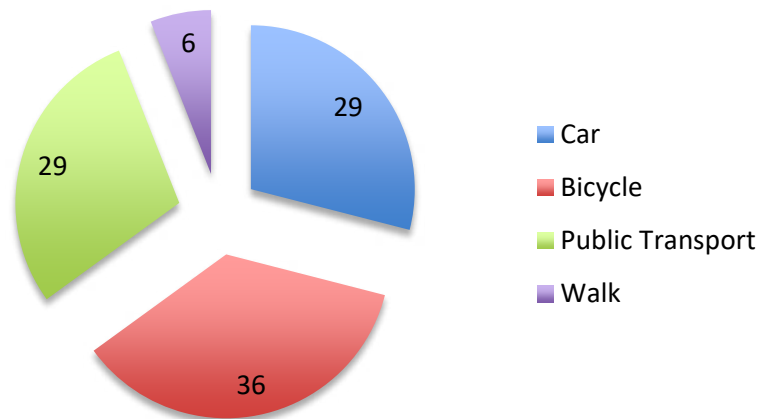
The Bike2Clean has established an income generator for the increasing informal workforce without jobs in Kisumu. This group of the population is widely recognised as one of the key challenges in the future of developing cities. When making the cargo bike available as a mode of transport, Dickons' incentives have primarily been economic, and the increased range of mobility have managed to leapfrog the living standards for him and his family.

## Sustaining ease of mobility solutions for Copenhagengers

In their small family, Anne and Erik have never owned a car and have always had their bicycles as their primary means of urban transportation, in line with the 50 % of Copenhagengers who commute to school and work (Copenhagen Bicycle account – See appendix). However, the expansion of the family included mobility challenges with two babies.

The transition from double-income-no-kids to a small family is usually the most normal stage in life to become a car-owner to ease the transport challenges when travelling with children. Conventional bicycles usually provide a safe option for carrying one adult and one baby. However, the conventional bicycle has certain limits that barely cover the needs for young families in Copenhagen. For Anne and Erik and their two small babies the mobility solution either requires investing in a private car, using the public transport system or the cargo bicycle. Along with every sixth family in Copenhagen, Anne and Erik chose a cargo bike to transport their children and the required luggage for a family. The cargo bike serves them for going to the playground, the parks, the grocery store, which would not be possible using a conventional bicycle.

## Modal split of Copenhagen



Copenhagens remarkable modal split with 36 pct. of all trips done by bicycle.  
Source: Urban Audit 2009



In Copenhagen the cargo provide an alternative to the car.

The cargo bike provide various disincentives for buying a car in Copenhagen.



The cargo bike provides an alternative for the car that sustains the freedom of urban mobility in the same way that a conventional bicycle does. Buying and running a car also includes insurance, parking fees, fuels, maintenance, licenses and taxation, which in Denmark can reach as high as 200 % of the value of the car. For Anne and Erik, the cargo bike is a door-to-door low-cost urban mobility solution, which combines the advantages of a family friendly spacious car with the freedom of the bicycle.

## Copenhagen enterprises turn to cargo bikes

The cargo bike as an alternative to the car is not only a suitable solution for young families. In recent years, the increased interest in cargo bikes in Copenhagen has inspired various companies to replace combustion engines with pedal power. Similar to the middle of the 20th century, the Copenhagen based carpentry company Logik og Co has customized a cargo bike for minor projects within the city. The cargo bike can carry 200kg of tools and material. It is designed so that the carpenters can organize their tools properly as well as

avoid heavy lifting by ergonomic design of the lightweight “toolbox”. The bicycle is the first of its kind and is an easy and convenient alternative, which also supports a green policy within the company. According to the company, the initial idea of the Carpenter Bicycle is not grounded in a green agenda, but is a consequence of increased traffic congestion and parking expenses for the company. For Logik & Co it was convenience that was presented as the key incentives for developing the Carpenter Bicycle.

### (Re)introduction of cargo bikes to existing modal splits

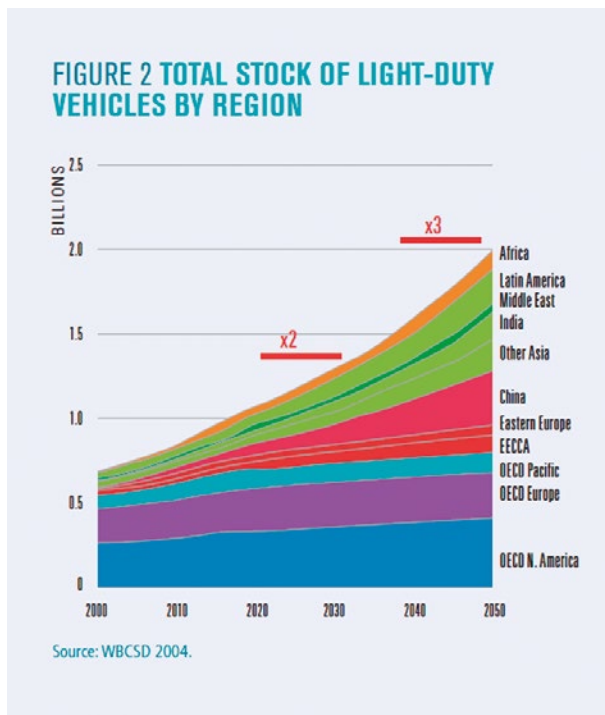
In Kisumu the cargo bike provides an instant increase in the range of mobility leading to job opportunities and improved urban basic services. In Copenhagen it provides a convenient, low-cost and environmentally sustainable alternative for cars and vans that assures the consistent range of mobility for families and enterprises.



The cargo bike prevents the carpenter from parking issues and congestion and supports the company's corporate social responsible and economy.  
Photo: Logik & Co.

The Carpenter Bicycle allows, the carpenter to use the bicycle infrastructure where cars are not allowed and thus avoids traffic congestions.  
Photo: Logik & Co.





A tripling of light duty vehicles in 50 years will primarily take place in non-OECD countries with proportional pressure on developing cities urban mobility systems.

In the different contexts and modal splits of Kisumu and Copenhagen the incentives for introducing cargo bikes become increasingly evident. The Kisumu and Copenhagen cases display the various usages of cargo bikes and thus competitiveness in the mobility battle for accommodating urban commuters and their cargo delivery.

In both cities, the use of the cargo bike revolves around the same incentives as conventional bicycles and comprise, according to the European Cyclist Federation, five major assets of cycling, which include:

- 1) Offering an alternative means of transport where there is no increase in prices of fossil fuel
- 2) Cost effective transport
- 3) Climate change and deteriorating air quality in the city
- 4) Health and the challenge of obesity
- 5) Growing cities and the quality of life. (See appendix)

The five assets described above are slowly gaining momentum for non-motorized transportation in developed cities, and the cargo bike has started to gain political interest in urban freight management in leading cities such as Copenhagen and London. However, the greatest challenges with urban mobility are to be found in developing cities.

A combination of rapid urbanization and growing wealth increase the travel demand and thus pose a potential threat for the existing urban mobility systems in developing cities, like Kisumu, as the World Business Council for Sustainable Development predicts. As the figures show, the rapid increase of light duty vehicles – private cars – will almost solely take place in non-OECD countries. This mobility challenge of the next decades can be accommodated by improving provision, policies and promotion of sustainable urban mobility and cargo bikes play a major role when taking people and goods from A to B.

**Jeppé Mikél Jensen**

jeppe.mikel@gmail.com

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**6**

# **Cycling Policy**

# Cycling Policy

## 6. Cycling Policy

This chapter contains three articles dealing with cycling policy and design that can be of great inspiration for other cities. One article is a general strategy to promote urban cycling through a conscious development of a cycling infrastructure with the recommendation to build upon the strengths of each individual city. The second article describes a multi-modal policy for the coordinated use of bikes and public transport, which can meet the needs for travelling from door to door in urban areas. The third article covers the process of developing an Urban Bikeway Design Guide, which shows how political will and desire can be allied to modern innovative dynamism, and how international cooperation can promote best practices in cities around the world.

In his article ***Bicycle strategy***, Roger Geller describes the Portland experience. In 2003, in order to support the increasing number of cyclists, Roger started to develop a tool to categorise the citizens based on their willingness to use their bicycles as part of their daily life. He identified four types of “Transportation Cyclists” and based his strategy on the analysis of the needs of these groups. The first step was to provide conventional bikelanes on collector streets which would attract a smaller dedicated group, “the enthused and confident”. This resulted in increased visibility of cyclists on the city’s main road networks leading to a desire for further improvements. The next step was to prioritise designing for the major group, “the interested but concerned,” who would cycle if good facilities were provided. Roger goes into interesting details as to how the city developed into one of the most cycle-friendly cities in the US. The main strategy is: “Build to your strengths,” which covers exploiting both the physical opportunities in the street network as well as the economic and political conditions on an ongoing basis. Part of the strategy was to be pragmatic, going after the “low-hanging fruit”. Portland’s strength is a tight grid network of relatively narrow streets offering the possibility of equipping a network of Bicycle Boulevards. Roger states that the idea of building to ones strengths takes different forms in different cities. He then looks at how local conditions affected the solutions found in other American cities.

Tom Godefrooij bases his article ***Multi modal transport policy***, on the example of the Dutch “bicycle and train” system. Tom presents us with an analytical framework for optimising the combined use of bicycle and public transport. The strengths and the weaknesses of both modes are reflected in the Dutch modal choice, with more bicycle use for trips under 15 km and more use of public transport for longer distances. Tom introduces the reader to the concept of a “trip chain,” and how the individual “links” have been optimised, with the use of the bicycle as a key element. Using cycling as the feeder mode for public transport you can enlarge the catchment areas around the stations from 500 to 2500 meters, resulting in an increased use of public transport. Most Dutch people use their own bicycle for the home-site feeder trips, but the egress trip is the weakest link in the trip chain. Providing public transport bicycles, in Holland the OV-fiets system, has turned out to be an enormous success, and it has strengthened the link of the egress trips in the door to door concept. Tom looks then at various solutions to problems associated with this model e.g. cycle parking and optimal station forecourt layout.

In his article ***The NACTO urban bikeway design guide***, Jeff Olson shows how the National Association of City Transformation Officials, NACTO are turning innovation into action in U.S. cities. The Urban Bikeway Design Guide is the innovative document developed by a partnership between U.S. cities and a creative project team. It is a new toolbox for designing urban streets, a new kind of design guide that was developed by cities for cities to cover the increasing demand for innovative urban bicycle facilities in U.S. Jeff describes the fascinating process creating the guide as a model for other countries or cities for using technological creativity, promoting innovative design and sharing best practices around the world. The design manual deals with three main issues, “Technology and Planning”, enabling the creation of a web-based guide, “Separate but Equal Design”, which implies that different sections of the cycling population are treated equally, and “Sharing Best Practices Globally”. This latter issue is of crucial importance in the attempt to elevate cycling to the status of a serious form of sustainable transport. The consulting team which produced the manual was drawn from all parts of the world and exchange of knowledge on a global basis is key to the promotion of cycling so that it becomes safe, healthy and fun in all communities.

# Bicycle Strategy - The Portland experience

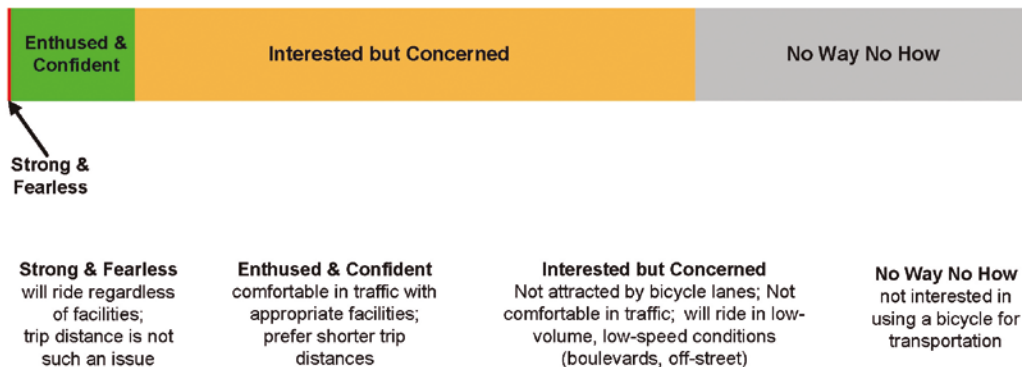
By Roger Geller, Bicycle Coordinator Portland, Oregon, USA

By 2003, bicycle use in Portland was climbing and had been for years—ever since the early 1990s when the city began to track the number of bicycle trips in our central city (see Appendix). Despite this positive trend I was anxious about the future. I knew that bicycle use would not continue to grow unabated unless we began to make the types of improvements that matched our ambitions, grand as they were, of achieving the levels of bicycle use I had seen in Amsterdam in the late 1990s. I began to wonder who was currently riding and why. I needed to know what we should do to attract ever more people to bicycle transportation.

Looking out of my figurative window I began to imagine who were the different types of people riding bicycles—and perhaps more importantly—the types of people who were not riding. I knew there were the stereotypical messenger-types—the road warriors: clad in black leather, adorned with piercings and coloured wherever hair grew. I knew that they—like I once did—self-identified as “Cyclists” and that they would ride under any conditions, regardless of our modest efforts. I also knew there were very few of them in Portland—or in any city. Growth would not come from that sector. So, who was riding? Who were the people that were being enticed to try bicycling and then stick with it over time?

Thus began the musings that resulted in a typology of Portland’s citizens based on their willingness to use a bicycle as “part of their daily life”, as our city policy called for. This typology, which we call the “Four Types of Transportation Cyclists,” now influences our considerations about how to advance our goals and also informs our analysis of where we’ve found success in advancing bicycle use from 1.1% of commute trips in 1990 to 6.4% 20 years later. Recent research, conducted by Jennifer Dill at Portland State University,

## Four Types of Transportation Cyclists in Portland By Proportion of Population



**Figure 1.** Four types of transportation cyclists

confirms this typology and advances the question about who rides and why (see Appendix). These “Four Types” as I formulated them are now widely accepted throughout North America and perhaps in Australia and New Zealand, too (See Appendix). Figure 1 displays the types proportionate to their estimated number in the overall adult population. The “strong and the fearless,” stereotyped above as “messenger-types,” are just people who will ride under what most would consider the worst of conditions: busy streets with many fast cars and no bicycle facilities. There are not many of them, but they’re in every city where there are bicycles. The “enthusied and confident” group was, in 2003, the principal answer to the question “who’s riding?” Though this group will not ride in the absence of a bicycle facility, provide them with a conventional bicycle lane on a collector street and they will ride. There are still not many of them, but there are quite a few more than the “strong and fearless.” Together, these two groups constitute perhaps up to 15% of the adult population.

Clearly, these two types did not and would not account for the overwhelming ubiquitousness of people bicycling in a city like Amsterdam. Just as clearly, bicycling in the world’s best cycling cities transcend “bicyclists” and is common among average people—the people I call the “interested but concerned.” What are they interested in? Bicycling. About what are they concerned? Interactions with automobiles. This group makes up the bulk of the population, perhaps 50-60%. With the right inducements and conditions they would ride; but a standard 5-foot (1.5-meter) bicycle lane on a busy street is not enough for them. Finally, the fourth type of “cyclist” isn’t a cyclist at all. This group—the “no way,



**Figure 2.** Portland Bicycle Boulevard  
Photo: Greg Raisman/flickr

no how”—is either not interested in using or is unable to use a bicycle for transportation. We estimate that they are perhaps as much as one-third of the adult population.

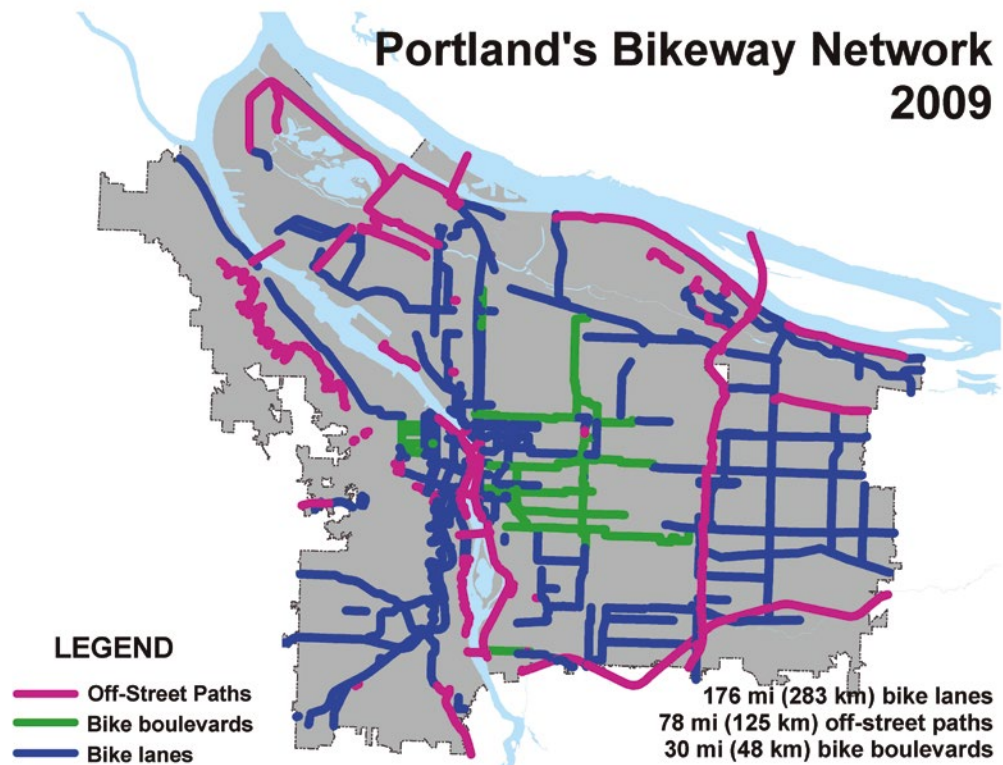
How then can this analysis inform a strategy to increase bicycle use? In retrospect, Portland gained recognition as the most bicycle-friendly North American city largely through our success in building a bikeway system that appealed to the “enthused and confident” cyclists. Though a relative small minority of the population, they are numerous enough that if you build a well-connected network of bicycle lanes it is possible for a city to capture a relatively high percentage of this group. Better yet, because bicycle lanes tend to be on the collector streets that are used for much of a city’s transportation behaviour, bicycling became a visible transportation activity. This visibility of bicycling served Portland well and contributes to the further improvements we continue to be able to make to our bikeway network.

In our current thinking about bicycling, we consider the “interested but concerned” to be our design vehicle. This is consistent with the idea of creating “8-80 cities,” cities that can be comfortably and safely navigated by those who are potentially the most vulnerable in traffic: the very young and the very old. This is influencing our policies, our bikeway designs and our strategies about what types of facilities to prioritise as well as our encouragement and education efforts.

### **Build to your strengths**

Though we didn’t consider it at the time, or in these terms, Portland was building to our strengths in developing a bikeway network.

Much of Portland’s inner city (within 4 miles [6.5 km] of our downtown) was built along a tight grid pattern. Our roadways, even those designed to carry high volumes of traffic,



**Figure 3.** Portland's bikeway network 2009

tend to be relatively narrow. An 80-foot (24 m) right-of-way is the exception in this part of town. More typical are 60- or 70-foot (18- or 21-meter) rights of way with roadway widths of 36-44 feet (11-13 m). While this can produce challenges in finding width for bicycle facilities, it also means that the traffic conditions are typified by relatively low volumes of cars traveling at relatively slow speeds. Inner Portland is not a city of 5-lane arterials with speed limits of 45 mph (72 kph). Rather, we have two-lane roadways with posted speeds generally no greater than 30 or 35 mph (48 or 56 kph.) This is complemented by our downtown, which follows this tight grid and uses signals on almost every block (approximately every 260 feet [80 m]) to progress traffic at speeds ranging from approximately 12-16 mph (19-26 kph). In this regard, Portland's downtown may be unique among large North American cities.

Our initial strategy to encourage more bicycling was to stripe bicycle lanes on main streets and principal arterials. In the early- and mid-1990s, bicycle lanes were the best

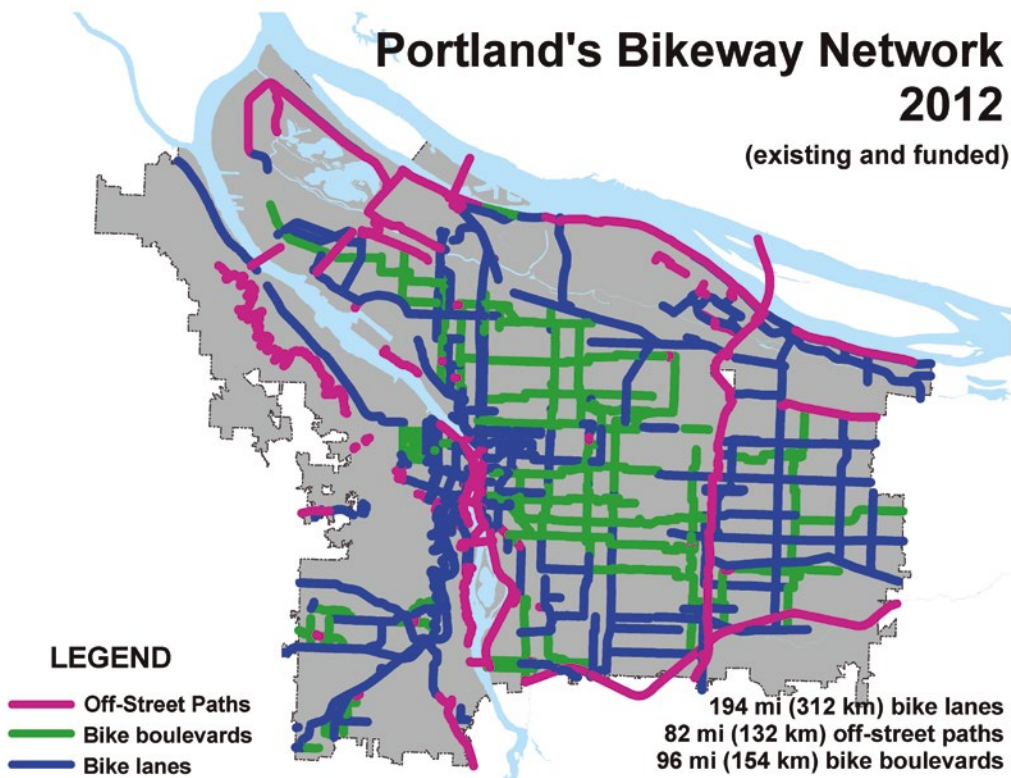


tool we had and they aligned with our philosophy to make Portland's main streets work for people on bicycles. Though of understandably limited appeal, these simple bicycle lanes perhaps attracted a larger proportion of Portland's population than they would have had they been developed in other locales simply because the nature of our collector roadways is less intimidating than are collector roadways in other cities. As a result, we attracted a fair number of the "enthused and confident" type and our cycling numbers grew. We didn't know this was a strength for our city, though in retrospect it seems to be. Figure 3 shows Portland's bikeway network as it existed in 2009 with its emphasis on bicycle lanes.

In 2007, we began to turn our focus ever more to the "interested but concerned." Recognizing the importance of the Dutch bikeway design principles, where "comfort" is as important as "safety", and "directness" to destinations and "cohesion" in the network were equally important, we understood that cycle tracks on main streets were the gold standard of bikeway facilities. They provided direct access to major destinations while creating supreme comfort through separation from motor vehicles. Unfortunately, these facilities also came with a high degree of difficulty both in terms of dollars and politics (the necessary removal of travel lanes is always difficult on Portland's narrow roadways and in North America's auto-oriented transportation systems and culture). Thus, we refocused on a facility type that was well-loved if relatively little used in Portland at the time: the bicycle boulevard. Though a shared roadway facility, bicycle boulevards are designed to keep both traffic volumes and speeds low. Because of that we felt they would appeal to more of the interested but concerned than would bicycle lanes. Because Portland has such a tight grid network we could develop these boulevards proximate to principal commercial streets and at least get people close to common destinations.

Portland's focus on bicycle boulevards has been well-received by both the public and politicians. It also reflects our building to an inherent strength of our closely-spaced street grid. In much of Portland, we have long corridors of these low-volume residential streets that can carry people long distances under conditions where we bring speeds down to 20 mph (32 kph) and traffic volumes to fewer than 1,500 cars per day—typically many cars fewer. Not many cities have such extensive opportunities to develop boulevards as does Portland and, as shown in Figure 4, we are actively exploiting that opportunity.

The idea of building to one's strengths takes different forms in different cities. New York City's street network on Manhattan is characterized by wide, broad avenues that include multiple wide travel lanes. There, the city has been able to remove the occasional travel lane without undue adverse effect on the movement of automobiles and create wide cycle tracks or buffered bicycle lanes. On other roadways they have been able to narrow existing multiple travel lanes enough that they can maintain the same number of lanes and still provide a wide buffered or protected bicycle lane. That is their strength.



**Figure 4.** Portland's bikeway network 2012

Boulder, Colorado has many streams with wide areas adjacent to them for flood control. They have capitalised on this strength and used these areas to build a network of urban trails in parts of their town.

Table 1 shows the relative strengths of various facility types in terms of providing main street access and creating comfortable riding conditions. The “difficulty” in the final column reflects both financial and political difficulty. This chart is representative of conditions in Portland, Oregon. The difficulties for other locales will vary based on the particular characteristics of the local roadway and levels of political support for bicycle transportation.

### Separation (comfort) v. Proximity (access) and degree of difficulty

Facility Type	Separation	Proximity	Difficulty
Shared route		★ ★ ★	
Share lane marking	★	★ ★ ★	★
Bicycle lane	★	★ ★ ★	★
Buffered bicycle lane	★ ★	★ ★ ★	★ ★ ★
Bike Boulevard	★ ★	★ ★	★ ★
Off-street path	★ ★ ★		★ ★ ★
Cycle track	★ ★ ★	★ ★ ★	★ ★ ★

**Table 1.** Interplay between comfort, access and difficulty of implementation

### Make bicycling visible

Bicycle transportation is aided both operationally (“safety in numbers”) and politically from increased visibility of people bicycling. Portland benefitted from our initial strategy of developing bicycle lanes on collector streets because of the visibility it created. Over time, critics of Portland’s efforts to encourage bicycle transportation could no longer state the often-heard canard, “Why are you wasting money on bicycling? Nobody ever rides.” The undeniably growing presence of people bicycling provided supportive talking points for politicians, journalists and advocates interested in advancing bicycling. I’m not sure that we would have progressed as quickly as we did in the political realm had our initial network development focused on bicycle boulevards. Though having more universal appeal than bicycle lanes, boulevards also tend to be on less-traveled streets where people bicycling in any numbers are not as likely to be seen by the general public.

Making bicycling visible is also a function of encouraging bicycling and reporting on bicycle use. Portland's successful encouragement programs accomplish two principal goals: 1) they highlight the benefits of using the city's bikeway system as a means of transportation and 2) they capture the public's imagination about the joy of bicycling. Portland also provides extensive annual reports about our ever-growing bicycle use and complements those with less frequent reports and analyses about the benefits that accrue to Portland as a result of bicycling. Because decisions about investments in bicycle transportation are ultimately political, these efforts that highlight both bicycle use, success and benefits have as important a role to play in advancing bicycling as do advanced design elements like cycle tracks, bike boxes and dedicated bicycle signals.

## Conclusion

The principal strategies that have contributed to Portland's success in bicycle transportation are:

- Build an appealing network
- Identify your target audience and understand their needs
- Build to your strengths, and
- Make bicycling visible.

Portland's lesson is to build the most complete and highest quality system possible at any particular moment in time and then continue to improve it as conditions allow.

Essential to our ability to consider and implement these strategies has been a solid foundation of policies that support bicycling, politicians that made key funding, planning and design decisions to advance bicycling, a strong advocacy for bicycling and a talented bureaucracy that was given the tools and support to succeed. The periods when Portland has advanced the most has been when bicycle transportation enjoyed the strong support of local politicians. Some of the key elements in our strategy have been and remain:

### **Be opportunistic and go after the low-hanging fruit**

Our initial focus on bikeway projects that were the least controversial was the way to get our foot in the door. We have always striven to achieve the best we can at the time, recognizing that we will not always build the best and highest design in the face of competing demands for limited space and funding and political realities.

### **Innovate and do not ask "what is allowed," but rather "what is best?"**

Portland has successfully introduced and/or popularized many bikeway designs in North America. We have often used design elements that were not formally allowed by standard traffic engineering guidelines.

**Design for the hordes**

Portland is now suffering from our own success. Much of what we've built in the past 20 years is now too small or otherwise deficient for the people currently bicycling and for those we're working to attract to bicycling. We are actively retrofitting bicycle lanes built long ago: widening them, eliminating any gaps and improving their operation at intersections.

The world has changed much since Portland began earnestly building a bicycle transportation system 20 years ago. Today, there exists a growing recognition that bicycling can be the "silver bullet" that addresses many of the urban and global ills that challenge us. Increased bicycle transportation has a positive effect on public health, climate change, air quality and other environmental concerns. Bicycle transportation provides affordable mobility in cities in a manner that enhances both the quality of urban life and economic activity. Twenty years ago few countries appreciated these benefits. Today these changing conditions and growing appreciation of bicycling allow planners, advocates and politicians to adopt strategies that promise rapid advances in implementing bicycle systems that reflect international best practices. For these reasons it behooves today's planners to pursue a strategy that promotes policies and designs that are as bold as they can be. This is why Portland's proposed bicycle transportation policy—adopted in the city's 2010 update of its bicycle plan—calls for the city to "create conditions that make bicycling more attractive than driving for trips of three miles (5 km) or less (See Appendix)." That is our goal for advancing bicycling and reflects a key element of our strategy to make Portland one of the world's better and most livable cities.

**Roger Geller**

[roger.geller@gmail.com](mailto:roger.geller@gmail.com) or [roger.geller@portlandoregon.gov](mailto:roger.geller@portlandoregon.gov)



# Multi Modal Transport Policy - The example of the Dutch 'bicycle and train' system

By Tom Godefrooij, Dutch Cycling Embassy, Holland

## Introduction

In the search for a sustainable solution to urban transport problems there is often a strong emphasis on the need for good public transport. Many politicians and experts consider (the promotion of) public transport to be *the* instrument to counter the unsustainable growth of private motorised transport. The question is: can public transport fulfil these large expectations, and if so, under what conditions.

There are obvious reasons to be sceptical, as public transport has some inherent weaknesses. Very few people have a bus stop right in front of their home, and very few buses, trams or trains will bring you right to your destination. As people are travelling "from door to door", public transport users have to get to and from the public transport stop at the beginning and end of their trip.

In this article, we will present a theoretical framework for optimising the combined use of bicycle and public transport, illustrated by the Dutch integration of 'bicycle and train' provision.

## Looking at strengths and weaknesses of the various modes of transport

Looking more fundamentally at the various modes of transport, we can see two polarities: 'private' versus 'public' on the one hand, and 'individual' versus 'collective' on the other hand. This results in four categories of modes: 'public collective' mode, 'public

	<b>Public</b>	<b>Private</b>
	<p><i>Strength</i></p> <ul style="list-style-type: none"> <li>- More efficient use of a transport system (less unused hours);</li> <li>- Available for everyone, without need to own vehicle</li> </ul> <p><i>Weakness</i></p> <ul style="list-style-type: none"> <li>- Attuned to average needs, not to individual needs</li> <li>- Only available in case of sufficient demand</li> </ul>	<p><i>Strength</i></p> <ul style="list-style-type: none"> <li>- Independent from collective (i.e. political) decision making</li> </ul> <p><i>Weakness</i></p> <ul style="list-style-type: none"> <li>- Summing up of individual choices does not necessarily result in the best total result for society</li> </ul>
<b>Collective</b>	<p>Train Bus Tram Metro Airplane</p> <p>...</p>	<p>Charter transport</p> <ul style="list-style-type: none"> <li>- Company bus</li> <li>- Touring car</li> <li>- Charter airplane</li> <li>- ...</li> </ul> <p>Carpool</p> <p>Shared car ownership</p>
<b>Individual</b>	<p>Taxi Rickshaw Bodaboda (Kenyan bicycle taxi) Rental bicycle Public bicycle/bike sharing</p> <p>....</p>	<p>Walking Bicycle Moped Motorcycle Car</p>

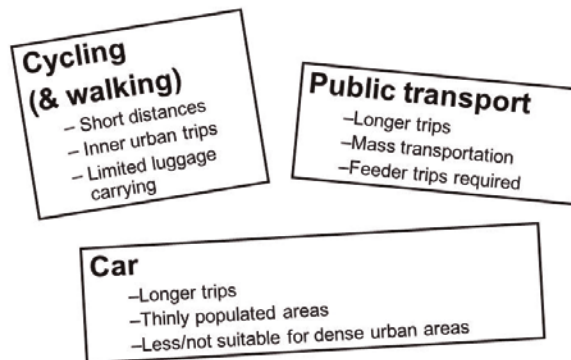
**Table 1.** Overview of modes according to their public, private, collective and individual character



individual' mode, 'private collective' mode and 'private individual' mode. Table 1 offers an overview of how specific modes can be characterised, and what the general strengths and weaknesses are. Important properties characterising each category of modes are 'penetration ability' (i.e. the ability to penetrate deep into the capillaries of the urban fabric and to provide access to individual addresses), 'flexibility' and 'radius of action'. This more subtle categorisation of modes can help optimise the transport system further.

Each mode of transport has its own 'domain of application' or context where its use is most useful. A sustainable and integrated transport system should utilise the strengths of each mode of transport and avoid the weaknesses, resulting in an 'optimal mix' of transport modes.

### Looking for the optimal mix



Cycling and public transport are very complementary in their characteristics and compensate for each other's weaknesses.

The *bicycle* is a perfect mode of transport for the urban environment: fast over short distances, flexible and providing access to each and every individual address. Moreover, the bicycle can be used at any suitable time. On the other hand its radius of action is limited.

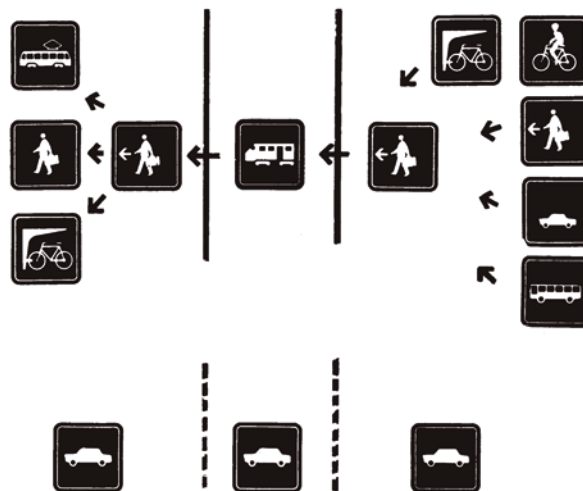
*Public transport* has quite the reverse qualities: its strength is mass transport over longer distances but its flexibility and penetration ability are very limited. Only over longer distances and under certain conditions can it offer acceptable (i.e. competitive) travel times from door to door. Over short distances, public transport does very poorly.

These strengths and weaknesses of both modes are reflected in the Dutch modal choice patterns: for trips up to 15 km, the bicycle is used more often than public transport; only over distances longer than 15 km is the use of public transport more frequent than bicycle use. This underlines the large potential of cycling as an important element in the urban transport system.

If we can properly combine the strengths of cycling and public transport into one, well-integrated transport system we would have available a system that can provide mobility for almost all trips with origins and destinations in urban areas.

### Trip chains

For discussing intermodal transport systems the concept of 'trip chain' is very helpful. Virtually all vehicular trips can be analysed as a chain of 'trip segments' or 'links'. The simplest trip chain has three links: a walking trip to the vehicle, a vehicle ride, and a final walk to one's destination. (The walking trips here can be as short as just a few meters.) In general, trip chains with one or more public transport links are more complex and include access and egress (or feeder) trips. The diagram below shows some rather simple examples with only one public transport link in the chain:



As any chain is as strong as its weakest link, the trip chain concept allows us to analyse which improvements of the integrated 'bicycle and public transport system' are most urgent. And every link in the chain can be optimised so as to offer the best possible door-to-door quality of the trip. The trip chain concept also makes it perfectly clear that good quality of access and egress trips are as important for an attractive public transport system as the quality of the public transport service itself.

In the next paragraph, we will look at the basics of the Dutch 'bicycle and train system' and describe the essential links for a smooth integration.

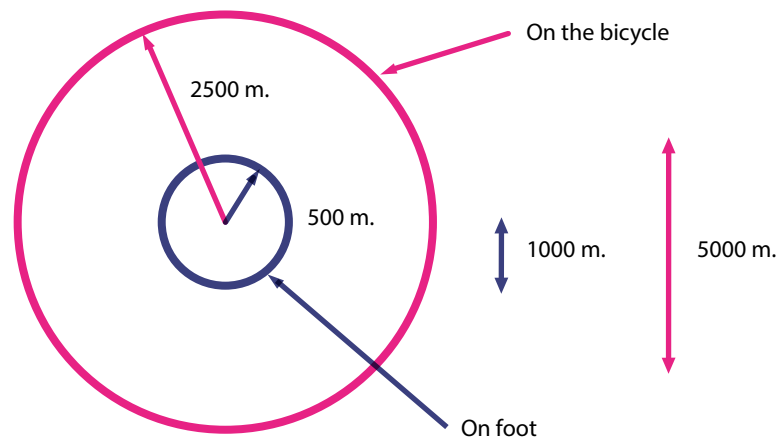
## Optimizing the links in the trip chain: the Dutch bicycle and train example

The Netherlands has a well-used railway system resulting in the most frequently used railway network in Europe. 40% of all train passengers make their access trip by bicycle, and 15% use the bicycle for their egress trip: these percentages are still growing. The success of Dutch rail is, to a large extent, based on the strong position of cycling in the urban transport system, but also because of a deliberate policy to fully utilise the potential of cycling as a feeder mode. Let's have a look why.

### Enlargement of catchment area as a consequence of cycling as feeder mode

The closer people live to a railway station, the larger their inclination to use the train. The area around a railway station where train passengers have their origin or destination is called the 'catchment area'. The more people living in the catchment area and the more relevant destinations there are, the more potential clients the railway system will have. About 75% of users of the Netherlands railway system spend no more than about 15 minutes for their access and egress trips. A shift from walking to cycling will immediately increase the catchment area of a railway station drastically as one can cover a 4 to 5 times larger distance in the same time!

### Enlargement of catchment area





**Photo 1.** Entrance of guarded bicycle parking at the station square 's-Hertogenbosch

Without the availability of cycling as feeder mode, public transport would depend on walking clients; and as a consequence one would need a much more fine meshed public transport network. This could be achieved by providing e.g. a (rather inefficient) feeder bus system to open up the entire urban area. The combination of bicycle and train is so strong because both sub-systems components are utilised for their strengths: the train for covering long distances, and the bicycle for opening up the urban area.

By optimizing the bicycle route network (more direct routes e.g. by offering short cuts) and by minimizing delay on station bound cycle routes one can further enlarge the catchment area of a railway station for both access and egress trips. Interventions closer to the railway station will have a larger impact, as more cyclists will profit from those interventions.

### **Improving the smooth transfer between feeder modes and public transport**

#### Station square layout

Also, the layout of the station square requires special attention. Here, all cycle routes are involved, as well as other feeder modes. It is the venue for making the transfer from feeder trip to the train system (and vice versa). Provisions like bicycle parking, taxi stands, bus stops, city maps, a drop off area, park and ride facilities and convenience shops, all these functions have to be accommodated.

From a cyclists' point of view it is important to get to the right spot to park the bicycle safely and as close as possible to the train platforms.

#### Bicycle parking

Ideally, the location of bicycle parking facilities is well connected to the local cycle route network, and close to the train platforms. Dutch railway stations usually offer two options

for bicycle parking: secured bicycle parking (either guarded or in lockers) at a certain cost, and unsecured parking for free.

Guarded (indoor) bicycle parking facilities can be found at larger railway stations, often in the basement of the station building. Bicycles can be parked in two layers so as to make the most efficient use of scarce and expensive space. New types of two tier bicycle parking are being introduced with integrated gas springs which help the cyclist to lift the bicycle to the upper storage level and back. This makes storing one's bicycle on the upper level a lot easier.

On smaller stations secured bicycle parking is offered by means of lockers or by means of automated entrance systems combined with camera supervision.

Everyday experience has taught us that a substantial proportion of cycling train passengers are not prepared to pay for secured bicycle parking. That is why each railway station has also free bicycle parking facilities available.

### Investment programme 'Space for the bicycle'

Good bicycle parking around railway stations is at the heart of the combined use of bicycles and trains. From 1999 to 2012, there has been a comprehensive investment programme to expand the number of bicycle parking facilities available, and to improve

**Photo 2.** Bicycle parking in the basement of the railway station in 's-Hertogenbosch



**Photo 3.** Two tier bicycle parking facility with integrated gas springs





**Photo 4.** Typical bicycle parking facilities at minor railway stations (Eindhoven)

the quality of the existing facilities. The ministry, the railways, municipalities and various other stakeholders are involved in the implementation of this programme. At the end, 400,000 bicycle parking places need to be available.

An important concern is the most efficient use of the limited space available. More and more the two tier bicycle parking facilities are also on offer for free bicycle parking, at some railway stations in multi store constructions, like the 'bicycle flat' at the Amsterdam central station or the facility in Nijmegen as shown on photo 5. Thus the distinction between secured and unsecured parking is getting smaller, also because a number of municipalities have started to offer secured parking for free.

### **Availability of bicycles for egress trips**

Virtually all Dutch people own a bicycle that they can use for the 'home side' feeder trips. But for egress ('destination side') trips the availability of a bicycle is less obvious.



**Photo 5.** Free bicycle parking in the city of Nijmegen

Therefore the egress link is traditionally the weakest link in the trip chain. Making bicycles available for the egress trips would bring many more potential destinations within the catchment area of the railway stations. There are a few options for making bicycles available for egress trips as well:

- One can take one's bicycle onto the train. Folding bicycles can be taken on for free. Ordinary bicycles are allowed outside peak hours with payment.
- Commuters may have a second bicycle at their destination station to cycle to their job.
- The third option is a rental or a public bicycle. The traditional rental service at railway stations was relatively expensive and procedures to get one were time consuming: filling out forms and paying a deposit. So the use of this rental system was low, and mainly for irregular trips. In 2002 the OV-fiets (i.e. PT-bicycle, or public transport bicycle) was introduced. This is a public bicycle system that requires a subscription, and allows subscribers to get a bicycle very quickly and easily. Subscribers have a pass with a bar code that can be read by a scanner to get a bicycle. The costs for renting are deducted from your account once a month. This system turned out to be an enormous success. By now (2012) it has 100,000 subscribers, and in 2011 over one million rides were made, thus being the largest public bicycle system in the world. The OV-fiets is used both by daily commuters and for irregular trips, and has proven to be a big improvement in the weakest link of the trip chain.



## Conclusion

The Dutch experience shows that investments in the integration of cycling and public transport are worthwhile. A systematic approach, addressing all the links of the trip chain door to door is resulting in an increased use of the Dutch railway system.

**Tom Godefrooij**

tom.godefrooij@dutchcycling.nl



# The NACTO Urban Bikeway Design Guide - Turning innovation into action in U.S. cities

By Jeff Olson, R.A. – Principal, Alta Planning + Design, USA

In 2011, the National Association of City Transportation Officials (NACTO) published its landmark Urban Bikeway Design Guide. This innovative document is the result of partnership between U.S. cities and a creative project team that developed a new toolbox for designing urban streets. The project was sponsored by the bicycle industry, with funding from the Bikes Belong Coalition and the SRAM Cycling Fund. The NACTO Guide was developed using on-line collaboration tools, with full colour, three-dimensional graphics and the input of bikeway design professionals from throughout the U.S. For many years, urban designers in the U.S. had been limited by the current national standards produced by the federal government (the Manual of Uniform Traffic Control Devices, or MUTCD) and by State Departments of Transportation (the AASHTO Guidelines for the Development of Bicycle Facilities). These national level guides are the result of national committees, take years to develop and are primarily intended for state and federal agencies. Because the demand for innovative urban bicycle facilities in the U.S. was steadily increasing, NACTO decided to produce a new kind of design guide that was developed by cities, for cities. The new NACTO Urban Bikeway Design Guide is a living document produced in both an online version ( see Appendix) and a printed version that can be continually updated and changed over time.

The effort to create the NACTO Guide represents a significant change in the bicycling movement in the U.S. For many years, leaders in progressive transportation had tried to improve the MUTCD and AASHTO guides, but the pace of change in cities continued to be faster than these national documents could be updated. As cities including Portland, Chicago, New York and others began to use innovative designs from around the world, a gap was developing between contemporary best practices and the existing national guidelines.



Portland, Oregon Mayor Sam Adams, Mia Birk of Alta Planning + Design and others discuss the concept of the NACTO Guide in October, 2009. Photo: J.Olson

Design elements that were commonplace in Amsterdam, Copenhagen, Montreal and other international cities simply were not in the manuals being used in the U.S. Cycle-specific traffic signals, cycle tracks, bike boxes and other innovations were known to be successful in other places, but American designers were being kept from using them because U.S. guidelines for these treatments did not exist. Because most U.S. design professionals rely on published design guidelines as protection from legal liability, the phrase “it’s not in the manual” became a common response to why communities could not use the innovative treatments that were being implemented in cities around the world.

In October 2009, a group of national leaders met at the headquarters of Alta Planning + Design in Portland, Oregon to discuss creating a new urban bikeway design manual. While many people had talked about doing this before, it was a core group initiated by Mia Birk of Alta, Rob Burchfield and Roger Geller of Portland, along with support from the Bikes Belong Coalition and the SRAM Cycling Fund that moved the concept forward. A key to making this initiative possible was that the mayors of large U.S. cities were being challenged to implement significant initiatives for bicycling. Led by Transportation Commissioner Janette Sadik-Khan from New York, the cities had formed a new alliance called NACTO, the National Association of City Transportation Officials. The NACTO cities were trying to innovate, but they were experiencing institutionalized resistance when they tried to install designs that were “not in the manual.” Mayor Sam Adams of Portland personally attended that first meeting in 2009, and made it clear that he and his peers in other U.S. cities supported the creation of a new way to solve this problem.

After that initial meeting in Portland, NACTO engaged a consulting team led by Alta, Kittelson & Associates, Open Plans and a group of advisors from the U.S., Denmark and the Netherlands to develop the new design guide. The project was promoted under the NACTO Cities for Cycling program, and had the support of member cities including Baltimore, Boston, Chicago, Washington DC, Houston, Los Angeles, Minneapolis, New York City, Philadelphia, Phoenix, Portland, Seattle, San Francisco and Austin. Momentum for the project accelerated quickly. When NACTO hosted a “Cities for Cycling” event at the Brookings Institution in December 2009, the keynote speaker was artist, musician and author David Byrne – and it was clear that the bicycling movement was being taken to a new level. NACTO issued a request for proposals for the guide, and the winning project team was tasked to produce the new guide within a year. The online version of the guide was launched in May, 2010 and the printed guide was released in October 2011. The NACTO team created a game-changing document that has significantly advanced the field of urban cycling in America. At the event celebrating the release of the printed guide, USDOT Secretary LaHood said, *“This is an extraordinary piece of work that’s long overdue.”*

There are three key issues that the new NACTO Guide represents: the use of web-based technology in planning, changing perspectives on the types of urban bicycle facilities, and lessons learned for global advancement of best practices for active mobility. Each of these issues is discussed in the following sections.

USDOT Secretary Ray LaHood with NYCDOT Commissioner Janette Sadik-Khan and Congressman Earl Blumenauer of Oregon at the public announcement of the new NACTO Guide in Washington, DC in October, 2011. Photo: Darren Flusche, League of American Bicyclists



## Key Issue: Technology and planning

The NACTO guide utilized web-based planning, communications and social media tools to develop a living document. The project consultants and study review team members were able to share experiences from real projects, document their innovations and collaboratively produce a document quickly and efficiently. Joe Gilpin, who served as Alta's project manager for the NACTO guide, worked with Open Plans to utilize Base Camp on-line project management and file sharing tools. Designer Nick Falbo of Alta utilized Google Earth and 3D Sketchup software to create photo-realistic images for the document based on real projects being developed by the partner cities. Each treatment developed in the guide was shared with the study review team, who linked innovative treatments and best practices from real projects to the project website. This process enabled NACTO to create a new type of on-line, graphically based, web-based guide in less than one year from concept to completion.



Bike box at a signalized intersection (intelligible) a bike lane approach. NACTO guide

Intersection crossing markings with dotted lines and colored conflict areas. NACTO guide





Graphic Courtesy of Alta Planning + Design  
One - way protected cycle track with raised curb and parking buffer. Nacto guide

The NACTO Guide features realistic 3D graphics for innovative treatments including bike boxes, intersection markings and cycle tracks.” These graphics include real examples and photographs of projects that have been implemented in the NACTO cities. For example, below are both a 3D graphic and a photo of a one-way cycle track from the NACTO Guide:

### Key issue: Separate but equal design

As the bicycling movement has evolved, the types of facilities being implemented have changed. In the 1990s, the U.S. design guidelines were based on primarily three types of bikeways: separated bike paths, signed bike routes on roadways, and designated bike lanes. These facilities were primarily oriented to skilled, adult, male cyclists who made up the existing American cycling population. At the same time in Amsterdam, Copenhagen, Montreal and other progressive cities, bikeway design became increasingly oriented to separating bicyclists from motorised and pedestrian traffic. Urban designs including cycle tracks, bike boxes, coloured pavements at intersections, dedicated bicycle signals



Photo: NYCDOT/NACTO

and other innovative treatments were developed. Since these treatments were perceived as safer and easier to use by a wide cross section of the population (especially women, children and seniors), they supported a larger and more diverse range of bicyclists. The NACTO guide represents a major shift towards implementing these types of 'separate but equal' treatments in American cities.

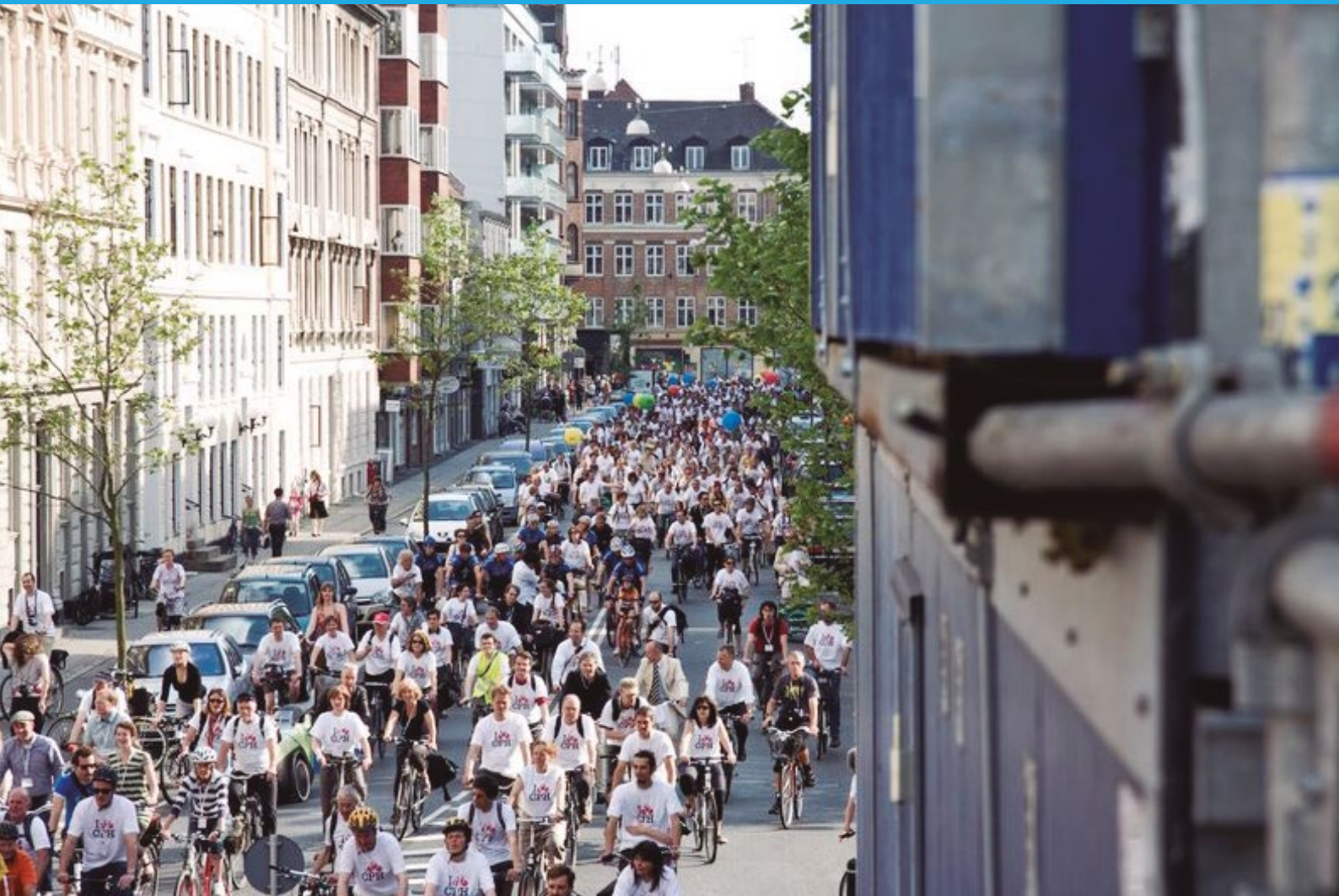
### **Key issue: Sharing best practices globally**

The world's cities are rapidly learning to share information and ideas in new ways. The NACTO guide symbolises a greater level of collaboration for cities around the world. The involvement of international members of the consulting team provided support for innovation and the exchange of ideas. This process can be repeated in other countries, cities and places that are working to create active communities where bicycling is safe, healthy and fun. NACTO has created a new level of collaboration in the U.S. bicycling community. There is now an ongoing series of NACTO Cities for Cycling Road Show events to promote innovation in urban mobility. The NACTO guide and the process that was used to create it can be a model for using technology creatively, promoting innovative design and sharing best practices around the world. If we work together, we can make the world a better place for bicycling, for cities, and for future generations.

The NACTO Guide Study Review Team included bicycle design practitioners from throughout the U.S. Alta Planning + Design was the lead consultant for the NACTO Guide, along with an international team of design professionals. A link to the lists people and organizations involved in this project is included in the references section of this article.

**Jeff Olson**

jolson@altaplanning.com





**7**

**Cycle Advocacy  
and Education**

# Cycle Advocacy and Education

## 7. Cycle Advocacy and Education

This chapter contains six articles about promoting cycle culture and includes experiences from cycle advocacy groups about organising citizens' movements and building up a large cycling organisation. The spotlight is also turned on the significance of civil partnerships and on marketing cycling as mainstream. The last two articles describe various ways of motivating children to cycle through games and training so that they end up as competent cyclists of the future.

In her article ***Cyclists' grass roots democracy***, Lake Sagaris emphasise the importance of strategic participation in cycle advocacy. Lake goes for a long-term, strategic approach and discusses how cycling inclusivity can be kept on the public agenda long enough for substantial change to occur. Lake emphasises the importance of mobilising what she calls "ecologies of actors", for example, interested politicians, committed technical people and many other groups. She emphasises the importance of these groups of actors, all of whom must be mobilised to achieve not only tactical successes but above all long-term strategic goals. She cites the eight-year long struggle in the Santiago arts district of Bella Vista to exemplify the application of the approach she advocates to cycling inclusivity to reclaim the streets of a neighbourhood for its citizens. She emphasises the importance of a cycling master plan, stating that even though the toolbox is similar, every city must find its own solution according to local needs and conditions.

In their article ***Cycling organisation***, the authors Burkhard Stork and Kolja Opper write about lobbying for cyclists in Germany. They highlight the difficult position of the bicycle in relation to the large automotive manufacturing industry and its powerful lobby. The need for a counterbalance to the ADAC automobile club in the form of a bicycle lobby led to the founding of The German Cyclists' Federation, ADFC, in 1979. The goal was to attract 10,000 members. Today, there are 135,000 members and it is the biggest cycling organisation in Europe. ADFC's goal is to promote public interest in cycling with a focus on lobbying activity. The authors emphasise that the basis for the power and influence of the ADFC is a large membership, which they gain by offering many different services for their members, including for example certification of Bed+Bike to establish a network of cycle-friendly accommodation for bicycle tourists. ADFC is however, facing some major challenges such as lack of young adult members and volunteers.

In his article **Cycle promotion campaigns**, Carlos Romero Sánchez tells his readers about getting people to pedal in Guadalajara. He paints a picture of many groups coming together to develop a city which will be sustainable, accessible, fair and democratic. Since 2004, when “Vía RecreActiva” Sunday was introduced, there has been a *before* and *after* in the world of urban mobility in Guadalajara. This event has developed to the extent that every Sunday 60 km of streets are closed to car traffic and are given over to pedestrians and cyclists with 200,000 users. Carlos describes how a wide range of activities have contributed to the further development of cycling in Guadalajara. These include a Master Plan on Urban Non-Motorised Mobility, a City Council for non-motorised mobility and the Bkt bicipública, a private initiative for city bikes for loan. Carlos gives a detailed explanation as to how the various civil society organisations work together and in partnerships towards their common goal of promoting the urban use of bicycles as everyday transportation.

In his article **Branding cycling**, Mikael Colville-Andersen describes marketing of cycling as mainstreaming - a good thing. Mikael outlines one of the great needs of our times – to market cycling energetically and so gain acceptance for it in the public’s mind as a natural form of transport for modern urbanites. He sees the bike as key to solving the liveability equation in our cities. Mikael warns against branding which uses the 1970s mindset with its focus on the environment, and advises us to focus on the bike as an effective transport tool. He sets four goals for promoting urban cycling: “A2Bism”, lowering the speed limit for cars to save lives and redemocratising urban cycling as a transport form for all. The last goal is marketing and branding urban cycling using mainstream marketing techniques in order to sell cycling like any other product. In addition, he points out that the shaping of our streets and public spaces in the future needs proper design not just traffic engineering. Infrastructure is important but marketing the bike is as important as inventing and developing it – if not more so.

In her article **Cycle events**, Jessica Tantaleán recounts her experience with teaching children for a bikeable Lima. Working in the City of Lima, Jessica Tantaleán sees the education of children in cycling as key to developing this form of transport in the future. The special programme for Non-Motorised Transport, CICLOLIMA has been developed to strengthen sustainable mobility. Jessica describes how various programmes have been introduced and coordinated in Lima, starting often on the streets and in the parks – a real hands-on approach – to educate both the children and the parents in learning a different attitude to cycling. Lima carried out the pioneering project “Humanising Transport”, known as “ZOOM” funded by the World Bank from 2005-2008. This programme was continued in the School Education Programme “BiciCole” focusing on children between 9 and 12. The children have the opportunity to use their bike with their parents on CICLODIA, every Sunday, when the main avenue is turned into a recreational bikeway closed for cars. As the programmes have developed, more and

more people have become interested and now the Ministry of Education is keen to spread the programmes out on a nationwide basis.

In their article ***Cycle training for Children***, Mai-Britt Kristensen and Loa Bendix encourage readers to take a child's perspective and make it fun. Working with children in the Danish Cyclists' Federation, their motto could be "Catch them young." If effort is not put into producing a new generation of (very) young cyclists, the number of adult cyclists could drop sharply within a generation. The approach to teaching young children is through play. If it is fun, they will learn. The Danish Cyclists' Federation has developed a concept known as "Cycling games" for children from 2-12 years, which started with a booklet "20 Cycling Games." Then a mobile bicycle playground was developed consisting of various challenges such as bumps, seesaw, and others. There are also campaigns to encourage children to bike to school as well as training in traffic safety. Mai-Britt and Loa state the key to a strong, blossoming cycle culture is to start early, take the kid's perspective, focus on team spirit, and make cycle training fun.



# Cyclists' Grass Roots Democracy - The importance of strategic participation

By Lake Sagaris, Santiago de Chile, Chile

**P**ro-cycling movements learn from experiences all over the world, but as conditions change, so do the lessons. Too often, we look only at infrastructure, rather than the people who make change happen.

## Same toolbox: different ways to put it all together in each city



**Figure 1.** Although the list of cycling-inclusive measures is relatively the same everywhere, priorities vary according to each city culture. Thus, in Santiago, with little green space for children, high walking levels and recyclers with specific needs when it comes to facilities, cycling-inclusivity can (and should) look different.

If we focus too much on the “what”, we get trapped in some pretty sterile debates: over compulsory or optional helmet use, cycleways versus road warrior approaches, “wars” against drivers or cyclists, etc. What really matters though, is how we move our issues and priorities onto public agendas, and how we keep them there long enough to see substantial change.

In Europe, shifts toward more sustainable transport modes and cycle-inclusivity took 20-30 years. Keeping an issue in the policy eye for that long is a major challenge. And democracy is crucial, particularly in countries where we’re just starting to democratise our own urban planning cultures. What is most crucial about democracy though, is something that many take for granted: civil society, that is, organized citizens, the space where you and me become “we”.

Indeed, the “Who” is a central issue for innovation in urban policy. And building (cycling) inclusive cities requires substantial innovation. In fact, it requires a paradigm change, away from automobility (see Beckman and others below), to new, sustainable living systems based on social justice, happiness and environmental benefits for all living species.

### The goal: (cycling) inclusive living

Building inclusive cities requires cycling (and walking, and wheelchairs) in every single road facility and public space developed as part of city policy (figure 2). This means roads are redistributed to benefit more people. Cars, ultimately, get crowded out. When it comes to sustainable transport for cities, they’re space-hogging, energy-guzzling and inefficient.

**Figure 2.** (Cycling) inclusive cities are about redistributing roads for multiple uses and in favour of the most efficient, socially just forms of work and transport. Photo: Sagaris Delhi (India).





For better cities, we need to think more about segregating cars, to keep public transit, walkers, cyclists and wheelchair users safe, and give people more room to garden, chat, play ball. Don't confuse long-term goals with the steps we must follow to reach them, though. That can lead to sterile fundamentalism and break down the dialogues necessary to build commitment to change.

Think about long-term goals. Hammer them out and build consensus with all possible partners. Then figure out what transitional steps are necessary to achieve them. Be careful not to use transitional steps that will block progress further down the road. Taking space away from pedestrians, by building cycle facilities on sidewalks, for example, can lead to a dead end, because ultimately that doesn't change how roads are distributed among needs and users. Using parking lanes for raised (Seville) or at-grade (Vancouver, elsewhere) cycle paths can be very effective however, so don't be dogmatic. Every measure plays out differently in different contexts.

Painting lines on roads, as citizens do in Guadalajara (see Appendix) or city planners do in Brussels (see Appendix) and Toronto (see Appendix) may not be ideal, particularly where speeds and volumes of motorised traffic are rather high. But they can open the way to more cycle users, and therefore more pressure for improvements. Putting them beside parked cars, though, leaving cyclists vulnerable to dooring (Toronto), causes accidents and no-win arguments about blame.

Building (cycling) inclusive cities requires planning to make sure improvements occur in specific periods of time, meet standards and have special budgets to "catch up" and meet targets for boosting walking and cycling. It also requires including the appropriate measures and facilities in all new residential, commercial and other development projects.

### Strategies to mobilize ecologies of actors

Cycling inclusivity requires more than just individual tactics: cycle rides, bike to work months, fashionable blogs, lobbying, etc. These need to be combined into long-term strategies that make the most of local opportunities, partnerships, crises and potential.



**Figure 3.** Santiago's cycling roundtable (2008). Led by the regional government and Ciclistas Unidos de Chile, with support from the Dutch NGO, Interface for Cycling Expertise, the roundtable brought together government staff, cyclists and civil society groups, environmental and neighbourhood leaders, consultants, academics and others interested in moving cycling ahead. See Appendix.

**Figure 4.** Building the social imaginary: A cycling-related spectrum

	Cyclist-centred	Community-based
Defining view	Cycling as an end	Cycling as a means
Participants	Cyclists, young, athletic, mostly male	Diverse in age, education, family, incomes
Identity	Urban tribe, tough, “road warrior”, macho	Collective, community view, gender aware
Social capital	Bonding (strong shared interests, fellowship)	Bridging diverse: networks, alliances, diverse relationships
Narrative strategy	Must survive the hostile city, “real” cyclists versus others who are not, competitive, aggressive (speeding on sidewalks, etc.)	Inclusive: cycling and walking is healthy, safe, empowering, etc.; multi-modal, ride respectfully; interconnection of all road users
Needs	Tough bike, helmet-wearing (or not — according to local culture), specialized cycling gear: cyclist uses what’s available, esp. sporting equipment	Women-friendly, task-friendly, clothing-friendly bikes and accessories sought. Cycling world should adapt to diverse users, particularly women and children
Organizations	Usually ad hoc, de facto rather than elected leadership	Collective styles of leadership, ad hoc groups and legally constituted organizations, with elected leaders, transparency, accountability
Funding	Anathema, except for small amounts raised through selling cycling-related paraphernalia to supporters and fans	Membership fees and external funding to finance increasingly sophisticated programmes; Tendency toward professionalization

This involves mobilising “ecologies of actors” all the way along the cycling spectrum interested politicians, committed technical people (sometimes called “inside activists”, Olsson and Hysing), relevant private sector players (retailers, educators, designers, consultants), neighbourhood associations, women’s and many other groups. There’s a whole spectrum of approaches, attitudes and interests that is necessary to push cycling ahead.

This requires people, organizations, and a wide variety of groups: a dense and diverse ecology of actors. Different styles, profiles, attitudes and strategies can help. So does debate.



**Figure 5.** Police on bikes supervise student demonstration in Toronto, February 2012. Unlike other actors in the system, citizens can protest, change rules, open eyes and minds to new ways of doing things. Photo: Sagaris, Toronto (Canada).

What's important is that everyone find their niche and that interactions are based on mutual respect.

Someone has to do the mobilizing and normally this is the job of civil society organizations. That's because most other players are thinking short-term. Planners think in terms of current rules and regulations, politicians are looking for votes, and private players are busy ensuring they can pay the bills and have something left over.

Citizens, however, are different. Citizens dream. Citizens can think about what is desirable and then move the whole system toward making those dreams a reality, protesting, arguing, critiquing, cajoling, proposing and cooperating (figure 5).

## In Bellavista

In the Santiago arts neighbourhood of Bellavista, we applied cycling-inclusivity to a major project to recover its main street, Pío Nono, which had turned into a major centre for crime and filth, after years of neglect, reflecting its location between two municipal governments, Providencia and Recoleta. Working with support from local (María Elena Ducci) and international architects (Ricardo Austrich and David Dixon, from Boston), Living City and the neighbourhood associations organized charrettes, workshops, formal exchanges and other activities to build consensus for recovering the street, widening its sidewalks, reducing parking and introducing a short but crucial cycling lane, between the main access to the city and the San Cristobal Hill Metropolitan park.

It took eight long years and endless hours of work, but in 2008 (figure 6), neighbours, the minister of housing, representatives of the two mayors, restaurants and other people gathered to dance and celebrate the opening of the new Pío Nono. This also catalysed the development of the Patio Bellavista (see Appendix), a cycling-friendly centre for restaurants, crafts people and other small businesses, which has become a leader in the local economy and an innovative example to real estate developers interested in improving the city.



**Figure 6.** Neighbourhood association president, Gerardo Lanzaroti celebrates the inauguration of the new Pío Nono street, with a rousing cueca, Chile's national dance, accompanied by a neighbour.

## The one-two rules of the policy cycle

Thinking in terms of ecologies of actors, rather than friends and enemies, good guys and bad guys, is important too. It means understanding that people in different niches within the ecology have different roles. As Chileans say, no point asking the elm tree for pears.

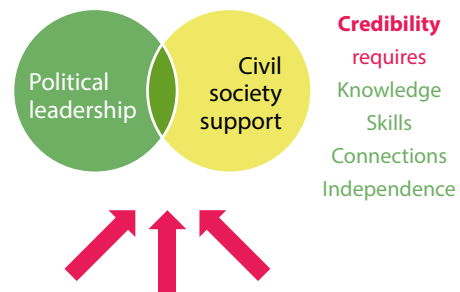
When no one's thinking about building a cycle network, someone has to start. Sometimes these are citizens' groups, like local cycling, walking and neighbourhood groups all over the world. Sometimes these are visionary politicians, as has occurred in many cities. The first one-two rule is that both —visionary citizens/visionary politicians— tend to alternate and we need both (figure 7a) over the long term, to pedal forward.

### The one-two dynamic: maintain the movement



**Figure 7a.** The one-two rules illustrates the way civil society pressure alternates with political leadership, to keep key issues on the policy agenda.

### The one-two rule: create pros, to offset contras



**Figure 7b.** The one - two rules illustrates the importance of both types of actors: political leaders need civil society support when they apply controversial measures.  
Source: Author's elaboration on PhD research (2008 - 2012)

But when pioneering politicians or technical staff dare to act, they need external support. That support isn't credible if it only comes from their own membership, party or pet groups. Thus, they need support from credible, independent citizen organizations. The second one-two rule (figure 7b) is that we've got to build both political will and civil society organizations.

## How: The nature of policy change, active citizenship and civil society

Funding and sustainable transport measures depend on public opinion. But most think solely in terms of individual citizens. It's true that each individual makes a difference.



**Figure 8.** Representatives of the two Bellavista neighbourhood associations, Living City, the mayors of Providencia and Recoleta, and the minister of housing on stage, celebrating the inauguration of the new Pio Nono streets, with wider sidewalks, no on-street parking and a cycle way (24 August 2008). Photograph: Mario López Vieyra.

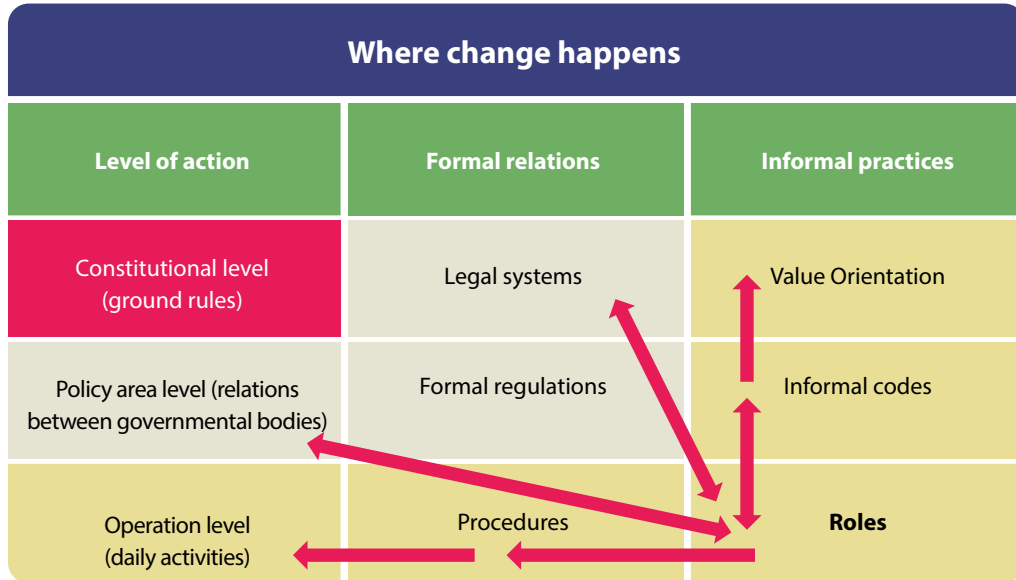
But organizations are the backbone of any social movement, because they accumulate knowledge, experience, networks of contacts and credibility.

Through active participation in planning, pressuring, protesting and proposing, organizations can generate the kinds of fruitful deliberation that make change possible. Just posturing and debating isn't enough. We need real heads-together-over-the-table conversation, that goes beyond dogma. Building this kind of change takes every kind of knowledge available: academic, technical and experiential.

That's because change doesn't happen just because we hold a demonstration, present a well-documented brief, or have a good meeting with a powerful politician. These are tactics. We need strategies that role them all together in a logical, effective way.

It sounds easy, but of course it's not. Change is multi-dimensional. Figure 9a shows the different spaces where change must take place for a new policy like cycling inclusivity to really take hold. Usually it's easiest to start with informal practices: how does your city plan transport, public space, walking and cycling facilities? Is this located in one department, or spread out over half a dozen national ministries and 52 municipalities (as happens in Santiago)?

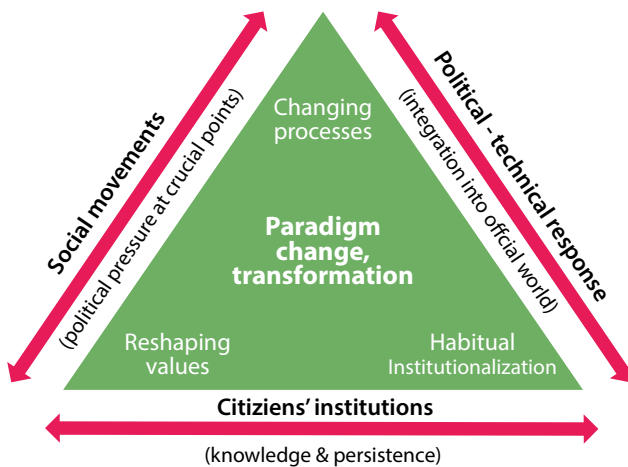
### Where change happens: Leverage points



De Jong et al The theory and Practice of Institutional Transformation

**Figure 9a.** Where change happens. Based on De Jong et al. 1997. Normally it is easiest to start by changing informal practices, particularly roles, and then move into formal procedures and regulations. Constitutional, legal and other areas usually take the most effort to change, although there are some exceptions.

Figure 9b shows how both social movements and citizens’ organizations are needed to generate new ways of building city transport systems and permanent change.



**Iterations - Interactions**  
(based on previous figure)

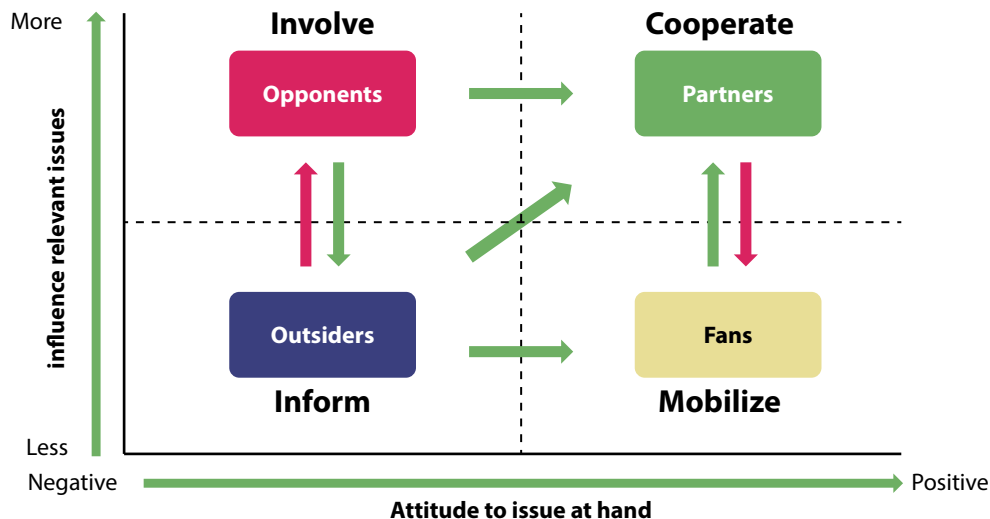
**Figure 9b.** Interactions between citizen movements, citizen institutions, and political and technical policy and planning bodies. Source: author’s elaboration, based on PhD research.



**Figure 10.** Participatory Mapping workshop 2008

## Mapping your ecology of actors

A strategy for cycling-inclusivity has to locate all these actors and figure out how to approach them. The Dutch created a very useful matrix for this purpose (figure 11a). As we did in Santiago, you can identify where people are today (figure 11b, and also where you would like them to be (figure 11c). In Santiago we discovered that once we'd identified key actors and goals, positions shifted very quickly (within a year) to the positioning we sought.



**Figure 11a.** A matrix for mapping your ecology of actors, developed by the Dutch province, Brabant, and used by Tom Godefrooij in cycle-planning training sessions (Santiago).



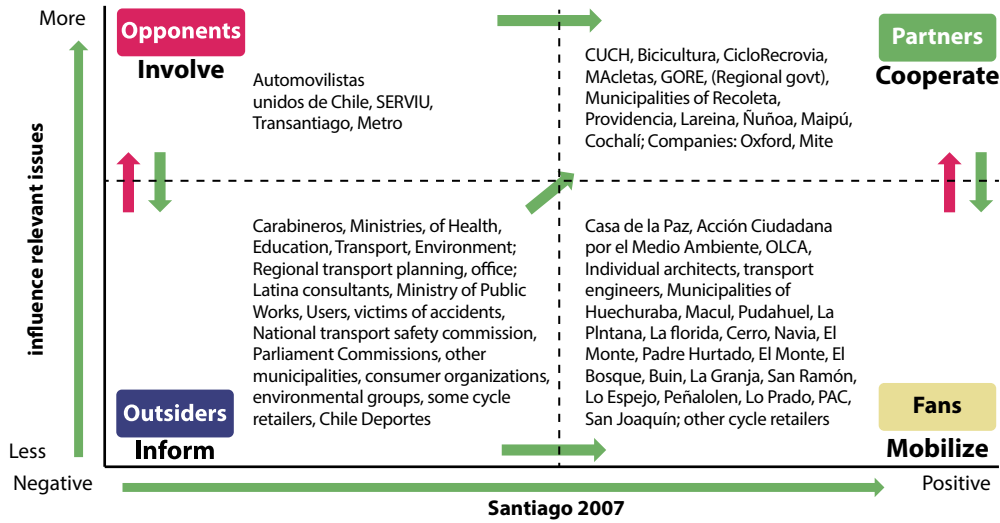


Figure 11b. Shows the initial mapping for Santiago.

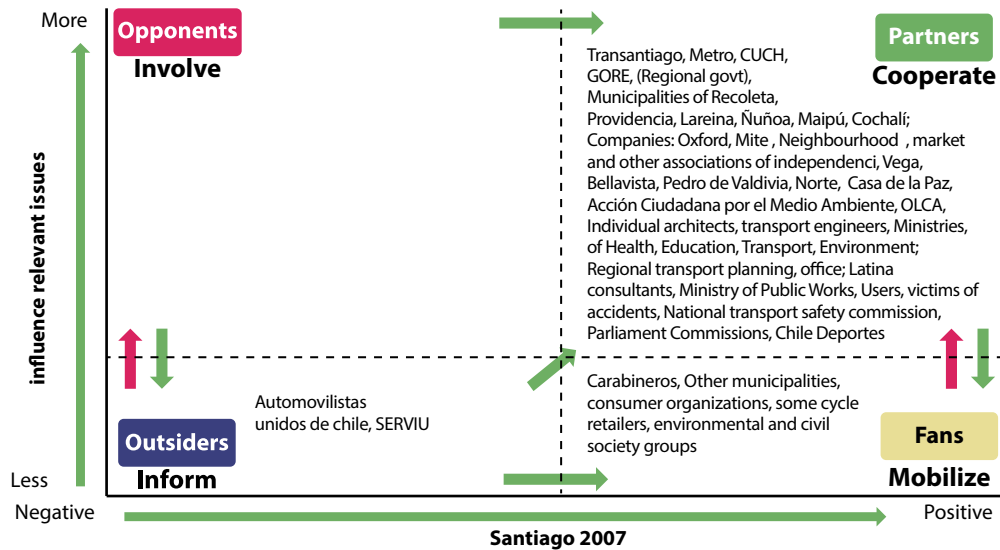
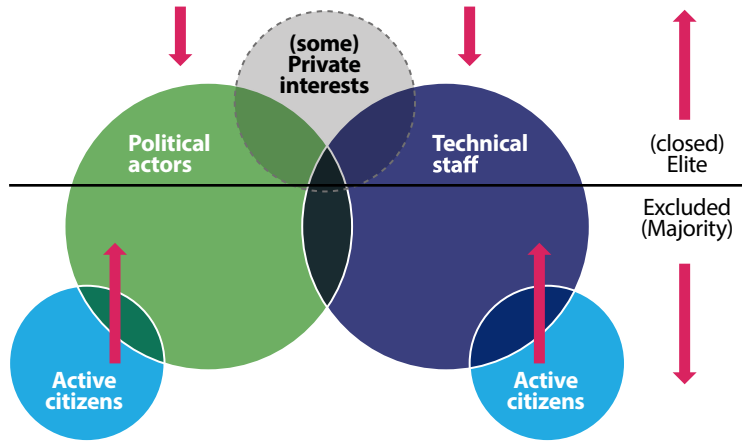


Figure 11c. Shows our desired map, largely achieved in 2008 with the Cycling Master Plan Roundtable.

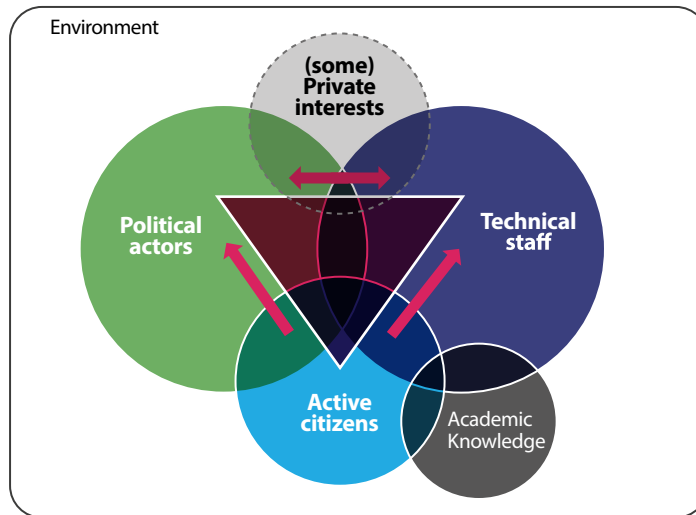
The key to a good strategy is to understand that we need to play many chords at the same time. Often citizen groups approach only friendly politicians. Or they only talk with a few technical staff or planners (figure 12a). But what's really important is to bring them all together (figure 12b) and talk to them in a coordinated way. This improves the information available, opens up decision-making to public scrutiny, and helps generate win-win rather than win-lose dynamics.

**Variegated collection of organizations that constitute the state** (Evans, 2002)



**Figure 12a.** Typical approaches to power have citizens focusing on political actors or technical staff separately, leaving room for misunderstandings, false information, manipulation and other barriers.

**Variegated collection of organizations that constitute the state** (Evans, 2002)



**Figure 12b.** Generating working groups, roundtables and other participatory instances makes action by political leaders, technical staff and citizens more visible, which reinforces all-way relationships there by improving transparency and effectiveness.

It's very hard for a single organization to play this role: hence the importance of diverse civil society actors. In Santiago, after years of bitter conflict, six pro-cycling groups formed *Ciclistas Unidos de Chile*. Thus, one group, *Bicicultura*, does mostly cycling promotion through its annual festival, and considerable lobbying. Another, *Ciclocreoivia*, organises open (car-free) streets in different neighbourhoods. *Macletas*, with support from Living City, organizes a women's cycling school. Living City has become expert on technical standards and processes for cycle-inclusion.

To make these networks function well, sometimes we exercise leadership, and sometimes we follow. Together, good leadership and good followship build strong, resilient organizations. Horizontal participatory processes, where citizens run sessions, organize events and otherwise share power (and responsibility) with government are essential: they build capacity, credibility, but also the independent citizen voices necessary for innovation and winning public opinion.

## What and Who

A cycling master plan is essential and it can't just be a declaration of good intentions: Portland, Madrid and other cities offer interesting examples. At the very least, it requires a proposed network, a participatory process, a permanent advisory board with a majority of citizens chosen by citizens' groups themselves, a permanent staff unit and ongoing training, including site visits and participation in key conferences, such as the European Cycling Federation's *Velo-City*. The plan also has to include funding and specific deadlines for completing new facilities. It should also contemplate cycle training, through formal and non-formal education systems (public health instances are ideal), and funding for diverse, citizen-led initiatives. For an excellent overview of the steps and issues involved, there is an excellent handbook developed by international experts, with support from the German development agency (GIZ) and the Dutch NGO Interface for Cycling expertise (Godefrooij, Pardo et al. 2009).

## Final reflections

After you've been doing this for a while, you notice that the list of measures for cycling-inclusivity is pretty standard (Godefrooij et al., 2009). But every city adapts and applies the list differently. Building cycle-friendly streets is good everywhere, it's true. But how the same measures play out locally is always different.

This is because each place has its own history, culture and people, and they all come together differently within the urban planning system. But if you're not careful, a lot of people get left out, often the ones most relevant to change. Just copying what someone did somewhere else is never enough.

Redistributing road space by giving parking to wastepickers in Delhi, for example, can transform lives and build equality and social justice. Making cycle lanes wide enough for recyclers in Santiago or Lima is every bit as important. We can't just copy the "best" standards for somewhere else. Everything has to be adapted to the specific local culture. Mumford said every great city is a collective work of art. That's exactly what building (cycling) inclusive cities is all about.

**Lake Sagaris**

lsagaris@yahoo.com

# Cycling Organisation - Lobbying for cyclists in Germany

By Burkhard Stork, Managing Director, ADFC and Till Kolja Oppel,  
Sports Engineer

**T**he German Cyclists' Federation (ADFC) was founded in 1979 in Bremen. Now with 135,000 members it is the largest national interest group of cyclists in Europe. It is represented in all 16 German states by state associations. District and local associations exist in over 450 districts and municipalities; in 80 cities, there are offices which advise in all aspects relating to the bicycle.

## The situation in Germany

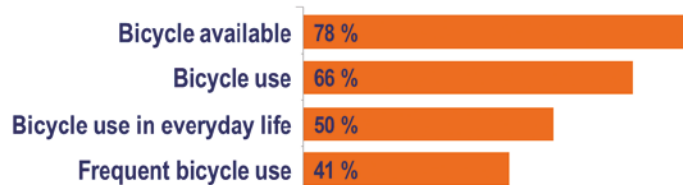
Germany is geographically located at the centre of Europe and is divided into 16 federal states. With approximately 82 million inhabitants, Germany is the most populous country in Europe, with a population density of 229 inhabitants per square kilometre. About 85% of the German population is distributed over 80 cities with more than 100,000 inhabitants, of which four cities have more than one million inhabitants.

The automotive industry has always been an important economic sector in Germany. In 2008, sales amounted to nearly € 346 billion and provided 747,000 jobs. This high rating is also reflected in the population. For example, in Germany there are more than 51 million registered vehicles. 83% of households have at least one car. Germany has built 13,000 km of motorway and is the only country in Europe with no speed limit on motorways.

However, especially in the urban regions of Germany a change in thinking is taking place. More and more people are using the bicycle as their means of transport and do without a car. In some cities, the share of cycling in the modal split has increased to more than 39%, but due to the large regional differences (Wuppertal below 1%) the total share of cycling in Germany lies at 10%.



**Figure 1.** Cyclists on the motorway at the annual ADFC rally (Sternfahrt) in Berlin  
Photo: ADFC/René Filippek



**Figure 2.** Bicycle use and availability in Germany measured in relation to the total population [cf. Fahrradmonitor Deutschland, 2011]

A representative survey in 2011 in cooperation with the ADFC also indicates that 78% of the respondents have a bicycle available and 50% use it in everyday life (see Fig. 2). Compared to the 2009 survey there are no significant changes.

Recreational cycling is particularly popular. From this a new branch of tourism has developed, generating 10% of the total revenue in tourism in Germany with a turnover of about €10 billion. Holidaying in Germany is popular. Of the 4.9 million German cycle tourists 86 %prefer to take their holiday in Germany!

## The German Cyclists' Federation

The German Cyclists' Federation was founded in 1979. On 18 April 1979, it was crowded at the Tebbe family kitchen table. All those present agreed: something must finally be done about the rise of the automobile and the decline of the bicycle. But opinions were divided as to how to implement this project in a country where the prosperous economy was due to the automobile. A bicycle lobby is needed, a worthy opponent for the ADAC automobile club. And so those present around the traffic consultant Jan Tebbe founded the General Cyclists' Federation. The association should only endure if 100 members joined within 2 weeks. 179 members exceeded expectations and the club continued.



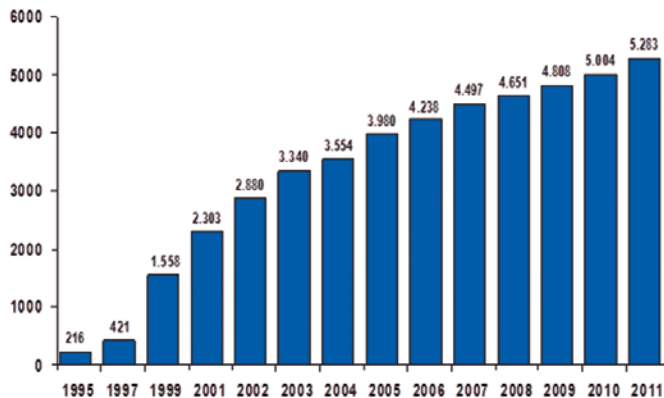
**Figure 3.** Federal Minister of Transport Peter Ramsauer receives the ADFC; f.l.t.r.: Ulrich Syberg (Federal Chairman, ADFC), Peter Ramsauer (Federal Minister of Transport), Ludger Koopmann (Deputy Federal Chairman, ADFC), Burkhard Stork (Federal Managing Director, ADFC)  
Photo: BMVBS.

The visions of Jan Tebbe could not be understood by all the members. Often dubbed “Jan flight of fancy” [Jan Höhenflug] because his goal to attract 10,000 members and an office with permanent staff was illusory at a time when meetings must be held in private living rooms. On 27 September 1979, it was done: the first national office was opened in Bremen. Then everything happened very quickly. Just seven years later, the target membership was exceeded. 12,800 members joined the club. Still the basis for the enforcement power of the ADFC is a large membership. Through offering a wide range of services for the bicycle and abandoning polarising maximum demands it managed to reach the current membership of 135,000 members, which is still rising. The ADFC is a bicycle club for everyone.

In order to further improve the political influence of the ADFC it must put more focus on lobbying. An important step in this direction was completed in 2011, when a representative office was opened in the capital Berlin in addition to the national office in Bremen. The opening of this office primarily serves to intensify contacts with politicians and other organizations. In this way, personal contacts can be established and maintained directly.

### ADFC Services

The increasing popularity of cycle tourism in Germany may well be due to the strong commitment of the ADFC and a decisive criterion for the well-being of cycle tourists is accommodation. It must offer a good standard of comfort, good nourishment, and a storage



**Figure 4.** Development in the number of Bett+Bike enterprises.  
cf. Bett+Bike Deutschland

room for bicycles. From this developed the simple idea of “Bed+Bike”: all hotels, guest houses and pensions can receive the ADFC quality award if they are ready to accept bicycling guests for just one night. Also they must have a secure storage space for their bikes, an opportunity for drying wet clothes and equipment, bike tools, maps and information about the surrounding area, rail and bus connections, and on the next morning be offered a full breakfast. Currently there are over 5,200 certified ADFC bicycle-friendly establishments. Thus cyclists today find it increasingly easier to find accommodation.

### “Oh, just for one night?”

The “Bed+Bike” project was initiated by the ADFC in the 90s in response to the continuously growing bicycle tourism. The cycle tourism experts active in the national technical committee “bicycle tourism” had many unpleasant experiences during their tours. These mainly included the cancellation of accommodation providers, particularly in holiday regions, when cyclists expressed their wish to stay only one night. In response, in 1995, a list of criteria for cyclist friendly accommodation facilities was developed. The echo from the trade specialists, the press, and especially in the hospitality industry was very positive. This was the starting point for “Bed+Bike” with the following objectives:

- Establishment of a Germany-wide network of cycle-friendly accommodation and catering services with clearly defined minimum requirements
- Qualification of accommodation establishments, so they can better meet with the wishes and needs of cycling guests
- Promotion of regional and Germany-wide bicycle tourism





**Figure 6.** Annually conference of the 16 representatives from the ADFC state associations  
Photo: ADFC

**Figure 5.** Cover of "Radwelt", the exclusive ADFC members' magazine ADFC/Zweiplus

Another home brand has evolved with the ADFC tour portal. Bike routes with a total length of 300,000 km are stored in a database. The cycle routes are covered and evaluated by trained ADFC scouts and the portal continuously expanded. The cyclists receive important information about the route, such as route course, quality, and sights of interest from cycle paths, in order to perfectly plan their trip. Map details or GPS tracks can be obtained for a small fee. Members have a free kilometre quota.

On evenings or weekends, day or multi-day tours are offered. Nearly 4,000 volunteer ADFC tour guides were in action in 2011 and made it possible for over 213,000 participants to take a short break in their own region on a total of almost 18,000 trips. The average length of tours was 56 km. Overall, 12.7 million kilometres were covered by bike in 2011, which corresponds to 302 circumnavigations of the earth. The ADFC is thus the largest tour operator in Germany. ADFC members can participate at significantly discounted prices in the paid tours.

Another service is the members' magazine "Radwelt" [Bike World], which appears six times a year. The professional magazine is available exclusively to members and is characterized by the wide range of topics. Besides cycling, tour reports, technical matters, consumer information, and legal advice can be found.

The ADFC member will always be offered expert advice. Over the members' hotline, questions about planning holidays, buying a bike, to technical bicycle matters and local involvement are answered. In addition, each member has liability and legal expenses insurance via the ADFC.

The ADFC is facing major challenges. Although almost every household has one or more bicycles available and there are over 30 million daily cyclists, the ADFC has only 135,000 members. The largest automobile club in Germany, the German Automobile Association (ADAC) has 18 million members. In addition, ADFC members are on average older than the total population. The association is lacking in young adults. There are not enough volunteers for the active work on the ground, and not enough full-time employees can be paid. The more members the ADFC gains, the greater the financial strength of the association, and the stronger the association's voice can be heard in society. To recruit more members the ADFC will significantly expand its service, because service is the central argument for recruitment and retention. Membership in the ADFC has to become more attractive.

Despite everything, service is not the most important task of the ADFC and must not be operated for its own sake. But only with a large membership organization can the ADFC reach its goal of promoting the public interest in bicycle traffic and to provide for the further prevalence of the bicycle.

**Burkhard Stork**

**Till Kolja Oppel**

burkhard.stork@adfc.de

kolja.oppel@adfc.de

## Cycle Promotion Campaigns - Getting people to pedal in Guadalajara

Carlos Romero Sánchez, Guadalajara, Jalisco, Mexico.

Urban technical consultant

**H**istorically, the metropolis of Guadalajara has been an ideal city for non-motorised transport, due to climatic conditions, abundant trees and its friendly topography. Most of this is flat, with slopes that do not go beyond 5%, with over 60 thousand hectares and very low population density, which on average does not exceed 60 people per hectare. A high percentage of the population lives within 15 kilometers from the city center metro about 40 or 50 minutes by bike.

As in many cities worldwide, there has been an excessive use of a single means of transport—the private car— usually with a single occupant, which has also been favoured with a disproportionate investment in infrastructure.

Guadalajara is aiming at a modal balance in the public space, where each mode of transport has the space, investment and infrastructure, according to their demand and capacity. This aim is based not on a feeling of pity, but for the dignity of users. The mobility of disabled people, pedestrians and cyclists should be prioritised, rather than mass transit and cars in general, in response to the needs of future generations.

In order to share some of the most important efforts which have been and are being made in Guadalajara, I present a summary of the actions, the vast majority of which have been made possible by the committed involvement of citizens who want to enjoy the capital of Jalisco, through the use of bicycles as an efficient means of daily mobility. The city bike is the best form of transport due to topographic and climatic conditions in this part of the Mexican Republic.



Pedaling for  
Guadalajara

## “Vía RecreActiva”

Without doubt, “Vía RecreActiva” Sunday marked a *before* and *after* as far as “Urban Mobility” goes. Since its inception, with 11km, on September 12, 2004, it has become the only street that is metropolitan in the whole of Mexico. Some isolated initiatives covering cycling infrastructure in the city (La Paz Avenue and Laurel Avenue) had been taken before this. Sunday closing of one of the most iconic road arteries of the city, which now has more than 60 km and 400,000 users on average each week, represents more than a car-free public space: it characterises a true symbol of social cohesion, recognition of the “other” as an equal and non-motorised transport as legitimate actors in the road network, largely transcending the field of mobility up to a socio-cultural spectrum.

In Guadalajara, there are more than 400,000 users in general, beating the 200,000 riders each Sunday on the bikeway RecreActiva; 7,000 take an evening stroll; there are seven weekly public tours; there is leadership and active participation in the National Network of Urban Cycling, a city council for non-motorised mobility and 1500 kilometers of a network of cycle routes in the Master Plan on Non-motorised Urban Mobility.

“Via RecreActiva” was possible thanks to the efforts of a group of local businessmen and concerned citizens who formed the civil partnership Guadalajara 20:20. By corporate management, they convinced the mayor of the city of Guadalajara to undertake the adventure of giving a human face to the streets. Learning from international experiences “Public Cities,” they replicated it in our capital city.



Sunday closing Via  
Recre-Activa

## Master Plan on Non-motorised Urban Mobility for the Metropolitan Area of Guadalajara (AMG)

There is an important example of the realisation of this master plan, which is the “Proposal for bicycle mobility network for the metropolitan area of Guadalajara CEJ ITDP,” which had the support of Hewlett-Packard, and was made in August 2008.

Thanks to the participation of hundreds of concerned citizens, coordinated by a local firm and advised by prestigious international organisations (8-80 cities, Alta Planning and ITDP), the Master Plan on non-motorised mobility in the metropolitan area of Guadalajara was published in February 2010. Its main objectives are to:

- Promote a sustainable urban mobility policy that gives priority to pedestrians and cyclists rather than motor transport.
- Develop a network of pedestrian and cycle routes to be supported by a sustainable urban mobility system for AMG.
- Create design standards for pedestrian and cycle networks in metropolitan and local implementation, through a Manual of Design for Pedestrian and Bicycle.
- Meet the needs of accessibility, with transportation access which is safe, fair, inclusive and respectful of the environment.

- Promote non-motorised mobility among the greatest number of citizens, civil organisations, institutions and companies.

The proposed pedestrian and bicycle network for the AMG has a length of 1,570 km and consists of the following infrastructure: 15 metropolitan corridors covering approximately 360 km and 26 areas of preferential access distributed among 8 municipalities with a radius of 1.5km each.

## Civil Society Organisations

Every day, more civic structures are promoting urban use of bicycles as a means of transport. These range from cultural themes such as “To the Theatre by Bike” or “Rolling House” to many others who do it for the pleasure of riding and building a better city, such as “City for All” and “Bike GDL.” Some have more place in universities and schools such as “100cias”, “BiciTec” and “Mobility for Development”.

In addition to these initiatives, the following can be found:

- Jalisco Ecological Collective CEJ
- Bike 10
- White Bike
- BKT bicipública
- Fijalara
- Citizenship Movement Proposal
- Block
- Collective Tricycle
- Managing the human
- The other faces of the city
- Jalisco as we go
- Red Tree
- Move you by your city
- Plan-V
- 2020 Gdl
- Femibici

## Metropolitan Platform for Sustainability

This is a horizontal space of civic organizations interested in promoting the sustainability of Guadalajara. Created in 2008 under the name of “Citizens’ Council for Sustainable Mobility”, it managed the Master Plan on Non-motorised Urban Mobility for the Metropolitan Area of Guadalajara and, in coordination with neighbours and entrepreneurs, opposed the construction of an elevated urban highway called “Route Express”.

Metropolitan Platform consists of civil society groups with different backgrounds, objectives, methodologies and subjects, but all with the same concern for a sustainable, accessible, close, efficient, prosperous, fair and democratic city.

Work to achieve the consolidation of the ideal city, is based on the “Declaration of Guadalajara”, which contains not only the principles underlying the urge to change the city, but the specific actions and agenda of work that brings us together.

It integrates the following civil society organizations:

- Center for Applied Technology infotectura and AC (CITA)
- City for All
- Jalisco Ecological Collective, B.C. (CEJ)
- Collective Tricycle
- Urban Block
- How We Jalisco. Citizen monitoring of quality of life
- The Other Face of the City A.C.
- Proposal Citizen Movement, B.C.
- Move around your city A.C.
- Plan-V
- Red Tree

## National Network of Urban Cycling BiciRed

In Mexico, cycling associations in various cities have been organised on a non-profit basis, to share success stories and experiences in our country covering proper and safe mobility for cyclists, pedestrians and other users of non-motorised means of mobility in the streets, roads or country lanes. They include movements of urban cyclists who encourage the use of bicycles as a means of urban mobility as a counterbalance to the problems that afflict society in the environmental, economic, social and health areas. Each year it convenes for this purpose and this year will celebrate the fifth meeting in the city of Oaxaca, in addition to conducting two camps.

The objectives of the BiciRed are sharing information, coordinating and promoting activities and initiatives of members in order to achieve their goals in the areas that each sees fit, and thus more effectively promote adequate and safe mobility of cyclists, pedestrians and other users of non-motorised means of mobility in the streets, roads or trails in the country, and / or encourage the use of bicycles as a means of mobility in Mexico. All this by:

- Promoting responsible and safe use of bicycles as a means of transport, a goal that is closely related to the overall goal of non-motorised mobility (pedestrians, people

with disabilities and users of other non-motorised means of mobility), promoting recreational and sport of cycling, and recovery and improvement of public spaces.

- Achieving recognition of bicycles as a vehicle of public and national interest, with rights and responsibilities like other vehicles on public roads in cities and on roads, highways and trails in the country.
- Building capacity and strengthening promotion and management of all participating organisations to achieve their local goals and serving as a space for organising, planning and coordination to raise and achieve national goals.
- Promoting regulatory changes, and budgetary and technical projects, affecting the public policies adopted at federal, state and local level, promoting safe and adequate mobility and cycling and, in general, non-motorised forms of transport.
- Proposing and promoting public policies to create and improve road and urban infrastructure, to ensure proper and safe mobility and accessibility for cyclists and pedestrians.
- Encouraging the various governments in the country to take into account citizens' initiatives that promote cycling and non-motorised means of mobility and generating coexistence among equals, and including as a priority in government plans a road infrastructure for cyclists and other non-motorised means of mobility, linked with all of the entities of the country.
- Promoting intermodal cycling with other means of mobility.
- Seeking to improve the quality of public space and a suitable environment in Mexican cities.
- Gaining more and more supporters and bicycle users, through advocacy, information, education and developing public awareness of the individual and social benefits of cycling, and the negative effects of indiscriminate use of the car.

### **Towards Carfree Cities 2011 MX car-free**

In September 2011, Guadalajara became the headquarters of the "Tenth International Conference Towards Car Free Cities", an event that brings together the best experiences and challenges in making cities increasingly independent of cars. This event was initiated by the World Carfree Network, through local activist organisations like City for All and Bike GDL A. C. With an uncompromising commitment to sustainable mobility,



Organized groups  
of civil society



the “Declaration of Guadalajara for Sustainable Mobility” was made, which develops as underlying principles in urban terms that the city becomes “accessible and close” and “prosperous and efficient”, in social terms becomes “democratic and equitable” and in environmental terms becomes “sustainable.”

It is required that an immediate moratorium be declared on any piece of infrastructure for motor vehicles, that the irrational growth of the urban area be stopped, that at least 30% of the metropolitan fund budget be allocated to pedestrian and bicycle mobility. As a sign of peaceful and purposeful activation, there is an urgent call to action to each of our authorities and actors involved in city development and management of mobility with the good intention of carrying out the following over the short, medium and long term:

- Ensuring accessibility for the most vulnerable
- Promoting urban proximity
- Stopping the unnecessary growth of urban areas
- Prioritising investment in sustainable means of mobility
- Discouraging car use and ensuring the management of traffic demand
- Promoting proactive and participatory mechanisms and promoting public consultation projects.

The signatories of this statement reflect a growing social outcry that is increasingly popular with civil society in other cities and countries, academics, specialists, businessmen, and with women and men who want to live in a city worthy of the name.



Carfree ITESO on  
September 2011

## UNIVA Bike Ride

In 2010, the first bike ride MOVILIZATE was held with students at the University UNIVA Atemajac Valley. So far, there have been three trips a year. This tour is a fun exercise, whose main objective is to enable young students from the largest private school in the city, of an appropriate age choose the way to be transported. More than 1,000 high school students participate in this event. These students perform various activities about non-motorised mobility, which includes a 10km cycle route, whose highlights are the Metropolitan Park, the iconic square of the colony Chapalita and the same university as their trip starts from and ends.

## Network Cyclist in GDL (cycle guide)

It has prepared a document that contains each of the facilities cyclists in the metropolitan area of Guadalajara might need, in order to identify their type, location and number in order to promote their use.



Cycle walk  
MOVILÍZATE UNIVA

## Bkt bicipública

The independent company BKT, with its own resources, is remarkable. It has involved the enthusiastic collaboration of various kinds of businesses, such as restaurants, cafés, small hotels and schools which, through financial payment and the presentation of a credential which is provided through a symbolic annual payment, facilitate this extraordinary means of transport.

**Carlos Romero Sánchez**

[c@carlosromerosanchez.com](mailto:c@carlosromerosanchez.com)



# Branding Cycling - Mainstreaming A Good Thing

By Mikael Colville-Andersen, Copenhagenize, Denmark

We are standing at a crossroads in the history of our cities. Nothing less. The rise in focus on re-establishing *liveable cities* continued unabated the past decade, with no peak in sight. I regard this as A Good Thing. At the forefront of this new movement is something as simple as The Bicycle, quite simply the most effective tool in our urban toolboxes for making our cities nicer places to live. The bicycle as a symbol of change is a powerful one.

Afternoon bicycle traffic in Copenhagen, Denmark. A Good Thing.  
Photo: Copenhagenize.eu





Human streets should not be engineered like sewers.  
Photo: Copenhagenize.eu

Cities around the world are now considering how they can replant the bicycle as transport on the urban landscape. There is a tendency to regard the bicycle as a transport solution (I refuse to call it a transport *alternative*) and place it in the same category as other transport forms. It is, of course, a transport form but leaving bicycle transport and infrastructure up to traffic engineers is unwise and quite useless.

For the better part of 85 years, traffic engineers and planners have failed miserably at tackling the traffic challenges presented by automobiles. They often regard traffic as a code to be cracked. A myriad of data and maps. Not as human behavioural patterns and desire lines. Unfortunately, the reigning school of thought is unchanged since the 1920s. It's easy to blame politicians for inaction and lack of vision regarding life in our cities and the widescale destruction of urban centres around the world. A destruction that has gone completely unchecked by policymakers and society at large. It is, however, more appropriate to look to the root of the problem.

Andrés Duany, the American architect and urban planner, sums it up quite nicely, however. "The problem with planning is that it has been overtaken by mathematical models - traffic, density, impact assessment, public costs etc. - discarding common sense and empirical observation". Unfortunately, this has been the case since engineers were first handed the job of engineering traffic in the early years of the twentieth century.

For 7000 years, streets in cities were human spaces used for transport, gathering, communication and as a playground for children - an extension of peoples' front rooms.



Cycle tracks run parallel to motorways leading to Copenhagen.  
Photo: Copenhagenize.eu

In two short decades in the early 1900s, that perception changed radically and streets became regarded as public utilities like sewers and electricity.

Allowing bicycle culture to blossom and bicycles as transport to once again fill the streets and cycle tracks is not achievable with the traffic engineering mindset that has dominated the past eight decades. Bicycle transport requires an understanding of anthropology, sociology, behaviour and design.

Copenhagnize Consulting's *Four Goals for Promoting Urban Cycling* are a template for cities to follow if they wish to increase levels of bicycle traffic. These four goals are simple but the fact that they are received as "interesting" is a sign that we have been overcomplicating cycling for far too long.

"A2Bism" is the primary goal. If you make the bicycle the quickest way to get around a city, the strangest people will be seen doing it. Homo sapiens are like rivers – they will



Much modern traffic engineering is not about creating space for cycling but rather ignoring a lot of space that could be used for cycle tracks.  
Photo: Copenhagenize.eu

always find the quickest route. This presupposes safe, dedicated infrastructure of course, but it's the simplest way to start thinking. Think bicycle first.

Then there is taming what we call The Bull in Society's China Shop. The destructive capability of the automobile must be restricted through traffic calming measures and lower speed limits in order to save lives and encourage cycling and public transport.

The redemocratisation of urban cycling is on the list of goals as well. Giving the bicycle back to the common citizen, for whom it was invented in the first place. Sub-cultures, in many regions, "own" cycling but the goal is to make the bicycle a normal, accepted and respected transport form for everyone else. The 99%, if you like.

The fourth goal is what this essay is about: marketing and branding, selling urban cycling like we sell any other product and using mainstream marketing techniques to encourage urban cycling. The philosophy that urban cycling is a product like any other and should be sold using basic and timeless marketing principles seems simple but it simply isn't being done enough. It is often either misunderstood or ignored by the majority of people working with promoting cycling.

It certainly presents a challenge, given the fact that an entire generation in many parts of the world have been force-fed the marketing perception that cycling is just a sport or recreation. There is, however, a great deal of historical experience to be used as inspiration.

For the first 60 years of the bicycle it was a rational, practical approach that pushed it forward by providing infrastructure - classic A2Bism all over the world, not least in Copenhagen. Infrastructure that followed the desire lines of the cycling citizenry made





Cycle Chic Breakfast event in Barcelona, in collaboration with cycling NGO Bicicleta Club de Catalunya (BACC). Celebrating the cycling citizens of the city with breakfast and a Cycle Chic photoshoot. Rolling out the red carpet for Barcelona's bicycle users.

the bicycle into an accepted and respected transport form. Today we have the added challenge of re-branding cycling as a normal transport form for Citizen Cyclists and this requires a different focus.

I have often said that if we relieved 80% of the world's bicycle advocates from their duties and replaced them with compact teams of recent marketing graduates we would triple the modal share for urban cycling in three years.

A bold statement perhaps, but let's have a look at where a great deal of cycling promotion comes from. Most modern bicycle advocacy began in the 1970s, when many nations were adversely affected by the two energy crises and the desire for societal change in the late 1960s had not yet faded. The bicycle was at the forefront of the symbolism of those heady times and became trendy for a few years.

When the energy crises passed however, the bicycle was relegated to a piece of sports equipment or something you used for recreation. The advocacy groups that formed in the 1970s may have survived but most have been stuck in the mindset of the 1970s, using the same messaging as environmentalism. Focusing on "It's healthy! It's good for the environment!" instead of highlighting the fact that the bicycle is an effective transport tool. The bicycle industry gave up too, concentrating instead on producing and selling bicycles (and a wide array of highly profitable accessories) to the hobby crowd.

If you consider the fact that environmentalism is the greatest flop in the history of marketing, you can see that we have to think differently. Forty years of environmentalism has not brought us an entire generation of environmentally-conscious citizens - just an entire generation of citizens who are tired of sanctimonious messaging from environmentalists.

When sub-cultures try to market themselves and their hobby/philosophy/way of thinking, it rarely reaches a mainstream audience. And yet, regarding urban cycling, it is the mainstream demographic that we should be interested in reaching. The "avid cyclists" already ride and will continue to do so. You get the feeling that they are keen to try and get a whole bunch of people to be just like them. Imagine if speed walkers did all the advocacy for pedestrianism.

Unfortunately for the sub-cultures, most people don't want to be just like them. Regular citizens would like to be able to merely ride a bicycle to work or around their neighbourhood if given the chance.



The goal now - more than ever - is mainstreaming our marketing and branding of urban cycling as transport, making it normal again - a lifestyle necessity as it used to be in cities and towns around the world for decades and as it is in cities like Copenhagen and Amsterdam but also as it is becoming in many other cities. I often highlight Barcelona, Seville, Dublin, Budapest and Paris. They are the poster children of Emerging Bicycle Cities. There were no bicycles left in these cities in 2006. No sub-cultures to speak of, no one riding at all.

Now, they have all proved that infrastructure combined with logical, practical marketing, works. All use positive imagery in municipal campaigns featuring no-nonsense photos of Citizen Cyclists getting on with their day on bicycles. Material that provides a societal mirror in which all the citizens can see themselves reflected. Practical bicycles are featured, with baskets, back racks, fenders and chainguards or the respective cities' bike share programme bicycles. The message is clear. "This could be you. All you need is a bicycle."

The success of Cycle Chic® is also an excellent example of marketing to a mainstream. It has gone from being a blog featuring photos from the streets of Copenhagen to being called Bicycle Advocacy 2.0. It is free from tired, sub-cultural messaging and it has appealed to regular citizens around the world since 2006.

Copenhagenize Consulting has held Cycle Chic events in many countries over the past five years. From fashion shows in collaboration with the municipalities of Dublin, Barcelona and Kensington & Chelsea to parties, photo shoots and cycle chic rides in cities like Mexico City, Helsinki, Moscow, Vancouver and Tokyo.



Focusing on celebrating those regular citizens who choose to ride in their cities. Something that the overly-protective sub-cultures and "avid cyclists" fail to do.

We are in the midst of a positive age where the bicycle is back and going strong. There are still challenges ahead. Are we faced with an impossible task? I think not.

When the Safety bicycle – the design we still use today – was invented in the 1880s, it brought with it the greatest social revolution the world had yet seen. It transformed human society more quickly, effectively and positively than any other invention in history. The invention itself was brilliant but what took the bicycle as an agent of change to the next level was the marketing of it.

Look at the vast array of posters for bicycle brands and accessories that graced the world between the 1880s and the 1950s. Mainstream marketing at its finest. Images showing cycling as elegant, attractive, effortless and enjoyable. Images featuring women – in order to underline the ease of bicycle use but also to sell bicycles to women and men.





It's interesting to compare the marketing of Raleigh bicycles in various countries. The catalogues change each year, but there is still a clear difference between the way they market their bicycles in Denmark and other markets like the UK or the USA. On the Danish site the bicycles are largely upright models in a city setting and they often feature Citizen Cyclists using them in practical ways. On the UK and US sites the images that greet you are adrenaline-driven hobby cyclists roaring down mountains or along country roads decked out in all manner of gear, leaning over their handlebars to go even faster.

Here we have two totally different marketing directions. If we want to encourage regular citizens to make the bicycle part of their daily lives, look to the Danish site. If we wish to perpetuate the myth that bicycles are merely pieces of sports equipment for hobbyists and recreational activities, look to the UK or the US.

Marketing cycling for the mainstream has worked before and will work again if basic marketing principles are adhered to. The bicycle industry has an ocean of products they wish to sell you but the 99% don't need them. All they need is a bicycle.

Successful branding requires a so-called Stickiness Factor. The creation of a social epidemic. The writer Malcolm Gladwell says in his book "Tipping Point" that, "ideas and products and messages and behaviors spread like viruses do" and that "the success of any kind of social epidemic is heavily dependent on the involvement of people with a particular and

rare set of social gifts. " Gladwell continues, saying that, "Epidemics are sensitive to the conditions and circumstances of the times and places in which they occur."

It's occurring now. The conditions and circumstances for a bicycle virus are perfect. The time and place is now and here. It is of the utmost importance that we recognize this and do everything in our power to allow this virus to spread by using marketing and branding techniques as old as homo sapiens themselves.

Let us leap elegantly over the tired and sub-cultural marketing and messaging of the bicycle industry and bicycle advocates and go for gold by selling this future commodity to the citizens of our cities. Let us pull out all the stops in messaging correctly and positively.

I think this would be A Good Thing.

**Mikael Colville-Andersen**

info@copenhagenize.eu

# Cycle Events - Teaching children for a bikeable Lima

By Jessica Tantaleán, Special Project Metropolitan of Non-Motorised Transport, Metropolitan Municipality of Lima, Peru

## The bicycle: an educational tool for sustainability

More and more cities define their sustainability guidelines in relation to the problems and impact of transportation systems, and adopt new concepts of sustainable mobility for city planning and managing urban travel and space in the city. The global trend to improve our cities and how we get around them means leaving the traditional view of transport and beginning to visualize a city where walking, cycling and public transport take center stage.

Education is the main axis that provides the opportunity to keep updated, renew ourselves and to have a vision which is more consistent with the challenges ahead. Therefore, this axis runs through all programs and actions that the Special Project for Non-Motorised Transport (CICLOLIMA) has been developing. We will not move on from the misconceptions entrenched in our habits if we don't educate ourselves nor, will our societies progress if we don't educate the young.

The bicycle has become a strategy and an opportunity to begin to open people's minds and to redefine the boundaries of building a sustainable mobility system in Lima. The CICLOLIMA team has integrated its various bicycle programs and activities (Recreational Ciclovía, CICLODIA, Educational Program for Sustainable Mobility "Bicicole", Green Night, Cyclist Fairs and Festibici, U.Bici University Educational Program) to create a system in which the different modes of transport exist harmoniously within urban space. It has created a space where the educator and the learner reflect on the role they play and fulfill their responsibilities, and about how to contribute to the solution of the huge problems

**Municipalidad Metropolitana de Lima**  
PROYECTO ESPECIAL METROPOLITANO DE TRANSPORTE NO MOTORIZADO

# III FERIA DE CICLISTA

**15 y 16 de Setiembre**  
Plaza Túpac Amaru  
Magdalena del Mar  
10:00 a.m. - 8:00 p.m.

**Participan:**

- Venta de bicicletas, cascos y todo tipo de accesorios para tu bicicleta.
- Agrupaciones de ciclistas.
- El Bus temático y pista de educación vial del TOURING Y AUTOMOVIL CLUB DEL PERU.
- Bicicline.
- Demostraciones y Acrobacias .
- Exposición de bicicletas antiguas. Paseos en tándem y mucho más...

**Organizan:** Ciclismo Sin Frontera, Cicloaxión, Ciclismo Verde, BMX Perú, L/Femme & Bikes, Unión de Ciclistas Sin Fronteras, Reclinetá, Actibiclimo, Lima Bike, Rodando Perú, Inka Riders

**Promueven:** CPD, BIGCENTRO, JAFI, Alleg-O, Club del Páramo

Cycle Fair

**Municipalidad Metropolitana de Lima**

## VIII SEMINARIO CIUDAD, MOVILIDAD SOSTENIBLE Y CALIDAD AMBIENTAL

**08 DE NOVIEMBRE**  
3:00 PM. A 6:00 PM.  
**AUDITORIO A4** Costado del Pabellón de Ciencias  
UNIVERSIDAD NACIONAL AGRARIA - LA MOLINA

**PONENTES Y TEMAS:**

**Ing. Jessica Tantalean Noriega** - Gerencia de Transporte No Motorizado - MML  
"Degradación ambiental originado por el sector transporte"

**Eco. Julio Cesar Chávez Bardales** - Ingeniería del Transporte - TARYET  
"Planificación y transporte de la ciudad de Lima"

**Soc. Juan José Arrue** - Fundación Transitemos  
"Políticas públicas a favor del transporte sostenible"

**Informes y preinscripciones:**  
Teléfono: 5121936  
E-mail: u.bicli@gmail.com  
Ingreso Libre. Se entregarán Certificados

**CICLOLIMA** | **UBICI** | **TARYET** | **lima**

University Seminar  
Educational  
Programme UBICI

**Municipalidad Metropolitana de Lima**

## LA NOCHE VERDE

**3ra. Edición**  
**01 DE NOVIEMBRE**  
7:00 p.m. - 10:00 p.m.  
Av. Arequipa Cdra. 1-9

**CICLOLIMA** | **lima**

3<sup>rd</sup> Edition of  
The Green Night

of the city resulting from its unsustainable transport system. These different programs give us the opportunity to get closer and closer to the changes we seek in our society, both in the classroom and in suitable and safe public spaces.

### The strategic training of trainers in citizenship: the ZOOM project

It is no coincidence that most of our team began their careers as educators in the pioneering project "Humanizing Transport", also known as "ZOOM" - in charge of FONAM and funded by the World Bank from 2005 to 2008. This school program for sustainable urbanization took them to schools around Lima to teach urban citizenship and provide environmental education, with the bicycle as an icon and tool. It was hard work, which did not begin in the classroom. The first workshops on urban cycling, road safety and environmental quality were given to students in streets and parks. In view of the good work and enthusiasm, little by little, the principals were persuaded to open the playgrounds and then the classrooms, where the project was consolidated for the benefit of children.





Proyecto Zoom  
Photo: Ciclolima File

## The bicycle in schools, inside and outside the classroom: BICICOLE Program

The Metropolitan Municipality of Lima, through CICLOLIMA, decided to continue and improve the project ZOOM, and make it the School Education Program “BiciCole” a fundamental axis of our strategy aimed at schoolchildren in the city. With this program, we continue innovating the national education system for children between 9 and 12 years old, through workshops on coexistence and citizenship, road safety, environmental issues, and practical urban cycling. The program was expanded with two activities that promote environmental protection and sustainable mobility: the “Environmental Brigades” and “To School by Bike”, respectively, programs carried out by biology teachers and university volunteer teams, trained by us, with those who promote environmental campaigns and rides to school that amuse and stimulate the children.

It was challenging to get the support of teachers to strengthen and expand the program. However, with great effort, agreements were reached and ZOOM educational material was improved and became manuals that met the technical requirements of teachers, principals and the Ministry of Education. With that, we reestablished our relationship with former colleagues and joined new partners, repeating the program to the great interest of the Ministry of Education, which aims to replicate the experience nationwide.



'Bike to School' Program  
Photo: Ciclolima File

The "BiciCole" program works because it manages to be included in the educational curriculum of three courses through our monitoring, supervision, and provision and maintenance of bicycles. In 2012 we closed the program with 90,000 students from 11 schools in Lima. This year, 40 new schools in lower middle - class districts of Lima will be added.

The influence of BiciCole reaches family and friends in their homes and communities. Parents support the program, because they allow their children to stay longer when there are special workshops. Before, they had a concept of just recreational cycling. Today they have a broader view thanks to lessons with their children. For example, the founding professor (senior), Ada Lopez, considered it wonderful and rewarding to learn to ride a bike as an adult through the program. The bike has solved the problem of lack of exercise, except for walking at the weekend with her family. It has also influenced her home's habits "My husband used to take the car to buy bread three blocks away. He now goes by bike and, as it is not very far and if he wants a bit more pedaling, he cycles to a bakery that is further away".

## Space for fun and competitive education: FESTIBICI

Similarly, the “FestiBici” have been characterized by their effective drawing power. Thousands of schoolchildren from the capital involved in contests to make your school “Metropolitan Champion of Champions FestiBici”. Through games, drama, dances and crafts, the students put into practice the knowledge acquired in the BiciCole. It is a space that encourages more schools to become involved, in addition to those involved in the regular program, and allows other sustainable transport authorities to interact with learners.

The FestiBici raises children’s awareness about the importance of using non-polluting means of transport such as walking, cycling, biking, skating and use of public transport systems. This is achieved in a way that combines education and fun and is facilitated by the creativity reflected in the different competitions of FestiBici.



Student at the FestiBici Competition  
Photo: Ciclolima File



Bike's day - 6 km of Life and Health on Ave. Arequipa  
Photo: Ciclolima File

Each date FestiBici develops in the Northern, Southern, Eastern and Central City, and brings together teachers and students to enjoy a day full of music, games, contests, and entertainment, surrounded by a circuit of activities, where promotion stands are positioned with information from each of the organizations involved in the program and others that contribute to sustainable mobility in Lima: the Ministries of Environment and Education, Electric Train Autonomous Authority (Metro de Lima), Protransporte (BRT "Metropolitan") and the Municipal Managers of Education, Culture and Environment.

### **The street, unique space for forming citizenship: recreational bikeways**

As we feel better in the streets and we want to stay longer in them, we will have a better quality of life and coexistence. However, when we grow up in a hostile, violent and insecure environment, which only rewards and protects the world of the car, the formation and change are more difficult. So, having adequate space is extremely important for children in order to learn to use the bicycle and, at the same time, allows them to share the experience with their parents.

The city of Lima, a large city that is home to a third of the country's population, is a flat city, with very little rain, and relatively moderate temperatures. The attributes that make the capital bike-friendly are enviable, but even so it is not considered by locals as a city

for cycles. The bike has a totally different background from any other mode of transport, requiring an initial effort to transform human energy into forward momentum. Therefore, it is necessary to develop habits and customs in Lima to make cycling popular, which is why we consider it important to work with schools.

If children learn to use the bicycle as a mode of everyday transport, over time it may break the association between car use and social status or success. The programs in the schools are good and have achieved active participation of children and teachers. However, it must not only be seen as an activity in the schools, thus CICLODIA program, which is held every Sunday over the 6 km of Arequipa Avenue, one of the most historic and elegant streets in Lima, allows only the use of bicycles and non-motorized modes of transport.

Thus, children have the opportunity to use their bikes with their parents, siblings, grandparents and friends, contributing to the improvement of family relationships and promoting social dynamics in public space. This allows people of different social, economic and physical status living in different parts of the city, to share urban space characterized by equality and traffic safety. The children, who are excluded from the main streets on the other days of the week since they are unsafe and threatening, are the big winners on Sundays: one third of the users are children.

**“When you enter a recreational bikeway, you feel that it is just the perfect community, protecting, caring and sharing and you feel safe.”  
(Survey, Lima Cómo Vamos, 2012)**

Therefore, reinforce the great value of the recreational bikeways. Their strategic value in education and training citizenship should be integrated into a government plan, as is done in many cities (Recreational Bikeways of Americas).

## Conclusion

Sustainable mobility, in particular cycling, is gaining strength in cities of all sizes, providing clean transport and a quiet, friendly and healthy environment. It's becoming a symbol of the values that we should encourage in children, also develops motor skills, promotes health by performing physical activity, improving balance, and allowing them to integrate and understand the social and urban environment. This makes the bike a teaching tool, an educational resource that is necessary to promote and advance the welfare and harmony of our current and future society, both in the classroom, through educational programs, and outside them, in an appropriate and safe area such as recreational bikeways.

**Jessica Tantaleán Noriega**  
jessieperu@hotmail.com



# Cycle Training for Children - Take a child's perspective and make it fun!

Mai-Britt Kristensen and Loa Bendix, Danish Cyclists' Federation, Denmark

**W**hen people from abroad visit Denmark, they are often amazed by our bicycle culture. 'How come you cycle so much?' they ask. The short answer is: we start early.

In Denmark, teaching the child to bike is considered the parents' responsibility, and we generally expect that children can cycle when they start school. Schools then teach them about traffic rules and traffic safety and often also participate in campaigns like 'Bike to School.' In fact, 45 % of Danish children frequently cycle to school.

Yet, we cannot afford to rest on our laurels because the number is actually decreasing. If we are not careful, our renowned bicycle culture could be gone in a generation. So in collaboration with the municipalities, the Danish Cyclists' Federation is making great efforts to get day-care centres and schools more involved in building and strengthening children's bicycle culture. The ground for a healthy and active life as a cyclist is laid in childhood, because if you do not cycle as a child, chances are that you will not cycle as an adult either.

## Get a head start with a training bike

People often think of cycling as something you learn when you start school. In fact, it is much better to start earlier. Nursery-school children are of course too small to cycle by themselves in traffic, but they are not too small to learn to cycle. Children down to two years of age are quite ready to start practising on a training bicycle, which is a two-wheel bike without pedals.



Children down to two years of age can start practising on a training bike. You will be amazed at what they can do, and how quickly they learn.

In addition to practising balance and motor skills, a training bike also makes the child more mobile. Taking a walk for instance becomes much more fun. But the training bike is also an amazing way to learn how to bike, and often, learning to ride a regular bike goes quite easily because the child already has good balance. Once it has learned to pedal and brake, it can start practising other manoeuvres. But how do you get the child to practise cycling without it becoming an irksome duty?

### Cycle training through play

Children learn through movement and play. Likewise, games provide a most enjoyable and effective form of cycle training. Over the last four years, the Danish Cyclists' Federation has developed a concept known as 'Cycling games,' which consists of a list of well-known children's games, such as 'Tag' and 'Follow the Leader,' which have been converted into cycling games for children from 2-12 years.

When playing cycling games, the children have to concentrate on several things at a time: keeping their balance, pedaling, steering. They must also keep an eye on the other kids cycling about, follow the game, and listen to the instructions of an adult. In short, there are many things to keep track of.





Cycling games can be adjusted so they keep challenging the child. Here, a boy is playing 'Follow the Leader' – advanced level.

But through the games, the children get better coordination, timing, and balance, and slowly they become one with their bike. And best of all: they do this almost without noticing because they are just playing and having fun.

Some nursery schools have really embraced the cycling games concept and integrated it into their pedagogy. For instance, the kids from 'Hylet', a Copenhagen nursery school, play cycling games each Friday. Then you will see the kids with their small yellow vests pulling their bikes to the plaza across the street and then wheel (or spurt if on a training bike) around the plaza catching soap bubbles with their helmets to name just one activity.

The leader of 'Hylet', Erik Nielsen explains their decision to use cycling games:

"Cycling benefits the child's development in many ways. It contains a lot of the elements that help develop the child both physically, motorically, psychologically, and cognitively ... Cycling also entails a lot of social activity, and last but not least, it creates joy and helps build up the child's self esteem."



Cycling games are a great pedagogical tool – and the kids love it. Here, a girl from 'Hylet' nursery school tries to keep her balance and concentration during an unexpected splash of water.

The Bicycle Games project is under continuous development. It started with the publication of the booklet '20 Cykellege' (20 Cycling Games eds.), and was followed by the establishment of a team of instructors with special knowledge of how to initiate fun cycling games. With the most recent step of the project, we are establishing local teams in a number of municipalities to spread the concept even further. Six of the cycling games have also been collected in a smaller pamphlet and translated into both English and Portuguese.

In 2011, the cycling game known as 'Obstacle Course' was taken to a new level. A mobile bicycle playground was developed consisting of various challenges such as bumps, seesaw, and much more. Here, the children can play more freely than during the more organized cycling games.

The children get a sense of freedom on the bicycle that they don't get to experience many other places. They get the possibility to challenge themselves and see what they can and cannot do on a bike. The less we adults are there to interfere, the more the children play, and the more they develop their games in completely unexpected directions, all the while becoming more secure cyclists – perhaps even more secure than their parents.

## Cycle safety vs. traffic safety

While you can get far by introducing cycling games, this does not do it alone. At the Danish Cyclists' Federation we differentiate between what we call 'cycle safety' and traffic safety. Cycling games are a great way to achieve cycle safety which means that you can navigate confidently on your bike. But this does not mean that you are 'traffic safe' meaning that you know the rules and know how to handle yourself alongside a passing car for instance. So, once the child has control over the bike, you can start teaching it about traffic rules and practising in traffic. But the basics have to be in order first. Because if you cannot cycle in a straight line, brake, or take one hand off the handlebar, you cannot also concentrate on rules, traffic signals, and other road users.



Children getting 'cyclewise' on the Danish Cyclists' Federation's bicycle playground. A more low-key one can be put together with a box of coloured chalk, pins, and your imagination.

## School cycling

As cycle safety is generally covered by parents, or in some cases nursery schools, Danish schools focus more on teaching children about traffic safety and strengthening their cycling habits. One way to do this is by participating in annual campaigns which set focus on cycling in a way which can be easily incorporated into the classroom.

The Danish Cyclists' Federation's annual campaign, 'Bike to School,' encourages all Danish school children to jump in the saddle two weeks each fall. The concept is quite simple: you have to bike to school as many days as possible during the campaign. You get one point for each 'cycle day,' and if you wear a helmet, you get a point for that too.

Special rules apply for the younger students who are too young to bike to school on their own. Instead, they get points for cycle training with their parents after school hours. In this way, the campaign also encourages families to start cycle training.

150,000 Danish children participated in the 'Bike to School' campaign in 2011.



The strength of the campaign is its being based on the team spirit of the class. The participating classes compete for a number of cool prizes. So the children cheer their classmates on in order for their class to get as many points as possible. One student, Oliver, said that it was too far to bike to school from his mom's house. So he would take the bus to his dad's and bike from there. Now that is team (and cycle) spirit.

Another key feature is that the campaign makes it easy to integrate cycling into the classroom. An extensive catalogue of assignments that teachers can use to integrate the bicycle into their teaching has been developed. For instance, you can combine math and physical education and have the children figure out their fitness rating, or you can practice grammar in a bicycle relay race in the school yard.

'Bike to School' has existed since 2002, and at many schools, the campaign has become a tradition to which students are very dedicated, especially those in middle school. Many municipalities also support the campaign e.g. by sponsoring local prizes and encouraging their schools to participate.

### Teaching traffic safety

In 2006, the decline in the use of bike lights triggered the development of a new campaign aiming to teach fourth-grade students about the importance of using bike lights and reflectors when cycling after dark. Children often start to bike to school on their own around fourth grade, so it is a good time to start teaching them to take responsibility for their own safety.

'Get Your Lights On,' like 'Bike to School,' also uses the classroom to make children curious about cycling. The class teacher receives a kit with lights, reflectors, and assignments for various subjects. In natural science, for instance, the children measure from how far away their lights are visible; they make their own reflectors, and test what happens to batteries if you put them in the freezer.

From the schools' point of view, the two campaigns provide an easy way to cover traffic education. Some may be unsure of how to teach students about traffic or feel that it is not one of their core tasks. But with a ready-to-use catalogue of assignments that also fulfill the requirements of other subjects, teaching traffic education and cycling does not become one more thing that the teacher needs to prepare. Instead, it becomes a helping hand that makes traffic education and cycling fun for students and teachers alike.



The lights and reflectors campaign 'Get Your Lights On' teaches fourth-grade students to take responsibility for their own safety.

### **The parents have got the power**

Cycling games and campaigns are a great way to make children enthusiastic about cycling. But ultimately, a child's cycling habits are very much dependent on its parents who might be unsure of the child's cycling abilities, or whose own transport habits affect those of the child. Busy work schedules and daily commuting can have a heavy impact on the families' transport habits. Cycling games and campaigns might help change this.

A visit to the bicycle playground has served as an eye opener for many parents who have been amazed by their child's wheeling around and taking the challenges at full speed. Not wanting to deny the child the opportunity to help collect points for the class during 'Bike to School,' some might start letting the child bike to school during the campaign.

We still have very little knowledge of how to affect parents in terms of the family's transport habits, but we do have indications that the children's enthusiasm when playing cycling games or participating in a cycle campaign can rub off on their family. Evaluations show many examples of children who have not only changed their own transport habits during the campaign but who have also influenced their parents. One student, Maria, wrote: "I inspired my mother and sister to bike more because I biked to school every day during the campaign."

But how to maintain and strengthen children's bicycle culture and meet the challenge of the families' changing transport habits will stay on the Danish Cyclists' Federation's agenda for many years to come.



A mom lends a helping hand to her daughter who is tackling the 'worm' on the bicycle playground during the UCI Road World Championships in Copenhagen, 2011.

## Where do we begin?

Although they can boast a high number of participants today, the Danish Cyclists' Federation's campaigns and cycle training projects started out as small-scale projects. Only through continuous development over several years have they evolved into what they are today.

So if you are starting more or less from scratch, do not feel discouraged. You do not need an established bicycle playground. Start small. A box of coloured chalk, some pins, or whatever you can find to make your own obstacle course will do the job. Make up your own cycling games. The kids will love it. A 'Bike to School' campaign does not need to start with a grand national concept or with a high-tech website. Start by sending out a cool bike chart where the kids can register the cycle days.

When working with children's cycling, the most important thing is to start early, take the kids' perspective, focus on team spirit, and make cycle training fun!

**Mai-Britt Kristensen**

**Loa Bendix**

mak@dcf.dk

loabendix@gmail.com

**Photo credit:**

The Danish Cyclist' Federation







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# **About the authors**



## Carlos Felipe Pardo

Carlos Felipe Pardo is a Colombian psychologist (Universidad Javeriana, Colombia) with an MSc in Contemporary Urbanism (London School of Economics) who has worked on transportation issues with several projects in his country and abroad. He has provided technical advice on urban transport to municipalities in various cities of Latin America, Asia and Africa. As part of that work, he has also taken part in the development of documents and training courses on Bus Rapid Transit (BRT), Travel Demand Management (TDM) non-motorised transport (NMT), sustainable transport and public awareness and behaviour change in the three continents. Apart from brief consultancies, during 2005-2009, he coordinated the GTZ Sustainable Urban Transport Project in Asia and Latin America ([www.sutp.org](http://www.sutp.org)) and was later ITDP Country Director for Colombia. He is currently the Executive Director of [Despacio.org](http://Despacio.org) in Colombia. [\*\*pardo@despacio.org\*\*](mailto:pardo@despacio.org)

## Bram van Oijen

Bram van Oijen is a transportation consultant. He has a BSc in Civil Engineering and an MSc in Civil Engineering & Management, both from Twente University in the Netherlands. He is currently Programme Manager - Non-Motorised Transport and Parking at the Institute for Transportation & Development Policy (ITDP) in Guangzhou, China. Some of the work projects Bram has been involved in include Greenway Planning and Design in Guangzhou, Lanzhou, Dongguan and Jakarta (Indonesia). He has also designed pedestrian and cyclist access to bus rapid transit (BRT) systems in Guangzhou Lanzhou, Yichang, Ulanbaatar (Mongolia) and Kuala Lumpur (Malaysia). He has worked with parking planning and operation in a number of Chinese cities, including Harbin, Guangzhou, Lanzhou and Foshan. [\*\*bram@itdp-china.org\*\*](mailto:bram@itdp-china.org)

## Ria Hilhorst

Ria Hilhorst MSc, is a consultant on planning and cycling policy. She was educated at the University of Nijmegen where she studied Sociology (NL). She is currently working for the City of Amsterdam as policy advisor on cycling and other traffic subjects. Some of her primary work projects include developing long term bicycle policy for the city of Amsterdam and advising on the bicycle network, bicycle parking facilities etc, developing quality requirements for and advising on the living quality of plans for new housing and residential environments and advising on various planning and housing projects in different Dutch cities. Her primary publications in Dutch include 'Quality manual, integral vision on user-friendly designs ..... Utrecht, 1997'. She has also published various articles in professional magazines in the field of housing and planning (1990 - 2000).  
***r.hilhorst@ivv.amsterdam.nl***

## Anvita Arora

Dr. Anvita Arora is an Urban Transport Planner. She has a PhD from the Indian Institute of Technology, Delhi, 2007. She is currently Managing Director and CEO of Innovative Transport Solutions (iTrans) Pvt. Ltd. Posts she has held in the past or currently include India Representative of Interface for Cycling Expertise, I-CE, Netherlands for 4 years, President of the Global Feet and Fiets Foundation, Netherlands, Director of the Institute for Democracy and Sustainability (IDS), Delhi and Visiting Faculty at Transport Planning at Urban Design Department (SPA), Delhi.

She has been involved in sustainable transport projects since 2000, and has focused on understanding the needs of the different user groups in the system, including the urban poor in transport planning. She is a certified trainer in non-motorised inclusive planning and has ongoing projects to integrate BRT and NMT systems in large cities.

***anvita@gmail.com or anvita@itrans.co.in***

## Gil Peñalosa

Gil (Guillermo) Peñalosa is currently Executive Director, 8-80 Cities, NGO based in Toronto, Canada. He has an MBA from Anderson School of Management at UCLA (University of California in Los Angeles). His past jobs include Commissioner of Parks, Sports and Recreation in Bogota, Colombia. In his work for the City of Bogotá, Colombia, Gil successfully led the design and development of over 200 parks and initiated the "new Ciclovía," a programme which sees over 1 million people walk, run, skate and bike along 121 kilometers of city roads every week. Gil also works as Senior Consultant for the renowned Danish firm Gehl Architects. He serves on the Board of Directors of City Parks

Alliance, is a Senior Advisor to StreetFilms in NYC, American Trails, Casas GEO Mexico, and America Walks. [\*\*gpenalosa@8-80cities.org\*\*](mailto:gpenalosa@8-80cities.org)

## Tanja Ballhorn Provstgaard

Tanja Ballhorn Provstgaard was originally educated as a Traffic Planner (BSc) from 1995, and has a Master's Degree in Political Communication from Roskilde University, 2006. She has been in the public sector since 2002 and worked previously as a consultant in COWI and Grontmij. Tanja is currently a Project Manager and traffic planner working with policy, strategies, and traffic planning for the City of Copenhagen. She has specially worked with the Heavy Goods Vehicles and wrote 'The Strategy for Heavy Goods Vehicles in 2009'. She has recently been the Project Manager on the innovation project Citylogistics in collaboration with the Universities CBS and DTU.

Tanja was an expert and external member of the National "Trængselskommission 2012" looking into what to do about congestion in the City of Copenhagen. [\*\*tanpro@tmf.kk.dk\*\*](mailto:tanpro@tmf.kk.dk)

## Fábio Duarte

Fábio Duarte is professor on the Graduate Programme in Urban Management at the Pontifícia Universidade Católica do Paraná, in Curitiba, Brazil and has been visiting scholar at Universidad Politecnica de Cataluña, and Massachusetts Institute of Technology. He is member of the Municipal Transportation Council of Curitiba. [\*\*duarte.fabio@pucpr.br\*\*](mailto:duarte.fabio@pucpr.br)

## Lars Gemzøe

Lars Gemzøe is an Architect, M.A.A., The Royal Danish Academy of Fine Arts (KA), Copenhagen. He has held posts at senior lecturer level including at the Center for Public Space Research, Danish Institute for Study Abroad and at the University of Copenhagen. He has been a senior consultant and associate partner in Gehl Architects APS, Copenhagen, since 2001. He has lectured at conferences and schools of architecture in Europe, Asia, Australia, North and South America.

Publications include "Public Spaces - Public Life, Copenhagen 1996", Gehl & Gemzøe, Danish Architectural Press (DAP) awarded the Edra/PLACES Research Award in 1998, "New City Spaces", Gehl & Gemzøe, 2001 (DAP) (published in Danish, English, Czech, Spanish, Portuguese and Chinese), "New City Life", Gehl, Gemzøe, Kirknaes and Sondergaard 2006 (DAP) (published in Danish and English). [\*\*lars.gemzoe@gmail.com\*\*](mailto:lars.gemzoe@gmail.com)

## Philip Insall

Philip Insall has been with Sustrans since 1990, and in that time has established a number of organisational programmes and functions, including Press, Supporters, Fundraising, Public Information, Publishing, Active Travel and International Liaison (which he continues to direct), as well as establishing and directing the programme of public health policy and partnership work.

Philip has led the work of Sustrans in many areas, representing them on a number of fora and working groups. He currently sits on the Board of the Physical Activity Alliance and on the DH Responsibility Deal. [\*\*philip.insall@sustrans.org.uk\*\*](mailto:philip.insall@sustrans.org.uk)

## Niels Jensen

Niels Jensen was originally educated as a landscape architect at what is now part of the University of Copenhagen. For a decade, around 1980, he was active in the Danish Cyclist Federation.

He is now a senior traffic planner working with cycling policy, strategies, and planning in the Cycle Secretariat of the Traffic Department of Copenhagen. He wrote the City of Copenhagen's "Cycle Policy 2002-12" and was the co-founder of the "Bicycle Account". He is involved in realising the Cycle Track Priority Plan and the Green Cycle Route Plan as well as other cycle infrastructure plans. Niels was a member of a European cycle manual expert group looking into the draft Irish Road Standards in 2009. He was invited by the German Marshall Fund to visit major U.S. cycle friendly cities and in 2010 became a member of the Consulting Team for the U.S. "Urban Bikeway Design Guide". [\*\*niejen@tmf.kk.dk\*\*](mailto:niejen@tmf.kk.dk)

## Virginio A. Moreno López

Virginio A. Moreno López is a Roads, Channels and Ports Engineer. He graduated from the Technical University of Madrid (1977/1983) He also took courses for Doctorate, University of Seville (1992/1994). He is currently employed as Project Manager in Urban Management, City Hall Seville. He has had professional experience in land management projects, urban development planning, planning and management of urban engineering assignments and projects. His publications include 'Remodeling of the road of the C.N.IV, Seville'. Reurbanisation of the street Serpents. Equipment and Municipal Services. N° 100. March - April, 2002. The engineering in the urban development municipal planning. Days of the Urbanism in Seville, May, 2000. Official college I.T.O.P. of Western Andalusia. Urbanisation and transformation of roads in urban routes. The IInd Andalusian Congress of Roads. Cadiz, February, 2000. [\*\*vml@urbanismo-sevilla.org\*\*](mailto:vml@urbanismo-sevilla.org)



## Tony Russell

Tony Russell has an MA in Engineering from Cambridge University and an MSc in Transport Studies, Cranfield Institute of Technology (1978). He is currently Transport Engineering Manager at Sustrans, Bristol. Over the past 15 years, Tony has gained extensive experience of infrastructure design for cyclists and pedestrians in the UK and abroad and is regarded as one of the leading experts in this field. He has coordinated UK-wide benchmarking programmes for cycling and was on the Cycling England selection panel for the Cycling Towns and Cities Programme. He now leads Sustrans' work on road safety, traffic and highway engineering, providing support for Sustrans' staff and external partners.

***tony.russell@sustrans.org.uk***

## Anne Eriksson

Ms Anne Eriksson has an MSc in Civil Engineering from the Technical University of Denmark, 1988. She is a Certified Danish Road Safety Auditor 1998 and is currently traffic safety engineer at the City of Copenhagen, Department of Traffic, specialising in safety for vulnerable road users.

Anne has vast experience in traffic safety and planning in Denmark and abroad. She has worked in the Municipality of Gladsaxe and has been a member of the Danish Road Traffic Accident Investigation Board and chair of the Danish committee on traffic safety in the Nordic Road Association. She has lived and worked abroad, especially in Latin America, and has planned courses and given lectures on traffic safety for both Danish and foreign students. ***anneri@tmf.kk.dk***

## Pau Avellaneda

Pau Avellaneda is a professor and researcher in the Department of Geography of Universitat Autònoma de Barcelona, where he gained a PhD in mobility and poverty in Latin-American cities. Throughout his career, he has increasingly specialised in vulnerable mobility users and in related aspects of road safety for all users with a new mobility culture approach. He has worked on many research and consultancy projects for different levels of the public administration. Among them, "Safe Routes to School" are especially relevant, particularly those located in Barcelona and other municipalities of its metropolitan area. His most recent publication is as a co-author of the book "Movilidad en zonas urbanas" (Mobility in urban areas), edited by Fundación Transitemos Perú. Currently, he is launching a research line about implicit risks of mobility together with other researchers. ***pau.avellaneda@uab.cat***

## Esther Anaya

Esther Anaya is a bicycle mobility consultant and researcher. She graduated in Environmental Sciences from Universitat Autònoma de Barcelona. She also has a Master's degree in mobility planning and management from the Universitat Politècnica de Catalunya. She is also a graduate in Cultural Studies (UAB). She has worked for non-profit organisations, consultancies and other private companies and for different levels of the public administration from 2004. She has been doing research about public bicycles, cycling mobility history in Spain and bicycle mobility integration in schools. Her most recent publication is as a co-author of a chapter in the book "Cycling and sustainability" edited by John Parkin for Emerald Publishing. She is currently working on a project to introduce bicycle mobility in Catalan schools. ***estheranaya@gmail.com***

## Alexandre Fremiot

Alexandre Fremiot is an engineer specializing in urban studies. He graduated from the Ecole Normale Supérieure in 2001 having specialized in civil engineering. He also obtained a Diploma from the Ecole Nationale des Ponts et Chaussées, with Advanced Study Diploma in urbanism 2001/2004. He is currently Head of Mobility Agency, City of Paris as well as being visiting professor in Marne-la-Vallée and Orléans universities. His primary work projects research or publications have been a Study of the structural stability of the La Tuque dam (Quebec), Hydro-Quebec, 2000, an Urban Study of the Parisian Greenbelt, City of Paris, 2005, and Les Halles Redevelopment Project in Paris, City of Paris, 2008-2011. ***alexandre.fremiot@paris.fr***

## Jeppe Mikél Jensen

Jeppe Mikél Jensen is a Social Geographer and Communication Consultant. He obtained a B.A. Geography, 2007 and a Masters in Sociology at Roskilde University (2011), Denmark, and University of Helsinki, Finland. He is currently working as sustainability and mobility consultant for the Union of the Baltic Cities Commission on Environment (Turku, Finland) specifically on the EU initiative: Networking Covenant of Mayors in the Baltic Sea Region. He is a member of the international board of the Danish Cyclist's Federation. He is a contributor to the CityFix blog hosted by Embarq/ World Research Institute on non-motorized transportation. From 2010-2012 he worked as a non-motorised transportation consultant and Coordinator of the Global Energy Network for Human Settlements, Nairobi, Kenya. ***jeppe.mikel@gmail.com***

## Roger S. Geller

Roger S. Geller has a B.A. in Chemistry 1982 *magna cum laude* and an M.A. in Urban and Environmental Policy from Tufts University 1990. Since 2000, he has been working as a Bicycle Coordinator in Portland, Oregon. He has written many articles, papers and technical considerations, including *Bridging the Gap* (2005) and *Cycle Zone Analysis* (2009) both accepted by TRB. He has contributed numerous technical designs on small and large capital projects as well as serving on numerous Technical Advisory Committees and Project Advisory Committees to steer design details of capital and planning projects. As project manager, he has delivered or supervised many miles of bikeways and innovative designs as well as helping to implement and design the majority of Portland's existing bikeways. **[roger.geller@gmail.com](mailto:roger.geller@gmail.com)** or **[roger.geller@portlandoregon.gov](mailto:roger.geller@portlandoregon.gov)**

## Tom Godefrooij

Tom Godefrooij studied architecture at the Technical University of Eindhoven and graduated in 1975. Through his work, he has developed into a sustainable urban transport expert. He started his career in the transport profession at the Dutch Cyclists' Union, dealing with virtually all aspects of cycling. Between 1996 and 1999 he was also president of the ECF and in 2000, he organised the Velo Mondial conference in Amsterdam. From 2001 to 2006 he worked at the Province of Noord-Brabant where he was in charge of the drafting of the Provincial Traffic and Transport Plan. He then moved to Interface for Cycling Expertise (I-CE) as executive officer for the Bicycle Partnership Programme, responsible for capacity building activities for partner cities in Asia, Africa and Latin America. He is now working as senior policy adviser at the Dutch Cycling Embassy. **[tom.godefrooij@dutchcycling.nl](mailto:tom.godefrooij@dutchcycling.nl)**

## Jeff Olson

Jeff Olson, R.A., is a consultant who got his BArchitecture from Rensselaer Polytechnic Institute and his M.A. in Public Policy from Empire State College. He is currently working as Principal, Alta Planning + Design and Faculty, State University of New York, Albany. He is a former NY State Bicycle and Pedestrian Programme Manager, as well as a former Director, U.S. Millennium Trails Programme. His major projects have been Grand Canyon Greenway, NYC Greenways System, NACTO Urban Design Guide, L.A.B. Bicycle Friendly American Programme. He has authored *The Third Mode: Towards a Green Society*. Jeff Olson is an architect and planner who has had a diverse career and been involved in greenways, open space, and active mobility projects for more than 25 years now. **[jolson@altaplanning.com](mailto:jolson@altaplanning.com)**

## Lake Sagaris

Lake Sagaris is a writer, bilingual editor and urban planner. She has a BFA in creative writing, 1980, an M.Sc. planning and community development, 2006, and a PhD in planning and community development (University of Toronto, 2012). She is currently Urban Advisor, Living City, Santiago, Chile and lead researcher for knowledge mobilisation, Toronto Cycling Think (and Do) Tank. She has been a plenary speaker (Velo-City Copenhagen, 2010), seminar leader and facilitator of events and processes in Santiago, Delhi, Bogotá, Rio de Janeiro, Washington, Durban, Sao Paulo, Utrecht, Delhi, and elsewhere. She continues to consult and work closely with grassroots community groups and organizations in Chile and elsewhere. ***lsagaris@yahoo.com***

## Burkhard Stork

Burkhard Stork is a theology graduate who is currently Federal Managing Director, ADFC, Germany. From 1997-2003, he was a member of the Board at the German Catholic Convention / Ecumenical Convention. Subsequently, he worked from 2004 to 2011 as head of the German Crohn's Disease / Ulcerative Colitis Association's (DCCV e.V.) federal office in Berlin. He has had his present post since December 2011 and is based in Bremen and Berlin. ***burkhard.stork@adfc.de***

## Till Kolja Oppel

Till Kolja Oppel is a sports engineer by profession. He attended Otto von Guericke University in Magdeburg, where he graduated in sports and technology. He is currently working at the German Cyclists' Federation (ADFC e.V) as a Technology and consumer protection consultant. ***kolja.oppel@adfc.de***

## Carlos Romero Sánchez

Carlos Romero Sánchez has a Degree in Architectural Engineering from the Universidad del Valle de Atemajac and a Masters in Architecture (specialisation in Urban Planning) and a Masters in Family Sciences plus numerous diplomas. He currently holds the position of Director of Non-Motorised Mobility in OCOIT Jalisco, is a consultant in urban planning and mobility and a professor of urbanism at UNIVA. He was a director of the Centre for Sustainable Transport CTS Mexico for the manual: Urban Development Facing Sustainable Transport. He has served as Director of Planning and Zoning in the Municipality of Zapopan and as Vice President of the National Chamber of the Construction Industry Delegation, Jalisco. ***c@carlosromerosanchez.com***

## Mikael Colville-Andersen

Mikael Colville-Andersen is an urban mobility expert. He is currently CEO – Copenhagenize Consulting. His projects include Escolas de Bicicletas (Sao Paulo), Cycling Strategy for Greater Dublin Area & Dodder Cycle Route (Dublin), Kickstand Sessions – Bicycle Policy Training Sessions (worldwide), Effective Cycling Promotion (research project), Bicycle Innovation Lab – Cultural Centre for Cycling (Copenhagen), consultant for various cities. He has published Cycle Chic - The Book (2012), Copenhagenize – Bicycle Culture by Design (in progress). [\*\*info@copenhagenize.eu\*\*](mailto:info@copenhagenize.eu)

## Jessica Tantaleán Noriega

Jessica Tantaleán Noriega is an environmental engineer, a graduate in environmental science and Engineering from the Universidad Nacional Agraria La Molina (Lima, Peru). She has a Masters in Urban Environment and Sustainability and postgraduate diploma in Mobility Management from the Universitat Politècnica de Catalunya. She is co-founder and promoter of the “Latin American Association for Sustainable Urban Mobility” and former member of the “Association for the Promotion of Public Transport” (Barcelona, Spain). Her last position was Manager of Special Project Metropolitan of Non-Motorised Transport, Metropolitan Municipality of Lima, Peru. [\*\*jessieperu@hotmail.com\*\*](mailto:jessieperu@hotmail.com)

## Mai-Britt Kristensen

Mai-Britt Kristensen is currently a Project Manager with the Danish Cyclists' Federation. She holds a Masters in English from the University of Copenhagen and has been working at the Danish Cyclists' Federation since January, 2011. She works primarily on projects related to children and cycling such as the development of a mobile bicycle playground. She also assists on a research project 'Safe and Secure Cycling to School,' which tests various interventions to increase school cycling. She is involved in the international work of the Danish Cyclists' Federation and the Cycling Embassy of Denmark where work is done to export Danish bicycle knowhow. [\*\*mak@cyklistforbundet.dk\*\*](mailto:mak@cyklistforbundet.dk)

## Loa Bendix

Loa Bendix has been Head of Campaigns at the Danish Cyclists' Federation. She trained as a chaos pilot (she has an education in entrepreneurship and innovative project design) and has been with the Danish Cyclists' Federation from 2009 - 2013. She was responsible for the four national cycle campaigns: Bike to Work (86,000 participants), Bike to School

(142,000 participants), Get your Lights on (campaign for 4<sup>th</sup> grade students with 40,000 participants or 2/3 of all 4th graders in Denmark), and Great Bicycle Day. Her organisation has continuously been working to improve and develop their campaigns to get more people to jump on their bike. For 'Bike to School 2012' for instance, they developed an add-on targeting the 12-16-year olds. ***loabendix@gmail.com***







# 9

## Appendix Contacts and references



## Carlos Felipe Pardo

### References

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## Ria Hilhorst

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## Anvita Arora

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## Gil Peñalosa

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## Fábio Duarte

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## Lars Gemzøe

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## Philip Insall

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## Niels Jensen

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## Virginio Moreno

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## Tony Russell

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## Anne Eriksson

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## Pau Avellaneda and Esther Anaya

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## Alexandre Fremiot

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## Jeppe Mikél Jensen

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## Roger Geller

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