

# MEETBIKE

## EUROPEAN CONFERENCE ON BICYCLE TRANSPORT AND NETWORKING

### INTERDEPENDENCIES OF BICYCLE AND PUBLIC TRANSPORT USE

3<sup>rd</sup> – 4<sup>th</sup> April 2008 Dresden, Germany

**meetbike**

European Conference on  
Bicycle Transport and Networking



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# NETWORKING OF BICYCLE-FRIENDLY CITIES IN EUROPE

Proceedings

3<sup>rd</sup> April 2008 Dresden, Germany





# NETWORKING OF BICYCLE-FRIENDLY CITIES IN EUROPE

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## **Greetings**

*Lutz Vogel, Mayor of the City of Dresden, Germany*

### **Ladies and gentlemen,**

Welcome to Dresden! It is my great pleasure to greet you as patron of this European conference to promote networking among the continent's bicycle-friendly cities.

Dresden is a name with a special ring to it. When it comes to the ear, it is almost automatically associated with the Frauenkirche, the Zwinger or the Semper Opera House, with the Green Vault, the Old Masters Picture Gallery and the Porcelain Collection.

But Dresden is not only a mecca for lovers of art and culture – cycling enthusiasts are also catered for admirably in the city. Anyone who has ridden the Elbe Cycle Path will find the enchanting landscapes, the sweeping bends of the river, the paddle-steamers, the meadows and the vineyards on the valley slopes etched indelibly into his heart. I can only hope that you, too, will find the time to join one of the cycle tours which have been organised in and around Dresden. And perhaps you will also take the opportunity to borrow one of the free hire bicycles here for individual explorations between the items of the agenda.

There are many good reasons to choose a bicycle to get around in the city. Especially for short journeys, a bicycle is the ideal means of transport for many citizens. Cycling is fun, keeps you fit, is ecological, flexible and fast, produces neither noise nor air pollution, and is last but not least inexpensive. It is becoming increasingly popular in Dresden.

The promotion of bicycle traffic is an important concern for the City of Dresden, and is aimed at further improving the conditions for cyclists in the city. In Dresden, we are seeking ways to shape mobility, rather than just coping with and controlling traffic. Against this background, we are actively committed to the elaboration of a balanced and sustainable transport concept, which will thus be fully compatible with the environment, urban development and social needs. Our with other European cities and with the additional funding it provided, to trigger positive developments in Dresden. Looking back today, we can certainly say that good use was made of this opportunity. Within the framework of "UrBike", numerous bicycle promotion measures were developed and successfully implemented. At the same time, bicycle traffic planning was advanced greatly as an integral component in Dresden's mobility strategy.

The "First European Technical Seminar" was held in Dresden in June 2006, and was concluded with the signing of the "Dresden Declaration". This proposed, among other things, a continuation of the networking between European municipalities interested in and committed to urban bicycle traffic promotion and sustainable mobility. It was also suggested that the exchanges of experience be intensified, and that the UrBike network be expanded to involve further partner cities, especially from the new EU member states.

Other existing European networks are able to lend considerable support to such efforts. I am thus very pleased to welcome the envoys of several such networks. Representatives of Eurocities and Polis, the networks of major European cities and regions, are also present. Dresden is a member of both networks, and is delighted that representatives have taken the time to attend this conference. We greatly appreciate your work and support, and look forward to further close cooperation in the future, also in the promotion of bicycle traffic, of course.

One local campaign to promote the use of bicycles has been a project to install one thousand new bicycle stands in the Dresden city centre. The steel stands now provide for secure bicycle parking at many key points around the city. The unveiling of the 1000th cycle stand is to be marked with an official ceremony in summer 2008.

On this note, I wish you a successful conference with stimulating discussions, interesting ideas and many new contacts – but at the same time also opportunities to get to know our beautiful city! I would be pleased to welcome you back to Dresden in the none too distant future, whether as a cyclist, a bus or train passenger, or maybe even as an enthusiast over a chess board: In November 2008, namely, the 38th Chess Olympiad is to be held in Dresden – in the new Congress Centre, by the way, directly on the banks of the river, and with perfect access via the Elbe Cycle Path!

Thank you.

## **Welcome Speech**

*by Bernd Decker, Project Officer, Energy Efficiency Unit,  
Executive Agency for Competitiveness and Innovation (EACI),  
European Commission, Brussels, Belgium*

**Sehr geehrter Herr Dr. Vogel,**

**Liebe Freunde der sanften Mobilität,**

**Dear Ladies and Gentlemen,**

It is a pleasure for me to welcome you on behalf of the European Commission and the Executive Agency for Competitiveness and Innovation. I would like to thank the host for the kind invitation and I am happy to visit the beautiful city of Dresden with its rich culture embedded in a beautiful landscape and nature best to be explored by bicycle.

I am delighted to see a much greater number of participants than originally anticipated and I thank the staff of the Technical University of Dresden for their hard work to make this important conference happen.

Some of you may wonder why the European Commission is concerned with cycling and why the Intelligent Energy Europe programme supports the MeetBike conference.

The European Commission is deeply concerned about the safety, health and environmental problems which are accompanied by the increased car use. It is assumed that urban traffic is responsible for 40% of the overall greenhouse gas emissions and even more for other pollutants. For example in Brussels, close to my office, the air is filled with more than 200 µg NO<sub>2</sub> per m<sup>3</sup>. Every day. One day in January we counted almost 400 µg (one hour average). Luckily, this monitoring station does not record particulate matter values which would deepen further our concerns.

Globally, cyclists represent 7% of the total amount of deaths on our roads – and most fatalities happen at road intersections in urban areas. This is mainly due to the lack of protection in case of a collision with a vehicle and due to the lack of visibility of cyclists; and due to reckless driving. The risk of being killed in a road accident is six times higher for cyclists and pedestrians than for car users. Often, the victims are women, children and elderly citizens.

The European Commissioner for Transport, Jacques Barrot, is an enthusiastic cyclist and particularly concerned about the safety of cyclists. He reaffirms that the vulnerable road users are a priority target group of the European road safety policy.

With the proposal for a directive on retrofitting existing heavy vehicles with „blind spot mirrors“, 1200 more lives could be saved on European roads until 2020. Every year, hundreds of road users lose their lives in accidents, because lorry drivers fail to notice them when taking a right turn. Directive 2007/38 on the retrofitting of mirrors to heavy goods vehicles registered in the Community has been adopted by the Council and the European Parliament in July 2007. It provides for existing heavy vehicles to be equipped with blind spot mirrors in order to reduce the number of accidents involving in particular cyclists and motorcyclists.

Based on the historical decisions taken by the European Council in March 2007, the European Commission presented a Climate Change and Energy Package in January this year. To reach the targets of 20% less greenhouse gas emissions, 20% better energy efficiency, 20% share of renewables in the energy mix and 10% biofuels in transport fuel by 2020 asks for concrete and serious actions.

## **Green Paper „Towards a new culture for urban mobility”**

A recent initiative of the European Commission is the Green Paper on urban mobility which was adopted in September 2007. The preparation of the Green Paper has taken place in partnership with the stakeholders concerned. A number of key events and meetings were organised and also a public consultation took place.

A green paper released by the European Commission is a discussion document intended to stimulate debate and launch a process of consultation, at European level, on a particular topic. A green paper usually presents a range of ideas and is meant to invite interested individuals or organizations to contribute views and information. Green Papers may give rise to legislative developments that are then outlined in White Papers.

I am sure that many of you have participated actively to share your views on the Green Paper with the Commission. It has received very useful contributions from the cyclist community. All these inputs are being used to prepare an Action Plan on urban mobility that the Commission intends to publish in autumn of 2008. For each proposed action, the Action Plan will indicate a time line for implementation and allocation of responsibilities between various actors.

The Green Paper addresses the need for an integrated approach in urban transport which incorporates public transport, walking and the use of bicycles. The increased use of these modes helps to achieve more accessible, safer and greener towns and cities. The Green Paper recommends to local and regional authorities to fully integrate these modes into the development and monitoring of urban mobility policies. More attention should be paid to the development of adequate infrastructure. Additional measures are suggested to promote cycling and walking, for example through traffic games, road safety assessments or educational packages.

A number of environmental problems could be improved by the development and implementation of sustainable urban transport plans – which includes the role of cycling. It seems appropriate to take the opportunity to address the question of the follow-up on SUTP as part of the Action Plan on urban mobility.

It is recognised that cycling has the potential to substitute half of the urban motorised traffic which operates on short distances below 10 kilometres. Cycling has its particular advantage at a range of up to 5 km to be the fastest mode of transport in cities. Bicycle transport allows for a sustainable, space efficient, emission and noise free individual mobility.

The European Commission offers various mechanisms to effect changes on the ground. Here some examples:

### **CIVITAS**

The CIVITAS Initiative is co-financing demonstration actions in almost 60 European cities, including measures on walking and cycling. For example, the city of Ljubljana is improving its cycling infrastructure using active involvement of the general public. Toulouse is experimenting the integration of bicycles in public transport services. Around 4000 children in Odense are involved in a training programme that aims at improving children's ability to make safe use of bicycles as a mode of transport. The lessons of experiences are being recorded, analysed and made accessible to the public through portals, such as ELTIS.

### **ManagEnergy**

ManagEnergy is an initiative of the European Commission, which aims to support the work of actors working on energy efficiency and renewable energies at the local and regional level. The main tools are sectoral advice, training, workshops and online events. Additionally information is provided on case studies, good practice, European legislation and programmes.

## **Intelligent Energy Europe**

The Intelligent Energy Europe programme is an important vehicle to help people to spread innovative practices across Europe. We are the European Commission's funding mechanism for projects in the areas of renewable energies, energy efficiency and sustainable transport, which we call STEER.

The IEE Programme addresses the cycling potential by supporting three cycling projects. ASTUTE, SPICYCLES and BYPAD Platform aim at a modal shift towards cycling. While ASTUTE and SPICYCLES reach out to employees and citizens as potential cyclists, BYPAD improves the conditions for cycling by policy quality audits for regions and cities. Other projects include cycling as a major component. For example the main goal of STREAM is to make tourist travel more energy efficient by promoting cycling at tourism sites. 47 partners from 23 countries are working in these cycling projects, with a budget of more than 6,5 Million Euros. Considerable achievements in reducing energy consumption and increasing quality of life (for example through healthier lifestyles) are being expected to result from these projects.

Every year we are launching a call for proposals, select successful projects and provide up to 75% funding for the project. The current 2008 call is open with a deadline for submitting proposals on 26 June 2008.

## **The role of the local authorities**

While it is recognised that most aspects of urban policy, such as road infrastructure, fall under the subsidiarity principle, and thus under the responsibility of the Member States or local authorities, the European dimension of environmental problems caused by the uncontrolled use of motorised transport require an European response.

In January this year, the European Commission launched the Covenant of Mayors, the most ambitious initiative to date involving the citizens in the fight against global warming. It comes after an informal consultation with numerous cities across Europe, whose Mayors joined the Commission in launching the Covenant. The Covenant consists of the formal commitment of the adhering cities to go beyond the objectives of the EU in terms of reducing their CO2 emissions through energy efficiency and renewable energy actions. Almost 100 cities throughout Europe, including 15 capital cities, have expressed their early support for the Covenant.

For example Lyon, a city which has expressed interest to join the Covenant experienced one of the fastest growing cycling communities in recent years. Ambitious policy decisions with concrete actions helped to raise the modal share of cycling considerably. The improvements of the cycling infrastructure and the introduction of a bike sharing system with several thousands public bicycles were key to this increase. The June 2006 edition of the Vélo'v newsletter reported that over 22,000 rentals per day were made by the over 52,000 subscribers to the service, an increase of 44% in a year, and representing 6,400,000km travelled for the year.

Barcelona is another example where the investments in sound infrastructure have helped to increase the bicycle usage for commuting. A decade ago, nobody would have believed that people in Mediterranean cities would start using the bicycle as a mode of transport. This has changed.

I acknowledge that the MeetBike organisers aim particularly at co-operating with the neighbouring New Member States in promoting cycling. These countries are undergoing dramatic changes in mobility behaviour and, at the same time, have access to considerable amounts from structural funds for improving transport infrastructure. Most of the resources are being invested in expensive infrastructure, such as metro lines. This conference comes timely to sensitise decision makers from local and regional authorities to use such funds to improve the infrastructure for cyclists and to think of innovative means to integrate cycling with public transport. European level interest groups, such as the European Cyclists' Federation can help such cities in advancing towards more sustainable transport modes.

### **Cycling at Commission buildings**

Last but not least – within the Commission we have taken measures to encourage staff to use more often the bicycle. Almost 200 good quality service bicycles are at disposal to the Commission's staff for work-related travel. Almost each Commission building has been equipped with safe bicycle parking facilities, changing rooms and showers. The EU cyclist group is initiating and supporting regular campaigns within the Commission to make cycling more acceptable and a real mobility option for work related travel.

### **Dear Ladies and Gentlemen,**

Before I close my speech, please allow me to illustrate our work by showing you a video which we have recently produced. This might inspire you for new ideas for which you might request Community funding. I will be at your disposal until the end of the meeting for further consultations.

Thank you for your attention and I wish you a successful MeetBike Conference.

To find out more about the agency and the programme visit: [http://ec.europa.eu/energy/intelligent/index\\_en.html](http://ec.europa.eu/energy/intelligent/index_en.html)

## **Welcome in Dresden, where transport science and transport practise work hand in hand**

*Gerd-Axel Ahrens, Technische Universität Dresden,  
„Friedrich List“ Faculty of Traffic and Transport Sciences, Germany*

### **Ladies and Gentleman,**

We are glad to greet so many transport professionals in our beautiful city of Dresden this morning. I counted participants from 24 countries – from Europe and beyond.

Welcome all. You will enjoy exploring the town by all modes. 100 bicycles are parked in the yard of the town hall for you. For those of you who do not want to go by bike to the streetcar museum tonight, also the use of buses and streetcars has been organized for you. On Saturday there will be extensive excursions for those of you who want to see more of the sights of this city.

In terms of transport sciences, Dresden is an outstanding place in Germany. Here you find the only faculty for transport at a German University. Transport is taught by 28 professors with about 163 research assistances.

The faculty includes 1900 students who study transport engineering or transport economy. Of these about 260 engineers and 160 economists enrol each year. The transport professors teach civil engineering, mechanical engineering, geography and economy and educate engineers of mechatronics together with computer science, mechanical and electrical engineering. Our students do not have problems to find jobs later, since the transport world appreciates the practical orientation and the broad interdisciplinary basic transport knowledge of our students.

In many areas the university cooperates with the City of Dresden, the State of Saxony, public transport operators, the logistic trade and producers of vehicles and transport facilities. A huge joint research program was finished for about 30 million Euros several years ago: INTERMOBIL developed numerous elements of the Dresden transport system of today.

The City of Dresden considers transport as an integrated element of the city development process. The major areas of transport planning in Dresden are:

1. Spatial development and land-use planning (towards a city with short distances)
2. Transport infrastructure for all modes with the ecological ranking of

Walking	24,4 %
Bicycling	12,3 %
Public transport	20,4 %
Car use	42,9 %
3. Transport management (with advanced techniques for guiding the traffic also through a management centre)
4. Integrated mobility management (mainly through educational measures, information and promotion of non-motorized traffic and public transportation)

The City of Dresden was a partner in the European project UrBike from 2004 to 2006. The project dealt with the integration of bicycles into the urban scheme using all kinds of measures. My institute served as an academic adviser, and we developed methods of “integrated” bicycle promotion.

At the end of the UrBike project a conference was held in Sevilla, Spain in December 2006. The UrBike community asked the Technische Universität Dresden to research the European market for potential cooperation in integrated bicycle planning and to work on a follow-up project.

This led to our preparing the MeetBike conference. We wanted to learn more about European experiences to promote the integrated use of bicycles. We wanted to discuss whether it is necessary to improve the networking of bicycle-friendly cities in Europe.

After we researched the existing networks and projects we came to the conclusion that cities, as the major responsible actor for bicycle planning and bicycle promotion, need to take over more responsibility and to lead the way in the discussion of how to integrate bicycles best into the urban scheme.

Hopefully this conference will develop helpful ideas and generate many actions to get further ahead in achieving a more sustainable urban transport system with less pollution, noise and accidents.



## **Integrated bicycle planning and programming - Czech National Cycling Strategy**

*Radomíra PLÍŠKOVÁ, Jaroslav MARTINEK<sup>1</sup>, Radomíra Plíšková, Centrum  
právního výzkumu, CZ*

### **Abstract**

Through the governmental resolution n. 678 from the 7th July 2004, the Czech Republic has declared its will to support the National Cycling Strategy (hereinafter NCS), respectively cycling itself as the field of interest. The NCS demonstrates the cross-cutting features and context of cycling. Within the term „cycling“ we understand both – the cycling transport and the cycle tourism. It is often perceived as a way of environmental protection and a physical activity important for our health condition. Under this context four priorities of the NCS were defined: (1) Development of cycling as an equal means of transport; (2) Development of cycling to strengthen the tourism; (3) Development of cycling to improve the environmental protection and our health; (4) Coordination with other fields and organisations. Each priority is completed with respective objectives and measures.

Implementation of the NCS includes a coordination and technical assistance for regional and municipal governments. To help this objective, the methodology „21 pillars for construction of cycling infrastructure“ was elaborated in May 2007 (ISBN 978-80-86502-60-1). The facts on cycling are categorised within 21 thematic sections explaining the main cycling issues and bringing the references for details (for the website of the NCS: [www.cyklostrategie.cz](http://www.cyklostrategie.cz) which keeps the same structure of the publication). The methodology was prepared under the research „Sustainable transport – a chance for the future“ (n. MDO 4499457501) by the Centrum dopravního výzkumu v.v.i. (Transport Research Centre) under support of the Ministry of Transport.

### **Introduction**

After four years of demanding preparation works, the Czech Republic can affirm: “Through the final governmental resolution n. 678, issued on 7th July 2004, the Czech cycling development strategy was fully approved”. The strategy tackles the majority of issues presented at the Velo-City conferences, but actually, the crucial issue is not “what to implement”, but “what is the best way” in Czech conditions? The role of the ministries within the National Cycling Strategy is to co-ordinate activities between all the levels, to create a systematic and financial background, to include development of cycling into the projects prepared for co-financing from the EU structural funds. To implement this task, the National Cycling Strategy defines a responsible co-ordinator for the planned measures and assigns a timetable for their implementation.

The National Cycling Strategy is progressively recommended to regional and local governments, to businesses and to NGOs to be included as a complementary part of their activities, programs and documents. The National Cycling strategy is a live document, which realisation will be carefully followed and the document will be further supplemented and updated.

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Key to the success - partnerships, high level of awareness and fund-raising

There have been elaborated many strategic documents, and it often occurs that they are not fully implemented or the actions prescribed by them are not always successful. Therefore our efforts are directed to create mechanisms which would help the National Cycling Strategy to avoid the same destiny. We deal principally with the five following specific focuses

3. Partnership and human resources. The Czech Cycling Strategy has a big advantage, as during its preparation phase, many partnerships with various bodies have been established. The fact of existing partnerships is crucial for fulfilment of the strategic objectives.
4. Decentralisation. Thanks to good experiences with previous partners from cycling projects, the National Cycling Strategy can be decentralised. In this way, the partners from bigger cities and the regional governments naturally join the National Cycling Strategy actions. This fact shows that cooperation with public bodies will not be just formal, but very active.
5. Raising public awareness. Our first point of interest is the work with massmedia. They are usually interested in events, important social-economic trends, concrete facts, attractive and instructive examples and interesting stories. These facts make a basis of the mass-media communication strategy and the way how the public is addressed through them. To support this communication, there is established an information portal: [www.cyklostrategie.cz](http://www.cyklostrategie.cz)
6. Cross-cutting and complexity. The National Cycling Strategy is not restricted only within borders of the field of transport, but it is linked also with environmental, health and tourism issues, and in a broader context with sustainable development as well. The cross-cutting and complex visions are missing in today's society, so if we apply the wider view of cycling, it opens a possibility to involve more partners and interested bodies from more fields.
7. Financial resources. The implementation of the National Cycling Strategy in long-term will be financially demanding. It is impossible to determine just one resource for its financing therefore to create a wide range of possibilities, the „cooperative financing“ - a condition for EU co-financing - is important. So far, the objective is to cumulate and associate the financial means progressively for implementation of projects and to effectuate actively fundraising. The regular basis for co-financing of cycling projects are subsidies from the national transport infrastructure budget for construction of cycle paths.

The main document of the National Cycling Strategy is accessible on internet - [www.cyklostrategie.cz](http://www.cyklostrategie.cz) (incl. an English version)

The website brings the full information on the strategic objectives, priorities and implemented measures. The National Cycling Strategy has the following main priorities:

- (1) Development of cycling as a means of transport equal to others;
- (2) Development of cycling to strengthen tourism;
- (3) Development of cycling to help protecting the environment and strengthen health;
- (4) Coordination of activities with other bodies and fields.

## **PRIORITY 1**

### **DEVELOPING CYCLING AS AN EQUAL MEANS OF TRANSPORT and AN INTEGRAL PART OF THE TRANSPORT SYSTEM**

Cycling transport is an essential part of the transport system. The Goal is to continue creating a dense network of safe cycle routes and accompanying cycling infrastructure in urban and rural areas of the Czech Republic:

Goal: 1.1. Creating the conditions for a further establishment of cycling infrastructure

Goal: 1.2. Increasing the safety of vulnerable road users

Goal: 1.3. Incorporating cycling transport into the integrated transport system

Goal: 1.4. Strengthening research, training, education and awareness on cycling

## **PRIORITY 2**

### **DEVELOP CYCLING FOR THE STRENGTHENING OF TOURISM**

Cycling in the Czech Republic is appreciated nation-wide; it is an entertainment and a physically active way to spend leisure time. By providing a valuable product we can draw attention to the wide use of bicycles as a common and regular means of transport and as a means for keeping in touch with nature which cannot be achieved through travelling in a car or by public transport. Using the current popularity of cycling in the Czech Republic as well as in all over Europe, we can bring active tourism to some Czech areas which are not known yet:

- Goal: 2. 1. Create the conditions for the support of cycle tourism
- Goal: 2. 2. Use of cycle tourism for the renewal of the countryside
- Goal: 2. 3. Preparation for the use of EU financial resources in favour of cycling

## **PRIORITY 3**

### **DEVELOPMENT OF CYCLING FOR THE STRENGTHENING PROTECTION OF THE ENVIRONMENT AND HEALTH**

Strengthening the physical and mental health of citizens and finding a good relation to the nature and countryside, are additional goals for development of cycling transport. Cycling as a part of the healthy lifestyle and protection of the environment becomes a big priority within the strategic objectives.

- Goal: 3. 1. Regulation and support of cycling in the scope of landscape protected areas
- Goal: 3. 2. Development of cycling in the territory
- Goal: 3. 3. Environmental training, education, and promotion programs for the support of cycling and a healthy life style.

## **PRIORITY 4**

### **COORDINATION WITHIN THE MINISTRIES AND OTHER RELEVANT BODIES**

- Goal: 4. 1. Providing and co-ordinating the research and development
- Goal: 4. 2. Sustainable planning and coordination of monitoring
- Goal: 4. 3. Providing and control of publicity
- Goal: 4. 4. Providing and co-ordinating educational and informational programs
- Goal: 4. 5. Updating of legislation and coordination of its application

Realisation of these measures is ensured primarily through the three ongoing projects:

- “Sustainable transport: a chance for the future (part Cycling)” supported by the Czech Ministry of Transport.
- “CYCLE21: Analysis of the needs for building the cycling infrastructure in the Czech Republic”, which is realised as a part of the National Research Program 2004 - 2009 of the Czech Ministry of Transport.

### **Final comment:**

A Chinese adage says: „Tell me and I will forget; show me and I will remember; let me do it and I will understand.“ The quotation uncovers the secret of how to reach the objectives of the National Cycling Strategy. The priority for its realisation is not to fulfill each planned task mechanically, but to understand its context and benefits and adopting them.

## **21 pillars for construction of cycling infrastructure**

Implementation of the National Cycling Strategy includes a coordination and technical assistance for regional and municipal governments. To help this objective, the methodology „21 pillars for construction of cycling infrastructure“ was elaborated in May 2007 (ISBN 978-80-86502-60-1). The facts on cycling are categorised within 21 thematic sections explaining the main cycling issues and bringing the references for details (for the website of the NCS: [www.cyklostrategie.cz](http://www.cyklostrategie.cz) which keeps the same structure of the publication). The methodology was prepared under the research „Sustainable transport – a chance for the future“ (n. MDO 4499457501) by the Centrum dopravního výzkumu v.v.i. (Transport Research Centre) under support of the Ministry of Transport.

In the first phase, inputs were focused from overviewing concrete measures, current projects and activities. The project team has looked at support of cycling transport as a dynamic process, beside results it deals also with the ways how the support of cycling transport has been incorporated into political and administrative structures. The project tackles twenty one topics-pillars supporting and further developing the cycling transport.

As a project output the methodology called „21 pillars for construction of cycling infrastructure“ was elaborated in May 2007 (ISBN 978-80-86502-60-1). The facts on cycling are categorised within 21 thematic sections explaining the main cycling issues and bringing the references for details publicised on the website of the Cycling Strategy: <http://www.cyklostrategie.cz/temata.php> which keeps the same structure of the publication.

The particular pillars described in the methodology are as follows: 1. Public involvement; 2. Cycling in a wider context; 3. Financing; 4. Safety of cyclists; 5. Planning and designing the cycling infrastructure; 6. Parking infrastructure and cycling culture; 7. Use of geo-information technologies for cycling; 8. Inclusion of cycle transport into the integrated transport system; 9. Statistic data, monitoring and cycle transport; 10. Cycle tourism; 11. Program Greenways; 12. Signposting of cycle routes in the Czech Republic; 13. MTB cycling; 14. Rail tracks used for cycle Greenways; 15. Cycling and recreation – our leisure time; 16. Promotion for support of cycling and a healthy life style; 17. Cycling and health; 18. International experiences, literature; 19. Human factor on national, regional and local levels; 20. References and contacts; 21. Cycling & subjects & well-invested finances.

### **1 Public involvement**

Many good things were not approved just because they were presented in an inappropriate time or at an inappropriate place, in an unsuitable way or to an uninformed audience. The important condition for the support of cycle transport is to get the interest of public and involve people into preparation of concrete projects and strategies. In this way a lot of problems can be avoided.

### **2 Cycling in a wider context**

If we want to confer the support of cycle transport, it is necessary to put it into a larger context, not to „close it within the borders“ of transport or cycle tourism, but to show its interfaces with our lifestyle, health and the environment. These links help to incorporate cycling within strategic and conceptional documents and into the transport and land use planning.

### **3 Financing**

Economic tools and financial resources make a crucial part for cycling development in transport policies. The NCS chapter shows some of those possibilities and experiences from other countries. Particular tools are categorised upon their relation to the public resources, the categories of expenditure, income and neutral tools are distinguished. A specific attention is drawn to preparation for the use of EU Structural Funds (2007-2013) for construction of cycle paths. The role of the National Transport Infrastructure Fund is very important as it subsidises by 60 % construction of cycle paths considerably (in 2008 is prepared cca 6,2 mil. Euro).

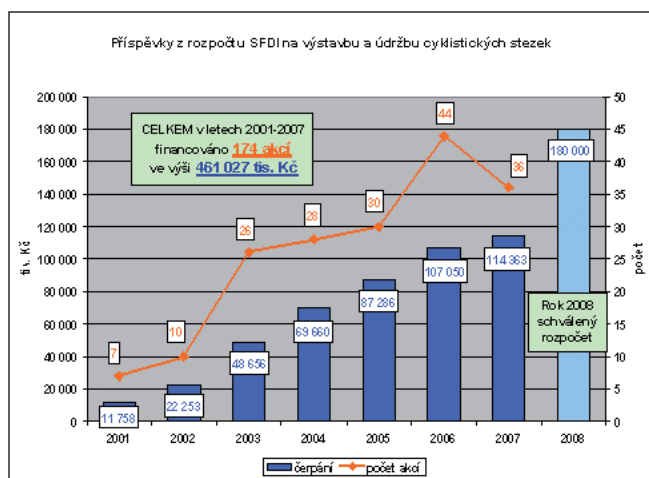


Figure 1: Funding from the National Transport Infrastructure Fund (SFDI) in 2001 – 2008 (CZK)

## 4 Safety of cyclists

At the present, there are many Czech regions where cycling is considered the means of transport n. 1 (for ex. Uničov, Prostějov, Pardubice and others). These regions cover the cities as well as their catchment areas reaching adjacent municipalities. Therefore while elaborating conceptions and strategies it is important to consider the spatial and safety needs of cyclists along the Ist, IInd, and IIIrd class roads, conditions for cycling transport should be investigated in a mandatory way. Only an obligatory inclusion of cyclists' needs and subsequent implementation of safety measures is the way to improve the situation of cyclists. One of the first regions which follow the rule is the Olomouc region. The issue of safety is promoted through campaigns and education programs.

## 5 Planning and designing the cycling infrastructure

The National Cycling Strategy underlines one of the main conditions for a good support of cycling - existence of good-quality and safe cycling infrastructure. In the Czech Republic it should be designed upon the Technical guidelines TP 179 „Designing of cycling infrastructure“, or the Czech technical standard ČSN 73 61 10 dealing with cycling issues in a complementary way. However it is important to emphasise that construction of cycling infrastructure and facilities should not be autotelic. Cyclists need both – separate cycle paths and shared ways – which means bicycle-friendly routes offering a safe and comfortable bicycle ride.

Regardless the mentioned facts, we may conclude that construction of new cycle paths is very good for increase of the bicycle use. In this context, we need to have data on the cycling infrastructure in the Czech Republic. In the nation-wide database, there are filed 1063,0 kms of bicycle-friendly routes which are designated to daily commuting to work, schools etc.. From the total number the 849 kms are of cycle paths and 214 kms of routes for non-motorised vehicles, signed by the B11 traffic sign (hereinafter „B11“).<sup>2</sup>

<sup>2</sup> Beside the „B11“ routes, forest and field paths are suitable for cycling and are heavily used by cyclists. All the suitable routes should be mapped and the total number of cycle routes would be different, even higher. The objective was so far to enhance mainly the routes / roads which are frequently used by cyclists, in many cases „popularly“ called „cycle paths“, often serving for daily commuting to work, school, eventually for leisure-time activities. The objective is to point out other roads / routes which are suitable for cycling and complete the existing stretches of separate paths. In urban areas we have mapped the „B11“s in the least cases, mostly we focused on non-urban areas and inter-urban routes connecting municipalities and used for linking the cycle networks.

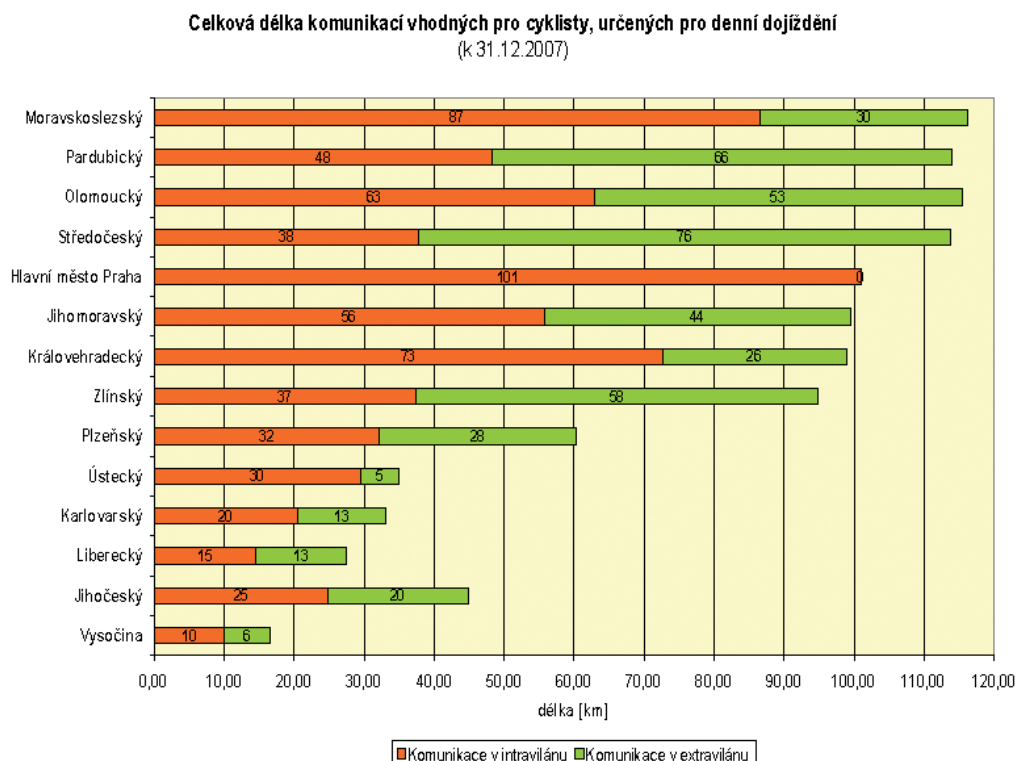


Figure 2: Total length of bicycle-friendly routes – suitable for daily commuting CDV and Czech Technical University, Transport Faculty - ČVUF FD 2008

For progressing in designing and constructing the cycle infrastructure an inspirational database has been created. It is called „The Best 68 examples“ on designing the cycling infrastructure. It serves as a help to politicians and officials for supporting the implementation of cycling projects in their city / municipality. Detailed information can be found on the website: [www.cyklostrategie.cz](http://www.cyklostrategie.cz)

## 6 Parking infrastructure and cycling culture

The bicycle ride, like any other movement, starts in a place of origin, goes through a planned track and ends in a desired destination. For support of bicycle use as an equal mode of transport, it is necessary to establish a good bicycle parking infrastructure, to give an opportunity for parking and safe storing of bicycles – from home to popular destinations – and providing a good guidance to cyclists (through a signage system leading cyclists towards the parking facilities) and situating proper cycling facilities as close as possible to the most frequented cyclists destinations. In other words, cycle transport cannot be understood only as a transport from A to B but also, and rather, as a chain created by the links: ORIGIN – TRIP – DESTINATION. The chain is as solid as its weakest link. Provision of sufficient parking facilities for cyclists brings improvement and strengthening of the chain.

## 7 Use of geoinformation technologies for cycling

While distributing the maximum information on cycling towards officials and technicians from the state and local governments and towards citizens – the most important milestone is undoubtedly the use of internet, web technologies and geographic information systems. Therefore the Centrum dopravního výzkumu / Transport Research Centre in cooperation with the Partnership Foundation and the Faculty of Natural Sciences of Palacký University in Olomouc, has initiated creation of the unified GIS database (JGD) which is successively constructed, associates the data on cycling infrastructure in the Czech Republic and is continuously presented to technicians and public interested bodies.

## 8 Inclusion of cycle transport into the integrated transport system

In the frame of transport function of cycling, it is necessary to monitor two main parameters. Accessibility of the system for users which means that it is necessary to include the part of the trip home - PT stop or PT stop – final destination and back. This can be provided only through a safe, comfortable, direct and fluent walking / cycling infrastructure which has a capacity to lead users to rail hubs. Further on it is necessary to make rail platforms accessible and bring sufficient supply of bicycle parking facilities – the system of BIKE & RIDE for daily intermodal commuting. This type of interfaces can be developed almost everywhere, upon local conditions, in the following PT branches:

- Rail transport
- Bus transport
- Urban public transport

As for details, Czech planners and transport operators are recommended to use the document which has been elaborated under the NCS objective 1.3.: „Inclusion of cycling into the integrated transport system“. The document brings an overview of programs and projects which help to support the intermodality of cycling with PT in its both functions: daily commuting to work and school and leisure time activities, tourism included.

## 9 Statistic data, monitoring and cycle transport

The data is acquired through the scientific research project „CYCLE21: Analysis of needs for construction of cycling infrastructure in the Czech Republic“. The project is implemented under the National Research Program 2004 – 2009 of the Czech Ministry of Transport (n. 1F43E/045/210) and is realised by CDV (Transport Research Centre), UK COŽP (Centre for Environmental Issues at Prague Charles University) and ČVUT FD (Czech Technical University – Faculty of Transport). The data is presented in the four areas:

- Cycling shares in the modal split and influence of length of trips on the use of a mode of transport
- Use of newly constructed cycle infrastructure and use of cycle helmets
- Sociological surveys on transport behaviour (Pilsen)
- Database of cycle ways and parameters of cycling infrastructure

The example:

Taking into account the Czech statistics on real shares of cycling within the modal split, we find out that there are localities in the Czech Republic where cycling is the mode of transport n. 1. Among numerous results we can quote e.g. the city of Uničov which has the biggest share of commuters by bicycle to work: 41,7% (relatively high shares apply mainly to the cities with the population above 5000 inhabitants). The highest share of commuters by bicycle to work is in the municipality of Labské Chrčice: 62,5%. The average share of cycling in the overall modal split in the Czech Republic is 7,3%. Detailed data was presented at the National Cycling Conference and will be stored in the national cycling database.

Consequently it implies that campaigns on increase of bicycle use in a certain category of Czech cities and municipalities are not necessary, as users – cyclists do exist, but improvement of the cycling infrastructure is what they need actually.



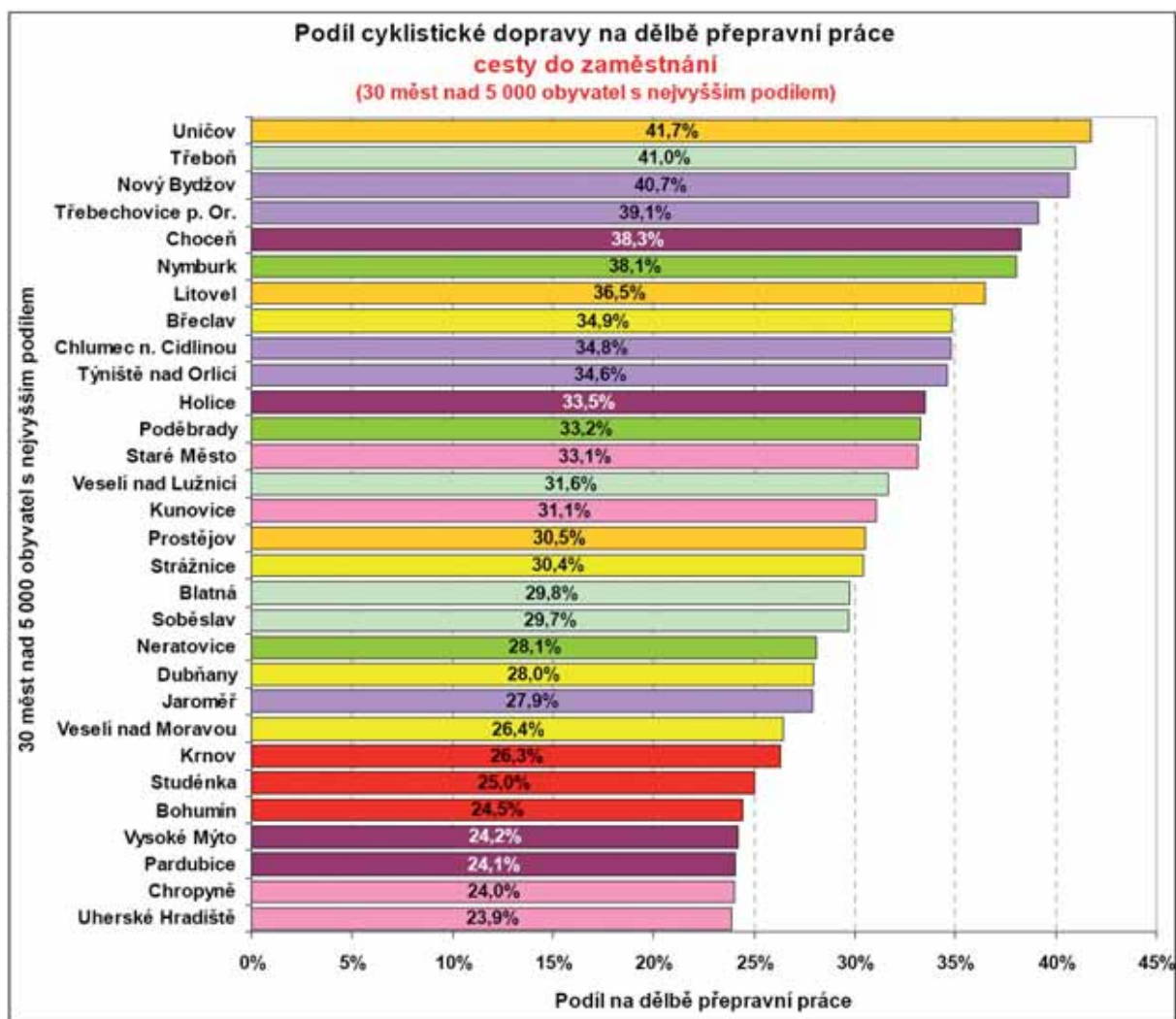


Figure 3: Cycling shares in the modal split (commuting to work) CDV and Czech Technical University, Transport Faculty - ČVUF FD 2007

## 10 Cycle tourism



Cycle tourism is a very popular and topical. Today, people are driven by the irresistible desire for acquiring the knowledge as fast and cheap as possible. The bicycle becomes an irreplaceable and widely accessible means for fulfilling these goals. The whole world is under globalisation and becomes a „common village“. All our works, actions, intentions, desires and dreamed-up goals depend on both – our financial capacity and time we decide to dedicate for their realisation. Cycle tourism brings a pleasant health-friendly and economic solution for both values – time and money. Bicycle riding and touring essentially connects us to the environment we are going through – a city agglomeration or an open natural area. By bicycle we move much faster than on foot and in spite of it, we fully perceive the places and the destination we chose as our goal. Bicycle helps us to get to know ourselves – our will, physical and mental shape. After every cycle tourist ride, without a medical check-up, we know how our body reacts and what our momental health condition is. For some people cycle tourism can become even an adrenalin sport which is a popular feature in many kinds of sport.

## 11 Program Greenways



In the Czech Republic the Greenways program is coordinated by the Partnership Foundation which provides assistance and support to organisations and projects contributing to sustainable development along trails and natural corridors. The main objective of the program is to create a network of organisations and projects for exchange of experiences

and cooperation. Czech greenways yet do not offer such a good level as Spanish or French ones nevertheless they belong to the most worked out trails in the Czech Republic. The most famous Czech greenways are Moravian wine trails, the Greenway Prague – Vienna and Krakow – Moravia – Vienna Greenway.

## 12 Signposting of cycle routes in cr

The Ministry for Regional Development supports cycle tourism also through its direct subsidies to the civic association of Czech Hiking Club which manages signposting of off-road cycle routes in the Czech Republic. The production, installation and maintenance of cycle signs on off-road stretches is coordinated through regional representatives of the Czech Hiking Club, with a kind cooperation of sponsors. Additional subsidies for maintenance of on-road cycle signs are acquired from the regional and local governments. As for the 1st of January 2007, the total length of cycle routes in the Czech Republic makes 29 937 kms.

## 13 MTB cycling

In the Czech Republic, one of popular forms of cycling is not sufficiently supported yet – recreational cycling, especially bicycle rides in plain terrain. During the last decade the understanding of cycle tourism has not included the MTB off-road cycling. A typical model for supported cycle tourism was in the picture of non-demanding cycling for families going through flat landscapes, enjoying easy short trips. Nevertheless, there are a lot of cyclists who like going by bicycle to more demanding natural terrains in the Czech Republic. There are many people using mountain bicycles and using forest routes and paths. However their needs have not yet been met while realising various cycling projects.

## 14 Rail tracks used for cycle Greenways

In the Czech Republic, there are more than 1.000 kms of rail tracks which are out of operation. The majority of them was abolished, some other tracks will experience the same destiny due to lack of financing for their maintenance. How could the non-functional rail tracks be re-used ? This question has been answered by the Partnership Foundation in the frame of its program of Greenways and by CDV in the frame of its research „Sustainable transport – chance for the future, phase 3.1.4. „Cycling in urban areas“ which is supported by the Czech Ministry of Transport (n. MDO 4499457501). The research findings clearly conclude the answer: „Why not to re-use abolished railtracks for cycle greenways?“



Figure 1: Cycle path „before“ and „after“ Cheb –Waldsassen the route n. 204 (a part of Waldstein trail) constructed on abandoned rail track from Cheb to Wiesau



## **15 Cycling and recreology – our leisure time**

Let's leave the context of cycling within the National Cycling Strategy. Let's leave aside the picture of cycling showing the number of kilometres and investments into construction of cycle paths. Let's look at cycling by a different sight: cycling and additional services, accompanying infrastructure for leisure-time cycling and its recreology aspect. The definition says: „Leisure time are the moments when a man carries out activities upon his will with such an intensity so as he can rest up, without any intention of being productive in benefit of the society.“ Leisuretime is an off-work period, free of overtime tasks and commuting to a workplace (non-binded time). The leisuretime cycling requires a specific range of facilities and a number of projects realised for recreation purposes.

## **16 Promotion for support of cycling and a healthy life style**

To promote cycling is important mainly in the phase before people start to decide which mode of transport they are going to use for a specific journey. This can be achieved also through underlining the benefits of cycling for our health because one of the most significant factors causing cardio-vascular diseases is a „well-spread“ sedentary lifestyle and a lack of physical activities where cycling can help a lot. An important instrument is the EU campaign – European Car-free Day / European Mobility Week implemented yearly since 16th till 22nd September. The tools of this campaign are based on informing, communication, organisation and coordination.

The practical inputs for a good promotion of cycling were based on a research project focused on analysis and monitoring of concrete communication methods applied for various user groups (public surveys, press releases and leaflets, exhibitions, public declarations, informative meetings with public participation, websites) and brought outlines for the following areas:

- Promotion of commuting to work and shopping by bicycle.
- Support of commuting to school by bicycle,
- Increase of bicycle use for leisure-time activities.

In 2007 – the 6th European mobility week (16. –22. Sept) and „European car-free day“ (22nd Sept.). Both events serve as promotion campaigns for environment-friendly means of transport and reasonable car use in urban areas. In 2007 both events focused on climate change, 1429 cities involved with 200 million people. In the Czech Republic - 75 cities.

## **17 Cycling and health**

Cycling makes our cities more vital, the life style of citizens becomes more healthy with cycling. The so-called „civilisation diseases“ are at the first place of the fatality chart. The risk that the arterosclerosis, high blood pressure or heart attack sooner or later affect us can be easily decreased. Sufficient active and regular moving and adequately equilibrated nutrition are the main helpers in reduction of these risks. While promoting the active movement and exercising, the lack of time for their practicioning is the most frequent reply. Is not everyday cycling to work and back home a great way how to link the pleasant with the useful? The time we spent on journey is lost if we go by car. But by bicycle the journey itself transforms us and brings us a better shape, health and temper. Moreover while using a bicycle we can get to the places which are accessible for those going by car and everyday we can make a pleasant trip in this way.

Cycling is officially recognised as a good method for enhancement of health through the governmental resolution n. 1046/2002 „Long-term program for improvement of health condition of Czech population – Health for all in the 21st century“. The program includes implementing of the National Health Plan – Projects for health improvement. Results of the subsidised projects are yearly presented at the Crystal Heart conference taking place in Poděbrady in June every year. The conference regularly tackles the topic of interfaces between cycling and our health condition <http://www.kristalovesrdce.cz>.

## **18 international experiences, literature**

Is the Czech Republic struggling alone for the cycling strategy or has it become an obvious part of policies in more countries? This question is answered by the ECMT Report on national cycling strategies (CEMT/CM(2004)11 from the 24th April 2004) and by the ECMT publication – Overview of cycling policies in European countries (ISBN 92-821-2325-1 ©ECMT 2004)#

## **19 human factor on national, regional and local levels**

As it was said many times before – many good decisions and actions depend on people therefore this chapter of NCS is linked mainly with activities of the relevant people on the national, regional and local levels. In the consequence, the impact into reality does not depend on a number of good strategic documents, but the confidence and dedication of active people who bring them into practice are the most precious levers. Actors and stakeholders are many, their involvement is up to their personal capacity, will and understanding of the policy matters related to development of cycling and support of good cycling projects. And the role of the coordinator is to explain well the links, common works and benefits...and help the existing system to become efficient and working for increase of bicycle use.

## **20 References and contacts**

This pillar refers to more details, presentations, articles and technical references related to cycling topics and advising all the partners implementing the NCS.

## **21 Cycling & subjects & well-invested finances**

This pillar gives space to companies from the private sector which have contributed (financially or in kind) to development of cycling, like the event of the National Cycling Conference which was held in Velke Karlovice in 15.-19.5.2007: the sponsors helped to make the event and again their involvement and contribution showed that cooperation with the private sector is relevant, not only because of sponsoring events but especially in development of additional services for cyclists. The goal is to draw attention towards the fact that cycling generates incomes in leisuretime services and tourism (design and construction of cycle ways and accompanying infrastructure, services for leisuretime, recreation, sports and tourism). Therefore the conclusion is that the finances invested into support of cycling are well spent and can bring „interests“ in the future, in the form of new services and business cooperation. Financing is important, but the most important is covering the needs of cyclists and building the cycling infrastructure for a convenient bicycle use. All the entrepreneurs establishing specific services for cyclists demonstrate their positive attitude towards cycling which is a good promotion itself.

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## **The Association of bike-friendly cities, towns and counties in North Rhine-Westphalia „AGFS” (Arbeitsgemeinschaft fahrradfreundliche Städte, Gemeinden und Kreise in Nordrhein-Westfalen e.V.)**

### **Co-ordinated promotion of cycling among local authorities**

*Marion Bugdoll, Cycling co-ordinator for the county Recklinghausen, Press relations officer of the “AGFS”*

#### **Abstract**

Cycling was already promoted in NRW at the beginning of the 80s. Besides financial promotion, some cities were granted the option to explore new routes of promoting cycling, to experiment and to try new options within the framework of the State programme. The State programme was phased out in 1993. The 13 cities of the programme at the time founded the “Arbeitsgemeinschaft fahrradfreundliche Städte, Gemeinden und Kreise in NRW” (“Association of bike-friendly cities, towns and counties in North Rhine-Westphalia”) (AGFS) in 1993, in order to be able to continue the successful work. In December 2007 45 local authorities are members already. Before being accepted as members of the “AGFS”, candidates are tested and evaluated by a selection committee regarding their bike-friendliness. Local authorities are subjected to a re-test every seven years. Campaigns of the “AGFS” are subsidised by the State NRW with rates between 70 and 90%.

It is the general objective of the “AGFS” to create sustainable, lively and friendly cities. Cities in which residents like to live and where individual physical activity during everyday life and leisure time is fun. We want to create more quality of life and physical activity and with that optimal conditions for local traffic, local provisioning and local leisure for our cities.

The “AGFS” members see themselves as contacts, experts and generators of ideas on the topic of cycling and local mobility and are forerunners for modern mobility and for future city planning. The “AGFS” acts as an interface for information and communication between member cities, municipalities and counties and conducts the dialogue with politics, interested associations and clubs. The “AGFS” uses instruments of public relations work and of advertising communication as its voice and publicist in order to achieve its objectives.

The focal point of the “AGFS” lies in public relations and lobbying. Besides this, exchange of information and experience occupies quite a broad spectrum. Contact between members quite often contributes to finding solutions faster and easier. The specialist group, to which all project managers belong, meets regularly. Besides this there are permanent workgroups on the topics of Internet and Public Relations and further workgroups are convened as and when needed.

The “AGFS” regularly makes available material and conducts campaigns, which can be used free of charge by members for their local public relations work. Lobbying and exchange of experience are also important aspects of the work of the “AGFS”.

In order to strengthen the lobbying for cycling among politicians at all state and local authority levels, and to create synergies between the economy and administration, the “AGFS” jointly with the State NRW have founded the initiative “Unternehmen Fahrrad!” (“Enterprise bicycle” or “Operation Ride-a-bike”) in 2004. Concrete projects are agreed upon and are executed here, in order to strengthen the promotion of cycling and the utilisation of the bike for everyday life and leisure.

More information can be obtained at: [www.fahrradfreundlich.nrw.de](http://www.fahrradfreundlich.nrw.de)

## 1 The AGFS in North Rhine-Westphalia

Co-ordinated promotion of cycling among local authorities

### 1.1 North Rhine-Westphalia

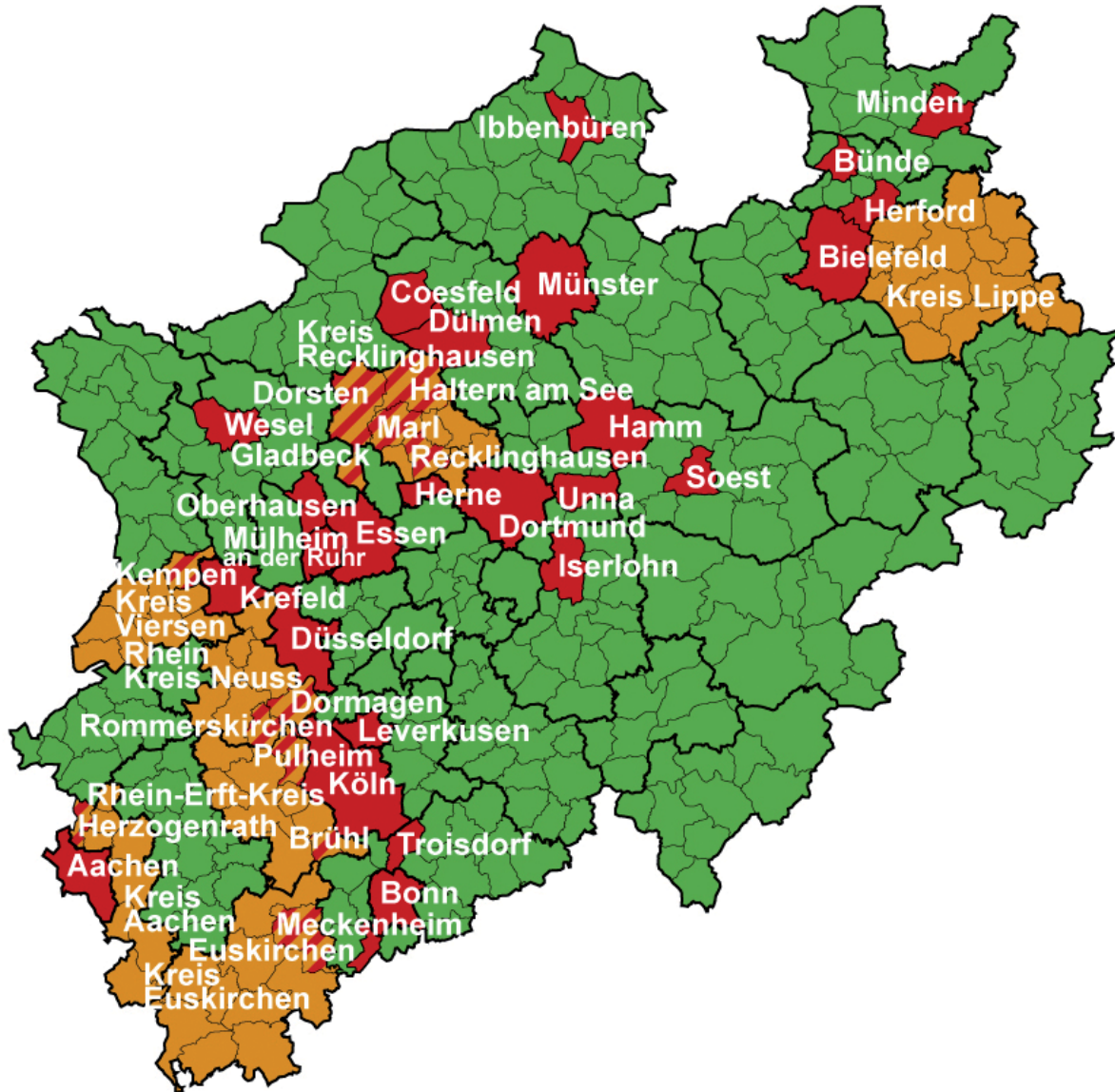


Figure 1: Members of AGFS in North Rhine-Westphalia “

First some facts about North Rhine-Westphalia:

NRW is situated in the west of Germany, close to Belgium and the Netherlands. With about 18 million residents it is the undisputed No. 1 bike state in Germany. During the last 30 years more than 1.4 billion Euro were spent on the construction of bike routes.

Cycling was already promoted in NRW at the beginning of the 80s. Besides financial promotion, some cities were granted the option to explore new routes of promoting cycling, to experiment and to try new options within the framework of the State programme. The State programme was phased out in 1993. The 13 cities of the programme at the time founded the “Arbeitsgemeinschaft fahrradfreundliche Städte und Gemeinden in NRW” (“Association of bike-friendly cities, towns and counties in North Rhine-Westphalia”) in 1993, in order to be able to continue the successful work.



Promotion of cycling is a task for local authorities. But 427 local authorities in North Rhine-Westphalia (towns, cities and counties) have got 427 opinions about how important cycling is and how it should be promoted. The State of NRW has therefore instituted an action programme for the promotion of cycling in order to be able to become active across the State. The action programme comprises eight building blocks, of which the “AGFS” is one.

The “AGFS” was founded in 1993 with 13 members and in May 2007 40 local authorities are members already. Another six local authorities are in the process of becoming members. Before being accepted as members of the “AGFS”, candidates are tested and evaluated by a selection committee regarding their bike-friendliness. Local authorities are subjected to a re-test every seven years. Campaigns of the “AGFS” are subsidised by the State NRW with rates between 70 and 90%.

## **1.2 Our mission - our objectives**

It is the general objective of the “Arbeitsgemeinschaft fahrradfreundliche Städte, Gemeinden und Kreise in NRW e.V.” (“AGFS”) to create sustainable, lively and friendly cities. Cities in which residents like to live and where individual physical activity during everyday life and leisure time is fun. We want to create more quality of life and physical activity and with that optimal conditions for local traffic, local provisioning and local leisure for our cities.

In this spirit the title of the mission “bike-friendly and more ...” documents the self-conception of members of the workgroup. They see themselves as being more than just “bike-friendly”, namely as model cities for sustainable, ecologically meaningful and city-compatible mobility, and support all measures which strengthen these cities as living space.

The “AGFS” members see themselves as contacts, experts and generators of ideas on the topic of cycling and local mobility and are forerunners for modern mobility and for future city planning. The “AGFS” acts as an interface for information and communication between member cities, municipalities and counties and conducts the dialogue with politics, interested associations and clubs. The “AGFS” uses instruments of public relations work and of advertising communication as its voice and publicist in order to achieve its objectives.

It is the objective of the “AGFS” to increase the cycling portion of traffic in member local authorities. A target of an average of 25% cycling portion of total traffic volume is formulated in the mission of the “AGFS”.

## **1.3 Structure and work of the “AGFS”**

The “AGFS” is a registered association according to German Law Relating to Associations since 2006. A general meeting takes place annually, to which the mayor and heads of department of members are invited. The “AGFS” office is responsible for the organisation and is supported by an external agency for brainstorming and creative work.

The focal point of the “AGFS” lies in public relations and lobbying. Besides this, exchange of information and experience occupies quite a broad spectrum. Contact between members quite often contributes to finding solutions faster and easier. The specialist group, to which all project managers belong, meets regularly. Besides this there are permanent workgroups on the topics of Internet and Public Relations and further workgroups are convened as and when needed.

The “AGFS” regularly makes available material and conducts campaigns, which can be used free of charge by members for their local public relations work. Lobbying and exchange of experience are also important aspects of the work of the “AGFS”.

Since its founding in 1993, a multitude of material was produced, campaigns were conducted and activities were arranged. This includes:

- Organising and conducting of conventions
  - on the topic of “moving children”, annually since 2004
  - at the opening of the IFMA Cologne, annually since 1999
  - on the topic of “City Living Space 2006”
- Organising and conducting campaigns with public impact
  - „Best for bike“, annually since 2000 jointly with the „ZIV“, since 2003 also with the „BMVBS“
  - „Only fools drive without light“, annually since 2003
  - „Take your bike to the World Cup“ 2006
  - „10 years AGFS“ 2003
  - „Only dummies crash“ 2002
- Publishing brochures for the technical community
  - parking a bike: „... and where is your bike?“
  - Tips on safety ... at construction sites
- Publishing brochures for the public at large
  - various, e.g. designing bike routes, opening up railway roads,
- Conducting excursions
  - for parliamentary delegates
  - for mayors and heads of department
  - for planners and administrative employees
- Publishing regular publications
- Maintaining an Internet presence [www.fahrradfreundlich.nrw.de](http://www.fahrradfreundlich.nrw.de) as well as an Intranet for members.
- Publishing press releases for central public relations, but also for use by local authorities.



Figure 2: Some brochures of AGFS

## 1.4 Local building blocks of members

“AGFS” members belong to different administrative levels: towns - cities - counties. Depending on the level, different approaches for the promotion of cycling are available. They all have a common modus operandi: A concept is created for the relevant local authority. This concept is passed by the political forums as being binding on their local authorities.

The city of Marl is a county city of the county of Recklinghausen. Both Marl and the county are members of the “AGFS”. While the biggest workload for the county was in the sector of public relations work and consulting, the focal point of member towns and cities was more towards the establishment of infrastructure. As soon as a certain infrastructure exists for the town/city, more investments are made in public relations work.

## 2 “Unternehmen FahrRad!!”



Figure 3: Logo of “Unternehmen FahrRad!”

In order to strengthen the lobbying for cycling among politicians at all state and local authority levels, and to create synergies between the economy and administration, the “AGFS” jointly with the State NRW have founded the initiative “Unternehmen FahrRad!” (“Enterprise bicycle” or “Operation Ride-a-bike”) in 2004. Concrete projects are agreed upon and are executed here, in order to strengthen the promotion of cycling and the utilisation of the bike for everyday life and leisure. Successful projects of the past, like “On the ball with the bike” on occasion of the World Cup 2006 in Germany can now be examples for major sporting events like the European Cup 2008 in Austria and Switzerland, the World Cup 2010 in South Africa and the Olympic Games 2012 in London. Contact was made with the organisers in South Africa and London, where definite interest was shown.

In the second field of activity of “Unternehmen FahrRad!”, attention is paid to city marketing. The facilitators responsible for city marketing are to be sensitised here about how much the cycling and pedestrian clientele can contribute to increasing turnover and to counteract the demise of inner cities. Concrete offers for better accessibility of inner cities for non-motorised traffic must be created, bike parking facilities in correct numbers and locations must be provided, the best possible service package for the pedestrian or cycling customer must be compiled and attractive advertising for this clientele must be done.



Figure 4: Brochures “City-Marketing Fahrrad” and “With bike to football-wm( Mit dem Rad am Ball)”

## 3 Conclusion

The successful work of the “AGFS” during the past 14 years shows that the integration of local authorities in the form of the “AGFS” has released energies and that synergies can now be utilised. Projects and material emerge, which would not be possible for any individual local authority by itself. In this way the “AGFS” also serves as an example for other local authorities and material is also requested from outside of the “AGFS” or NRW.

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# **The institutional process of organizing a national conference on bicycling and a bike lobby network for provinces in Italy**

*Fabio Lopez Nunes, Provincia di Milano, Italy*

## **Abstract**

This document sums up actions taken and results achieved through the First National Bicycle Conference ("Inbici") organised by the Milan Province on behalf of the Ministry for the Environment and Protection of Territory and Sea (MinAmb).

## **1 Introduction**

Italians live a paradoxical relationship with bicycles. The movement promoting the use of the velocipede was created in the Po Valley area which is one of the most polluted and congested in the entire continent. Large metropolises have just about no bicycle equipment and services, while they are suffocated by cars; the present day fashion to replace compact cars with enormous vehicles, like Vans and Suvs is worsening congestion. Yet the number of people using a bicycle regularly is growing considerably and is now a fast-growing movement.

There are small and medium-sized towns who have made great efforts over sustainable mobility, obtaining considerable modal split performances: these include, Ferrara, Bolzano, Lucca, Parma, Modena, Reggio Emilia. In large towns, with no serious policies in force, numbers are very low; in Milan we are close to 4% (going up to over 10% in the historical centre).

But Italians are cycling enthusiasts: Italy, together with Germany, is first European manufacturer of velocipedes, about 27% of the sector, with an important sales market mainly for hedonistic, leisure use; viceversa, still low on the transport one. The European experience shows that cycles are widely competitive and can absorb a considerable slice of modality on short routes (up to 5-6 km).

The Bicycle has become the "purpose" of action taken by many institutions, agencies, organisations and associations: thus, a development policy stimulates a systemic approach, concertation of initiatives and defining actions which borrow this approach.

Such contributions have highlighted the need to create confrontation enabling different missions, vocations and traditions to interact, all merging towards a common goal.

Certain cycle associations stand out (some belonging to ECF), the Olympic Sports Federation, in this panorama, as well as a growing group of Provinces coordinated by the Milan Province. Within the present constitutional structure, the Provinces manage vast territories, somewhere in the middle between Regions and Towns.

In Spring 2006, an important document called "A RUOTA LIBERA (By free wheel)" was approved during a convention organised by Lodi Province launching the topics in this proposal. The stakeholders launched the idea of a national conference in a letter sent to the President of the Council of Ministers, Romano Prodi, on July 20 2007.

On 27 November 2006, the Minister for the Environment and Protection of Land and Sea set up the sustainable mobility Table; the 2007 Budget, after years of silence on the matter, created a specific national fund with a part for cycling mobility.

Milan Province, after drawing up its own cycling strategy "MiBici", offered to become Province coordinator on these policies, promoting a specific Forum for an exchange of experiences and coordination actions. For these reasons, MinAmb and Province agreed to organise the First National Bicycle Conference "Inbici" for authorities, institutions, stakeholders, citizens, during the international Bicycle fair "EICMA" held in the Milan Trade Fair in November 2007.



The Conference was organised in plenary sessions with a full workshop platform (18 topics) producing a considerable amount of data and reports, mostly visible on the website [www.bici2007.it](http://www.bici2007.it). During the three days, there were over one thousand talks by speakers, company representatives, associations and university members, professionals and simple cycle enthusiasts. Numbers which prove what a success the event was, reaching its apex during the first two days with respectively 410 and 560 presences. And an imposing team of speakers, 138. The fullest workshops were those on mobility education, modal integration, planning networks, cyclist safety and moderating traffic.

Three macro topics dealt with:

- Daily mobility
- Tourism and leisure
- Sport and health

## **2 Daily mobility. The time to invest**

Daily mobility was dealt with in a series of sub-topics: inter-modality, networks and planning, design, national service, laws, signs, modal integration, the market, mobility management, traffic moderation, bicycle and school and, last of all, financial resources. For inter-modality, a much debated point, the San Donato Milanese experience was listed as an important reference, to sustain and support in other parts of the country too. In fact, a cycle station can help transform a non place, to cite a famous definition of Marc Augé, into a socially and economically active one. Naturally, investments must be made on inter-modality support services. From this point of view, there's still a long way to go as the cycle-train relationship is highly critical, mainly due to a lack of strategic vision by railway management. Within inter-modality, bike sharing, which can definitely promote cycle use, was discussed: but other services are needed to make it easy and, above all, safe, to use cycles in town. In other words, we need to move in a system logic.

For network planning, the fundamental role a cycle has in attracting users to public transport emerged: not just a modal component, but an inter-modal development tool. On the contrary, planning touches on a painful note as our country is way behind from technical culture point of view: a basic aspect that inevitably affects designing cycling routes. There was a lot of debate over regulations and laws. The debate on market focussed its attention on the need to further implement bicycle product quality in Italy; it is at the centre of hard international competition from Far Eastern countries which can manufacture at much lower prices but, naturally, to the detriment of quality. For this reason, the cost of a quality bike is something that must not be demonised. This workshop also analysed unfair competition, something this market has a fair amount of: to get round the problem, an effective answer could be an obligation put place of production on the product. Thus, a doc bicycle would offer ample quality guarantees.

Another much debated matter was traffic moderation; a fundamental element in town centres to create pacific cohabitation between cars, cycles and pedestrians and a main modal integration factor, assuring separation of the different traffic types. Town roads must go through thorough conceptual change "aimed at variability and reducing the road section reserved for cars". Vehicles must move slowly in towns: slower movement from one place to another but safer and more ecological. We must increase the spread of the so-called 30 zones at town level: urban areas within which no vehicle can exceed 30 km an hour.

Analysing the financial resource aspect, a need certainly emerged for increased amounts to be set aside for sustainable mobility, but also for an effort to be made to promote it not just at state level but also locally. Towns could launch a reflection on how urbanisation charges are used, setting a part of revenue from territory transformation aside to finance sustainable mobility.

### **3 Tourism and the environment. Huge potential**

For its very characteristics, cycle tourism is an activity that gives economically depressed areas, cut off from mass tourist flows, added value with important employment results.

In the light of this, it seems clear that priority should go to existing infrastructural heritage, at least compared to building new roads, and in particular to those belonging to the State Railways. This is where the draft Bill proposed by MoDo, foreseeing conventions between Railways, Regions and local authorities to transform unused railway stretches into soft mobility routes, in primis cycling, fits in. A large popular initiative was launched on 2 March 2008, the first National Day dedicated to unused railways with cycle and pedestrian events taking place along the abandoned railways. The first tangible Conference result was the allocation of two million euro to recover some railway areas. Not an important amount, but definitely an encouraging start.

The workshops analysed some examples of networks functioning or being built, starting with Eurovelo. As far as Italy is concerned, a mention should go to the Bicitalia network proposal made by Fiab-ECF: we hope it becomes part of the Bicycle master plan, the general cycling mobility plan.

Without a cycling route network, cycling tourism cannot take off. But it's still not enough. Signs have to be adapted, hospitality provided, maps produced and guide books in German and English developing market actions abroad; all indispensable if we want cycle enthusiasts from all over Europe to come to Italy, especially German-speaking ones.

An aspect to stimulate cycle tourism is modal integration: trains, boats, rack trains and cable ways are essential means of transport for this sector. In particular, railways should do more: the South is splendid for this sport, but is practically unreachable by rail, especially from Northern Europe.

### **4 Sport and health.**

A really high quality debate; based on the idea that the bicycle is part of a system so cycling must be approached systemically using suitable technology, targeted alliances, accomplished strategies, common languages. Preparations for the national event ended up by creating a strong contact network leading to the event's real political result. The initial discussion point was: how does sport fit into this composite system? Basically, what has sport got to do with it? A lot, naturally! Above all because sport is passion. Race cycling has its own philosophy differing from urban cycling to a certain extent. Its role, and that of sport in general, is to help build, widen, divulge and consolidate a culture: in this case, the bicycle, stimulating citizens to using paths, cycling itineraries, etc. in an adequate manner. That is also why the Conference underlined that routes are the very start of the system; developed through a network of basic plants, cycling stadium tracks, where children can learn how to cycle. An emotion physiology has developed: it is given a basic role in building a person's rationality, in forming knowledge. The Bicycle is an extraordinary pedagogical opportunity.

We discovered that contributions went beyond strictly educational matters, moving, for example, into the safety area. There's a tighter relationship between the two aspects than you think.

On the matter of helmets, the focal point of a correct approach to safety is not making them obligatory for cyclists, but making them perceive the need. There must be more action over models: safety is implemented by working on user mentality. Naturally, regulations are essential; vehicle traffic has to be moderated and cycling routes increased; but the matter is resolved when people understand that there is a risk and equip themselves to face it. Reflections of this kind emerged during the seminar on Monsieur Vélo, Hubert Peigné, coordinator of the French cycling mobility policies. That context clearly showed how the cyclist safety question can only be handled and resolved if there is a strong perception of risk. Without this, other actions are not enough.

## **5 Province two-wheel promotion factors**

The First National Conference ended on the most important result: a commitment taken by the Minister for the Environment to set up a National Bicycle Service. Just a few days after the event ended, this mechanism was launched, undoubtedly starting that complex journey needed to create a new authority within a Ministry organisation. Sadly, the recent government crisis and early dissolution of Parliament brought things to a stop so we hope it will be filled by the new Government.

In the meantime, the work started over two years ago leading to the creation of the “Cycling Provinces” coordination within the Italian Union of Provinces is proceeding. This institutional level is still the most sensitive to cycling matters, proved by the ability – of varying intensity in the different local situations – to draw up programs and initiatives shown by the different Provinces over the years. The day after the Milan Conference, the cycling mobility Workgroup set up within the UPI (Italian Union of Provinces) met to define 2008 program and goals.

A program full of initiatives to be summed up in some guidelines. On the one hand action within the institutions, more specifically organising updating courses for the Province’s technical and managerial staff, implementing the first national survey on the cycling mobility of Italian Provinces, creating a good practice window in the UPI website. But, above all, the provincial authorities’ commitment to preparing strategic cycling mobility plans that are an integral part of mobility and territorial planning.

Work is going ahead in the awareness that important results have been achieved, but that things must be speeded up to capitalise on their value.

## **BYPAD**

### **Setting up a European platform of cycling expertise by means of the bicycle policy audit BYPAD**

*Tim Asperges, TIMENCO bvba, Belgium; Ursula Lehner-Lierz, velo:consult, Switzerland*

#### **Abstract**

BYPAD (Bicycle policy audit) is an instrument for the evaluation of local and regional cycling policy and the improvement of its quality, which is based on European best practice. BYPAD has been continuously further developed and applied since 1999 by an international consortium of cycling experts, with financial support from the European Commission. Experience from BYPAD applications shows, that local/regional authorities find BYPAD a useful tool, which really helps them improving their cycling policies.

Within only nine years, BYPAD has created a pan-European network of more than 130 cities, towns, regions in 21 European countries. 58 certified auditors are supervising the audit processes, and cities, towns, regions, city networks (POLIS, ICLEI, Energie-Cité) and the European Cyclists' Federation ECF, representative of the bicycle user groups in Europe, are exchanging knowledge and experience on cycling policy.

BYPAD is based on the methods of total quality management, which have already been used in the business world for many years (e.g. ISO-900 series, EFQM<sup>3</sup>). The entire quality chain consists of nine modules which all together ensure a balanced cycling policy. BYPAD does not only focus on the pro-active cycling measures, but also on the framework under which cycling policy is taking place, and on its effects and outcome.

By applying BYPAD, cities/regions become part of the European network of cycling experts (auditors) and cities, towns and regions with a pro-active cycling policy, which actively exchange knowledge and experience on all aspects of cycling policy.

The network activities organised in the BYPAD project comprise:

- BYPAD Certification of cities/towns/regions
- BYPAD Certification of auditors
- Providing the BYPAD website (with best practice database, and overview of results from BYPAD audits)
- BYPAD newsletters
- regional workshops including study tours
- international seminars

After the European funding of BYPAD, which is ending in September 2008, the BYPAD-network activities will continue on self-supporting basis. Besides cities, towns, regions and auditors, the city networks POLIS, Energie-Cités and ICLEI and the European Cyclists' Federation (ECF) as the representative of the bicycle users are essential part of the European BYPAD network. In the next step, the BYPAD network will be extended by involving the cycling industry and national (and regional) authorities/ organisations that support the improvement of cycling policies (e.g. Cycling Scotland, Fahrradfreundliche Städte, Gemeinden und Kreise in Nordrhein-Westfalen, ...).

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3 European Foundation of Quality Management

The aim is to make BYPAD an international platform for cycling expertise which improves the quality of cycling policy and by this increases cycle use and cyclists' safety. The BYPAD-platform can be a foundation in which following actors play a role:

- Network of bicycle consultants/universities;
- City-networks (POLIS, ICLEI, Energie Cité, EUROCITIES, ...)
- Associations of national / regional co-ordination points for bicycle policy (Cycling, England, Cycling Scotland, Fietsberaad (The Netherlands), Fahrrad Freundliche Städte Organizational structures which can be started from the this BYPAD-platform are:
- Bicycle industry

On this MeetBike conference the idea of a permanent platform on cycling expertise will be launched.

## **1 Introduction**

It isn't a new cognition among transport experts that cycling can contribute significantly to improve accessibility and quality of life in cities and agglomerations. Mobility studies show repeatedly that the share of short trips that can be substituted by cycle trips is considerable: about 50 % of all car trips are no longer than 5 km. This figure already shows that there is a huge not utilised potential for cycling. Especially in cities and agglomerations, where the availability of (public) space is limited, cycling can contribute enormously to solve the daily transport problems and their negative effects.

Increasing the 'market share' of cycle traffic in the total transport system and improving its safety and attractiveness at the same time, demands a pro-active cycling policy on all political and administrative levels, e.g. in cities and towns, counties, cantons, federal states and on national level. This comprises that - depending on its responsibilities - each level cares for the corresponding favourable general framework. It doesn't suffice just to conduct a cycling policy. To achieve the best possible effects, cycling policy needs to be both effective and efficient. Therefore it is crucial to take the right measures and to avoid measures that are counterproductive. This means that the factors of success and failure of cycling policy need to be known. Public authorities are postulated to conduct an intelligent, target-oriented cycling policy on a high quality level and at economical spending.

Quality management can contribute to improve and safeguard the quality of cycling policy and thus help to actually tap the full problem solving potential of cycle traffic.

During the last ten years there is an increasing awareness for the need of a high-quality cycling policy. Looking for manners for assessment and improvement of the quality of local cycling policy, benchmarking instruments and indicator systems have been developed and measures and programmes have been evaluated during the last years in several countries:

- United Kingdom: Benchmarking project of the CTC (user organisation);
- Netherlands: Fietsbalans (Cycling Balance) of the Dutch cyclists' union (user organisation);
- Switzerland: Indicators for cycle-friendly cities and towns (research project of the SVI);
- Germany: Evaluation of the cycling policies of the member cities of the city network 'Cycle-friendly cities and towns in Nordrhein-Westfalen' (region of North-Rhein-Westfalen)
- Europe: BYPAD - Total quality management tool for improving cycling policy (independent auditors).

## **2 BYPAD**

### **2.1 Improving cycling policy in a European context**

BYPAD (Bicycle policy audit) is an instrument for the evaluation of local and regional cycling policy and improvement of its quality. BYPAD has been developed and continuously further developed and applied since 1999, with support from the European Commission. Meanwhile more than 130 cities, towns and regions in 21 European countries are evaluating and improving their cycling policy, supervised by 58 certified auditors from these countries.

**BYPAD-1999-2001: research project**

BYPAD is based on international best practice in local cycling policy, availing strategies and measures which are successfully put into effect somewhere in Europe. The exchange and dissemination of this knowledge is one of the goals of BYPAD.

The BYPAD-tool was developed in 1999 -2001 by an international consortium<sup>4</sup> in the framework of an EU project (100% funded) and tested in seven European cities: Gent, Graz, Troisdorf, Birmingham, Zwolle, Ferrara and Grenoble. The first BYPAD-tool was focussed on mid-sized and big cities. Because of the enthusiastic reactions of the test-cities a follow up project – BYPAD+ – started in 2003.

**BYPAD- 2003-2004: training-dissemination project**

The aim of the subsequent EU project BYPAD+<sup>5</sup> (50% funded by the EU) was to improve the method and to apply BYPAD Europe wide. The BYPAD-tool was simplified, a training programme was set up and an active dissemination programme with regional workshops, international seminars, and interactive website, newsletters was set up.

An international network of certified BYPAD auditors was set up in 16 European countries. They succeeded to implement BYPAD in about 60 cities in Europe.

**BYPAD-platform 2006-2008: widen method + dissemination project**

The last EU-project<sup>6</sup> (50% funded) started in 2006 and ends in September 2008. Goal was to widen the BYPAD-tool for towns and regions and to expand the network of auditors, cities, towns and regions to central Europe and the new member states. There has been developed a BYPAD-city, BYPAD-town and BYPAD-region tool and there have been trained 37 new BYPAD-auditors. Also the existing BYPAD-auditors followed an expert training to exchange all relevant new knowledge on cycling policy. At this moment BYPAD has been implemented in more than 130 EU-cities / regions in 21 countries, guided by 58 certified auditors. The BYPAD-platform projects is ending in September 2008 with a final conference (17-18 September) in Tartu (Estland). It is the aim to establish a BYPAD foundation which is continuing all BYPAD-activities on self-supporting basis.

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4 Langzaam Verkeer, Belgium (co-ordinator), FGM-AMOR, Austria, velo:consult, Switzerland, European Cyclists' Federation

5 Same consortium

6 Vectris, Belgium (co-ordinator), IMOB-Hasselt University, Belgium, FGM-AMOR, Austria, velo:consult, Switzerland, Ligtermoet & Partners (The Netherlands), CDV (Czech Republic)





BYPAD is based on the EFQM-approach which is transferred to the subject of (local) cycling policy. Through BYPAD, municipalities should initiate a process of continuous quality improvement. To achieve this aim, BYPAD combines cognitive, conversational and learning elements. The quantitative assessment of the individual aspects of cycling policy helps to convince the rationalists (cognitive element). Discussing the cycling policy within the evaluation group of decision makers, policy makers, executive staff and the user organisations ('clients') strengthens the political will to improve the quality of the cycling policy (conversational element). Assessing the cycling policy in a moderated process supervised by an external auditor, strengthens the effect of learning (learning element). Also the regional, international seminars and the good practice database (see further) strengthen the effect of learning.

**Total Quality Management:  
Normal in the business world**



**Total Quality Management: Soon  
normal for cycling policy**

BYPAD regards cycling policy as a dynamic process where different components need to fit together to be successful. BYPAD does not only scrutinise outcomes and effects of the local cycling policy, but also if and how this process is embedded in the political and administrative structures. Are there objectives for the cycling policy? Is the selected strategy adequate to achieve these objectives? Are the allocated resources in balance with the objectives, and is the continuity of financing safeguarded? Is cycling policy restricted to few infrastructural measures or is the wide range of pro-cycling measures put into effect, including measures to discourage car use? Is there cross-sectoral co-operation with strategic partners? How is safeguarded that the measures taken achieve the objectives strived for?

BYPAD distinguishes nine modules, whose qualities are determined separately (See figure 2). For each module, a quality level is assigned on the BYPAD ladder of development which has four levels in total. The results of all nine modules altogether determine the overall quality level of the cycling policy. On the basis of the results for each module, the municipality can define quality objectives and derive measures separately for each module. Besides that, it is possible to monitor the evolution of the local cycling policy.

The principal item of BYPAD is the questionnaire, which consists of 30/22/18 questions covering all aspects of cycling policy for cities/ towns/ regions. For each module, it contains a number of questions, whose answers are preset. They describe appropriate measures which have successfully been implemented in European cities. A quality level between 1 and 4 is assigned to each answer. The quality level is zero, if no action is taken in the field in question. BYPAD is kind of a mirror for the city's cycling policy. It detects the weakest link in the quality chain and shows where improvements are necessary and possible. By filling in the questionnaire the city (town, region) receives direct inspiration of what could be done in the field in question for climbing up to the next quality level.





Figure 2: BYPAD modules



Figure 3: BYPAD ladder of development

### The levels of development are:

#### Level 1: Ad hoc oriented approach

Fire brigade principle: Cycling policy is mainly limited to problem solving. Measures are mainly focussed on infrastructure or road safety at specific locations. Cycling policy is on a low quality level which is characterised by low and irregular budgets, few officials with low skills and without competence. Quality is a result of individual efforts only.

#### Level 2: Isolated approach

Robinson Crusoe principle: There is already a cycling policy, but it is neither integrated into the overall transport policy nor in other policy fields such as land use, health, environmental policy. Good infrastructure is the main concern of the policy, although some supplementary activities are undertaken. Cycling policy is characterised by some use of data and a limited knowledge of the users' needs, global agreements with a limited compulsory character, measures which are often counterproductive, because they are not tuned to the needs of other road users or not integrated into the objectives of other policy fields. Continuity isn't safeguarded.

### **Level 3: System orientated approach**

We are pulling into the same direction: Cycling is regarded as a system, which is integrated into the overall mobility policy. The political will to support the cycling policy is underlined by a sophisticated local cycling strategy and appropriate budget allocation. The cycling policy comprises a wide range of different measures; different target groups are targeted with tailored measures, partly in co-operation with other public and private partners. Cycling policy is based on good data and the knowledge of user needs, but still on a project basis with limited running time.

### **Level 4: Integrated approach**

The winning team: Cycling policy is regarded as a permanent task with strong relationship to other policy fields. Measures to encourage cycle use are complemented by measures to discourage car use. There is strong political support, good leadership, regular budget allocation, enough skilled staff and comprehensive in-house expertise. Systematic networking and regular exchange of information, knowledge and experiences with internal and external actors help to raise and maintain the quality standard. The cycling policy is characterised by the availability of high quality data, regular monitoring and evaluation, strategic partnerships with the aim to win these partners over to allies who contribute their part to the local cycling policy.

## **2.3 BYPAD evaluation group**

A key issue in the BYPAD approach is that the whole process of evaluation and quality improvement is carried out by a local evaluation group. This evaluation group consists of politicians responsible for cycling, policy makers and executive staff of the municipality dealing with cycling, and representatives of the local cyclists' user organisation(s), who use the 'product' of the local cycling policy. Bringing these three different players together, BYPAD assures that the local cycling policy is examined critically from different perspectives.

The evaluation group looks for strengths and weaknesses of the cycling policy in order to find jointly a consensus on fields where improvements are necessary and possible. The audit process is supervised by an external consultant, who is a certified BYPAD auditor.

## **2.4 BYPAD process**

At the beginning of the evaluation process, each member of the evaluation group fills in the BYPAD questionnaire individually. For each single aspect of the cycling policy, each member of the evaluation group assigns a quality level between 1 and 4. In a following meeting, when the whole evaluation group comes together, they are confronted with the judgements of the other members. It is the objective of this meeting to find a consensus on the strengths and weaknesses of the actual cycling policy and to assign jointly a quality level to each question of the questionnaire. Based on the results of this debate, the evaluation group develops a quality plan for the future cycling policy during a second meeting.

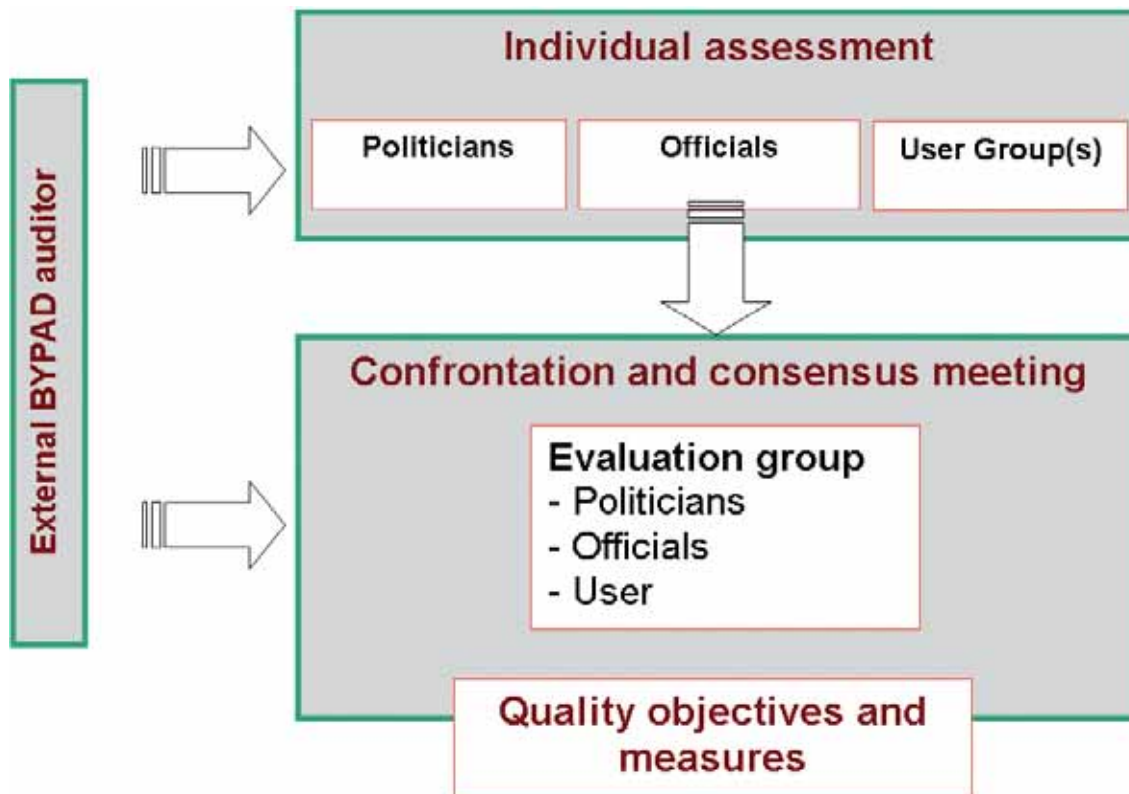


Figure 4: BYPAD process

## 2.5 BYPAD results

As a result of a BYPAD audit process, a city/ town/ region gets scores for each of the questions of the questionnaire, for each of the nine modules and for its cycling policy as a whole<sup>7</sup>. These scores indicate straightaway where the strengths and weaknesses of a city's cycling policy are (see figure 5). The interim and final reports of the audit, written by the auditor, are a detailed inventory of the cycling policy so far and a documentation of the audit process. The quality plan documents the objectives, main fields of action and measures the evaluation group has agreed on.

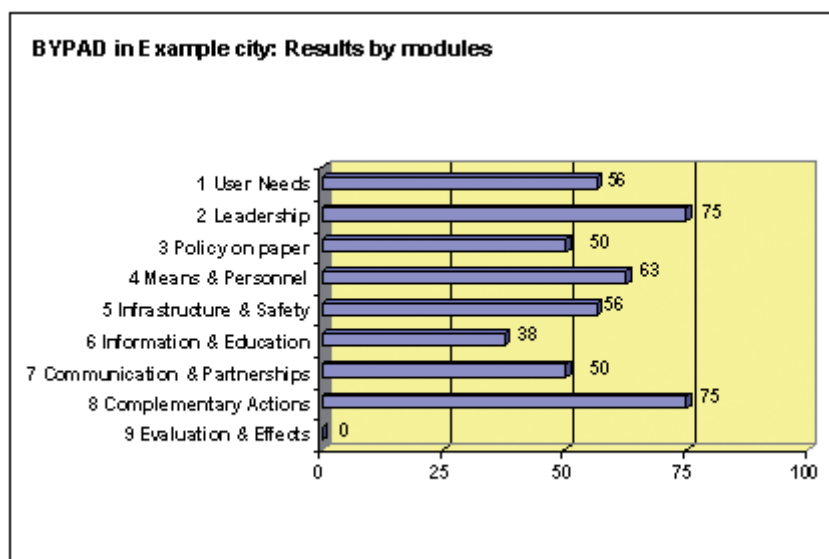


Figure 5: BYPAD results by module

<sup>7</sup> To avoid decimal points, the levels 0 to 4 are transferred to 0 to 100.







BYPAD ceremony at Velo-city 2007 in München.

### Monitoring tool

Besides this city marketing BYPAD offers the cities an objective monitoring tool for following up the improvements of their cycling policy. Repeated applications of BYPAD give cities/ towns/ regions the basis for setting out their cycling policy. For many cities the BYPAD-audit is the door-opener to start up improvement actions for the local cycling policy.

### Recognized method

In the national cycling strategies of Germany, Czech Republic and Austria, BYPAD is recommended to cities and towns as the QM-tool to improve their cycling policy. In the Czech Republic, the awarding of subsidies is coupled with the application of BYPAD. In Nordrhein-Westfalen (Germany), the application of BYPAD can be co-financed by the state government.

### Exchange of experience and best practices

Besides implementing the BYPAD audit and making a cycling quality/action plan for a city/town/region the second goal of BYPAD is the exchange cycling expertise in Europe. Following activities are organised for reaching this goal:

- **National/regional workshops, by language region.** On these workshops, the participating cities/regions actively play a role and new cities/regions are coming into contact with the BYPAD-tool (e.g. Recklinghausen, Germany, in German for D-A-CH. Genève, Switzerland, in French for CH-F-B), 's Hertogenbosch, The Netherlands, in Dutch for NL-B, Lund, Sweden, in Swedish and Danish for S-DK-N).
- **International seminars / excursions:** international seminars on specific cycling topics and excursions are organised to stimulate the exchange of cycling expertise (e.g. Ceske Budejovice/ Czechia 2006, Munich/Germany 2007, Tartu/Estonia 2009, ...).
- **BYPAD-website:** [www.bypad.org](http://www.bypad.org) is both an informative medium as a working instrument for the BYPAD-auditors and BYPAD-cities/regions. There is a public area (with information on the BYPAD-method, contact points, experiences of cities, best practice database) and a protected area with results of the BYPAD-cities, city reports, BYPAD-questionnaire, city registration etc.
- **The best practices database** of BYPAD gives examples of all BYPAD-cities. This means there are given examples for all different quality levels in cycling policy. Cities, regions that are on a low level also find inspiration what they can do in cycling policy.
- **The 3 BYPAD-questionnaires** for cities/ towns/ regions are each available in 15 languages.
- **The BYPAD-newsletter**, published 3 times a year, is disseminated throughout the BYPADnetwork and via the contacts of the BYPAD auditors and network partners.

### 3 Experiences with BYPAD

During the last nine years, more than 15 regional workshops and international BYPAD-seminars were organised where cities, towns, regions and BYPAD-auditors exchanged their experience on cycling policy and the BYPAD process. It was part of the BYPAD project that – per language region – BYPAD cities came together in workshops to exchange the experiences they have made with BYPAD and the lessons learnt from the audits so far (= regional workshops). Besides these regional workshops, also international seminars were organised where all BYPAD actors were invited. In panel debates, representatives from the BYPAD cities and regions discussed the effects BYPAD audits have had so far, whether it is worthwhile for a city to carry out a BYPAD audit, whether cities are ready to repeat it, under which conditions and when, and their wishes for the further development of BYPAD. Following reactions came out of the several meetings at regional workshops and international seminars:

- There was a unanimous opinion that the BYPAD process was very inspiring and that it has brought lots of insights and knowledge about cycling policy. Panellists confirmed that the audit process has led to a more comprehensive understanding of cycling policy. Cycling policy is being regarded now as much more than providing infrastructure, whose complexity has been shown by the BYPAD audit. These opinions are being shared also by politicians and user groups, who had participated in the process.
- The fact, that BYPAD brought all those persons together who are involved in cycling - both within the municipality and outside – was estimated positively. For many of the cities and regions it was the first time that these persons came together, and the very intensive discussions were regarded as very fruitful.
- It is regarded as a positive effect, that after the first meeting all persons involved in the local cycling policy are on the same state of knowledge and information of what is going on in the city. In several cities the BYPAD intermediate and final reports were the first profound documentation ever of the local cycling policy.
- The process has improved transparency about who is doing what in the various departments of the municipality. For the officials, the BYPAD audit has delivered the justification of the work of the officials and it has provided the arguments why certain additional measures need to be part of the future cycling policy.
- At the first glance, the comprehensiveness of the questionnaire was felt to be a bit 'shocking', and especially politicians and user groups judged it sometimes as difficult ('academic'). But once they had worked through the questionnaire, most readers assessed working with it as very enriching and the effort worthwhile. This feedback of the BYPAD applicants is of great value for the BYPAD consortium. The questionnaire has been shortened from 40 to 30 questions (cities), and the consortium is focussing on making the questionnaire more understandable and easy to fill-in.
- The BYPAD questionnaire and process help to find out the essentials of the cycling policy, to find the effective adjusting screws.
- All panellists from BYPAD cities agreed that it is essential that audit processes should be supervised by an external auditor, because an external auditor has a neutral view on the city's cycling policy ("A prophet is without honour in his own country"). A second, essential reason is that the external auditor is a cycling policy expert and has experience from other cities and other audits and can thus give lots of inspiration and advice (she/he helps to open eyes).
- Audits should be regular part of a professional project management. All panellists agreed that the BYPAD audit should be repeated after 3 or 4 years.
- There is a strong need for best practice examples. Cities and regions want to enforce learning from each other.



## 4 What BYPAD does achieve and what not

BYPAD has been developed for cities, towns and regions that strive to improve their cycling policy and therefore decide for an audit process. Rotational repetitions of the audit enable a city to monitor the evolution of its cycling policy on the long term.

BYPAD supports the integration and co-ordination of programmes, planning and measures. It helps to improve the co-operation between the various actors and helps to identify potential partners for co-operation. The audit process helps to improve the transparency of the actions of the municipality. In several BYPAD cities, the audit meetings were the first time ever that politicians, officials and user groups came together in this composition, which were mostly found as clearing and fruitful.

BYPAD strengthens quality oriented ways of thinking and acting, and makes people aware of the necessity to evaluate their own actions. That's why BYPAD initiates a process of continuous quality improvement.

Since BYPAD identifies strengths and weaknesses of the cycling policy of a city, cities can learn from each other by looking where other cities – compared with them - are strong or weak, to take up the corresponding measures in these fields or just to avoid them.

BYPAD is not made for the beauty contest between cities/ towns/ regions. Although scores are assigned to each of the 30/18/22 questions of the questionnaire, to each module and to the cycling policy as a whole, as a result of an audit, it doesn't make sense to make ranking lists of the best cycling cities. Particular emphasis has to be put on the fact that BYPAD is a qualitative method and not a quantitative one. The results of an audit depend to a high degree of the estimations of the members of the local evaluation group. This can lead to the result, that a rather advanced, but very self-critical cycling city comes off (relatively) worse than a city on a low level of development, but with a less critical evaluation group. The expert opinion of the auditor can have a correcting effect to some degree.

Comparing cities from different countries, not only the different general framework (e.g. political, cultural, legal) has to be taken into account, but also the different backgrounds of the auditors.

## 5 The future development of BYPAD

Experience with BYPAD audits so far and feedback from both cities and auditors have shown that there is awareness for the necessity of an instrument for the quality management of local cycling policy, with a strong need for learning from each other. There is also a need for using BYPAD both in small communities and in territorial authorities such as metropolitan areas, cantons, federal states, counties.

To promote the application of BYPAD in order to improve cycling policy and by this stimulate cycle use and contribute to a more sustainable transport system, a European BYPAD platform will be established. The aim of this BYPAD platform is:

- to train auditors, especially in those countries where BYPAD isn't applied so far;
- to promote the application of BYPAD;
- to organise the exchange of experience between BYPAD cities/ towns/ regions on the one hand and auditors on the other hand, per language region and on an international level;
- to keep the BYPAD method up to date and to safeguard its quality by processing feedback from auditors and cities and organising exchange with architects of similar instruments on a regular basis;
- to certify auditors and BYPAD users;
- to become a knowledge centre on cycling expertise with an international team of bicycle experts where cities, towns, regions can rely on for support.
- to become a training centre for cycling expertise in Europe.

Following questions have to be answered for starting up this BYPAD-platform:

- How are the BYPAD-activities funded (if no EU-support is possible anymore) ?
- Who are partners in this BYPAD-platform ?
- Is the BYPAD-platform a new legal body ?

#### **Financial basis:**

This BYPAD platform has to live on self-supporting basis (without EU-funding). There are three main tasks:

- Task 1: Keeping BYPAD up to date on a high quality level
- Task 2: implementing audits + training auditors
- Task 3: exchange of cycling expertise

Task 2 should be self-supporting by incomes for fees from cities, towns and regions and by the training fees paid by the certified auditors.

For tasks 1 and 3 external funding will be necessary. Possible sources are national/regional authorities and bicycle industry.

#### **BYPAD-platform partners**

At this moment there are 58 certified auditors and about 130 cities, towns and regions that are using BYPAD. In the BYPAD network there are also the city-networks POLIS, ICLEI and Energie Cité who do have the task to communicate about BYPAD to its members. The European Cyclists' Federation (ECF) representing the cyclists in Europe is also a partner in BYPAD.

With the evolution of more and more national and regional cycling knowledge centres<sup>8</sup> that are supporting local authorities on cycling measures, it could be logical that they also are linked with each other on European level by BYPAD.

Also the bicycle industry is a vital player in making cycling possible, safer, more comfortable, ... So the bicycle industry would be an interesting partner in the BYPAD-platform.

#### **New legal body?**

A complete new foundation 'BYPAD platform' could be started. It is the question whether this is necessary as there are already existing different city-networks that are working on sustainable (urban) transport. There is also the former Cities for Cyclists network which was co-ordinated by ECF. This association could come back alive with this BYPAD-platform initiative.

These are some open questions which we want to discuss at the MEETBIKE conference.

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<sup>8</sup> Fietsberaad (The Netherlands), Cycling England, Cycling Scotland, Cycling cities Norway, Fahrradfreundliche Städte, Gemeinden und Kreise in Nordrhein-Westfalen (AGFS), Club des Villes Cyclables (France), Velokonferenz Schweiz, (VKS) ...

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## **Cycling and Sustainable Mobility in France**

*Hubert Peigné, Interministerial coordinator (bike), French ministry of ecology*

### **Abstract**

The State in France has lost any interest in bike and bike use until 1995. Under the pressure of cyclists associations and cities, it launched a new bike policy at that time and, more widely, a policy of space sharing, speed reduction, road safety, priority for the weakest and the slowest.

Real successes have occurred, multiplied, but are not wide-spread enough.

To-day, 4 programmes – a way for all, street code, veloroutes and green ways, pro-velo policy – are operated and, of course, in continuous progress. For the major part, they are entrusted to one coordinator, Hubert Peigné, senior chief civil engineer, helped by teams of civil servants (various ministries) and a national technical institute in Lyon (CERTU). He assembles and brings together the bodies and actors – cyclists and other users; local authorities; operators and companies in transport, tourism, industry etc ... He arranges or facilitates their cooperation; he encourages their interest and open-minded curiosity for partnerships in Europe.

### **1 France (without oversea territories): some data for a better understanding of its context**

550 000 Km<sup>2</sup>

62 000 000 Inhabitants

Density: 113 Inhab / Km<sup>2</sup> (low density in Europe)

4 levels of administration:

- State

- 22 Regions

Paris: 11.5 M Inhab

other: 0.7 to 5.5 M Inhab

8 000 / 45 000 Km<sup>2</sup>

- 95 Counties (départements)

80 000 / 2 400 000 Inhab

600 / 10 000 Km<sup>2</sup> (except Paris and three neighbours: 100 / 400 Km<sup>2</sup>)

- 36 500 cities and villages (communes)

mostly united in communities around the major ones (for instance Strasbourg and its 26 neighbouring cities)

Population: Paris 10 M Inhab (Greater Paris)

Marseille, Lyon and Lille: 1 M to 1.5 M Inhab

Other: less than 0.7 M Inhab

## **2 Bike use in France before 1980**

Bike use decreases continually during the 60's and 70's.

The State, widely responsible for local public policies, tries to react and endows itself with pro-bike measures: cycling facilities on the national roads network ( over 80 000 Km long at present ); assistance to cities for their own roads (and the beginning of a local cycling network); publishing technical guidelines for better cycling roads and streets; founding teams of experts in the State offices etc ...

Among the cities, only Strasbourg adopts strong and autonomous policies and programmes (independent from the national ones).

## **3 Years 1980 – 1995**

### **3.1 State withdrawal**

The political decentralisation in 1981 / 1983 meant a competence transfer from the State ( to local authorities ) which gives up every kind of interest in any kind of bike policy.

54 000 Km of national roads become roads of the counties ... which totally neglect every kind of bike traffic.

### **3.2 New involvement of cyclists and cities**

In the meantime, two initiatives, unnoticed, will have later a major importance:

- 1980: the FUBicy – fédération des usagers de la bicyclette: union of local cyclists' associations – is founded by Jean Chaumien (founder, in 1974, of the Strasbourg association )

- 1989: ten cities create the « club des villes cyclables – CVC – club of cycling cities » (Strasbourg, Bordeaux, Nantes, Chambéry, Lorient...)

FUBicy and CVC will grow steadily ( in 2008: about 140 local associations in the FUBicy; more than 1 000 cities – including Paris, Lyon, Lille... - within the CVC). Together, and with other bodies and partners, they will turn into a real power, source of proposals, at both local and national levels.

### **3.3 State policies for road safety; good for bike too ... later on.**

All the same, the State commits itself in two traffic policies which will prove favourable to cycling:

- struggle against speed, stronger every year.

- promotion of an applied programme: « safer cities, districts without accidents ». The financial State support to cities will be interrupted after a few years but the experience won't be lost and cities will develop, little by little, similar and efficient policies of their own.

## **4 Years 1995 – 2008: the State meets bike again « ... and works to encourage a better space sharing.**

### **4.1 State commitment for a network of « Veloroutes et Voies Vertes – VVV – Veloroutes and Green Ways » .**

In 1995, the State, rediscovering the importance of bike in leisure and tourism, launches the policy « Veloroutes and Green Ways – VVV – Veloroutes et Voies Vertes »

Then come: in 1998, the adoption of the national scheme of VVV, based upon the Eurovelo map; in 2001, gradual design and implementation (by local authorities) of regional schemes, with a financial support of the State (20 M Euros) until 2006; in 2003, founding of the national team for VVV (Mission Nationale des VVV) within the ministries; elaboration of technical papers and books, of economic surveys etc...

In 2008, the network of main VVV is 12 000 Km long, including 4 000 Km of VV / Greenways.

## **4.2 Bike in urban life; the State is back.**

In 1995, the State rediscovers bike in urban life as well: founding of the national bike committee (State and partners, especially users and local authorities); changes in the Highway Code; annual prizes; bike festivities every first week-end of June; new guide-books for cycling design; start of a bike policy in the national railway company ( SNCF ) etc...

In 2004, Mrs. Le Brethon, MP, gives to the Prime Minister a report suggesting 30 actions for a bike-friendly State, a State bike policy. First measures are taken in April 2006:

- launching of the « Street Code » approach, in order to adjust the Highway Code to life in cities and the urban context ( not only for cyclists... ).
- appointment of an « interministerial coordinator for the development of bike use - « Mr. Vélo » - depending on the minister of Ecology who mainly supports him. He builds and proposes in October 2006 an action plan, that he sets up immediately... and renews in January 2008: a summary is given at the end of this paper.
- in the same period, from 2005 on, the ministry has endowed itself with a group of civil servants in charge of promoting, towards local authorities, fully responsible, public space sharing, which is more favourable to cyclists and, also, to pedestrians, disabled people, public transport...: it is the so-called approach « A Way for All ».

## **4.3 Urban cycling, VVV, space sharing: three teams and a leader-coordinator.**

Interesting is the fact that one person, Mr. Peigné, senior chief civil engineer, has been entrusted with these three missions ( he has an assistant for each of them ) as head of:

- a team « bike » (as interministerial coordinator);
- a team « VVV », which is now a specific part of the previous one;
- a team « a way for all ».

As a global leader, he gives the directions and coordinates the activities, trying to make every mission benefit the two others.

## **5 2008: uneven trends within the society, the State, the local authorities.**

The next chapter gives some examples of « success stories » which multiply and expand... in a French society which is globally favourable, but also tepid and indeed hesitating.

All inquiries reveal that 80 % to 90 % of the population wish a wide pro-bike policy, and think bike use will actually grow strongly.

But a majority does not see the contradiction with the previous – and, too often, current – policies of urban sprawl, of natural space consumption (space seems abundant in France...), of car-based mobility. It does not see that an increasing number of persons are condemned, by those policies, to be car-dependent, either for access to school or to employment and other services of daily life ( for the first time, in several cities, the number of jobs accessible by car – for instance in 30 or 60 minutes – has decreased during the last 5 or 10 years !).

Many politicians and technicians are not urban daily cyclists; they have wrong or oversimple ideas (vélo = cycle path, and that's all). They just think « Tour de France » and sport...

Those ideas are evolving, rather quickly for leisure and tourism (the wide variety of users is at last recognised), but rather slowly for some matters however important ( benefit for health, less obesity ...).

## **6 2008: some « success stories » (among many others fortunately).**

Here are some examples, picked up in a list which lengthens every month, every year...

Many « collèges » (schools for young teenagers – 11 to 16 years old) don't register more than 2 %, 3 %, perhaps 5 % of pupils cycling to and from their school. But in Montpellier (by the Mediterranean sea), they are 50 % to 80 % (it depends on the season) in Jacou's collège which opened in 1999 with safe cycle route and good and secured bike storage conditions.

In Strasbourg, bike use reaches 25 % in town (10% for the whole urban area).



In Grenoble, ST Microelectronics has set up a mobility plan: bike use and public transport use have increased by 10 points (for instance: from 10 % to 20 %) to 15 points. The chamber of commerce is now « selling » mobility plans to each firm on its territory.

Traffic and behaviour inquiries in 2006 or 2007, in cities such as Lille, Lyon, Rennes, Reims, Rouen... show that car use is decreasing in percentage – its modal share drops by 2 % to 5 % - and even (in some areas) in travelled kilometers, for the benefit of bike and public transport together (1 % to 3 % respectively).

Double cycling ways in one-way streets appeared first in Strasbourg and to-day represent 60 % of the more than 500 one-way streets of the city. They are now spreading and expanding in Bordeaux, Paris and in many cities: bike traffic has strongly increased in the concerned streets... but not the number of accidents !

Bike-sharing such as Velo'v in Lyon (launched in may 2005, now rich of 4 000 bikes and 350 stations) and Velib' in Paris (20 000 bikes and 1 400 stations since july 2007) are conquering French cities. Their success: each bike is used 6 or 7 times a day (or much more); night use is surprisingly important (up to 15%); they make bikes visible in streets (car drivers would say they were not before...); they get private bikes out of their garages or cellars !

## **7 2008 and after: what directions, which actions ?**

### **7.1 Some favourable factors.**

At the national level, several factors are emerging:

- a new commitment of ministries and, first of all, ministers: Ecology, Sustainable Development, Transport, Industry, Economy, National Education...
- the Interministerial Delegate for Road Safety – DISR – has left the idea of obligatory helmet wear, does not say « bike = danger » any longer but rather « more cycling = less danger », adopts some good measures for bike use (street code...).
- the constant, steady presence and activity, in the bike (and sustainable mobility) field, of the CERTU – a national technical institute (located in Lyon) which has already produced, over the last 20 years, technical books and guides, symposiums, training courses etc... for every kind of audience (in priority: civil servants of the State and local authorities). These functions and tasks are quite precious for a rich cooperation of all actors.

### **7.2 Four action plans or programmes.**

Four programmes can be identified, obviously linked with each other

Programme 1

.....

A Way for All

With the approval of the General Secretary of the ministry of transport in 2005, this programme is being set up by Mr. Vélo's team and the CERTU.

Some principles:

- do not forget anyone and give priority to the weak, the disabled, the poor, the vulnerable, the youngest and the oldest etc...
- give the shortest route to them.
- reduce the differences in speed, in vulnerability, in number... between the various categories of users.
- etc...

Some aims: to produce technical guides (what to do) and methodological guides (how to do it: especially how to begin – which is the most difficult step - and according to which method...), quite necessary in front of so many possible conflicts in space use, adapted to elected people (decision makers), to engineers or architects of different kinds... To disseminate the « a way for all » philosophy.

Some supporting events: to organise days and sessions for experience sharing, training, meetings etc...

## Programme 2

### ..... Street Code

The « street code » approach, launched in april 2006, is led by the interministerial delegate for road safety – DISR. It relies on CERTU's work, which associates representatives of pedestrians, disabled people, cyclists, car drivers (automobile clubs), two-wheelers (= motorised), rescue services, police, operators of goods delivery, public transport, etc... Therefore, cycling is not the only matter to be considered...

Have already been adopted, to be effective in the summer 2008:

- meeting zones (intermediate and additional solution between zones 30 and pedestrian areas).
- systematic extension of double cycling ways in one-way streets within (future) meeting zones and zones 30 (existing and future).
- principle of cautiousness and responsibility of the strongest towards the weakest, of the fastest towards the slowest.

Other measures are being experienced or (mostly) in preparation for 2008, 2009...

## Programme 3

### ..... Veloroutes and Green Ways

The VVV programme continues...

Two innovations are currently studied:

- founding a national observatory of VVV, on an institutional basis (partners: State and local authorities). Its data and productions should be at other actors' disposal (notably in the tourism sector).
  - the possible founding of a new structure – association or any other solution which is currently studied....
- It aims at promoting the VVV network from economic and touristic points of view, beyond the programme of physical implementation of the routes alone.
- The arrangements of Switzerland (Swiss Mobile), Canada-Québec (VéloQuébec), Spain, Great Britain etc... are under examination.

The objective is to set up something like a PPP – private public partnership – with a significant (major ?) role for the private sector.

Mr. Vélo leads a broad working group on those topics. Decisions could be taken at the end of the summer 2008.

## Programme 4

### ..... Developing bike use Action plan at the national level

Mr. Vélo proposed in January 2008 a renewed action plan. He and his team already are committed in its implementation.

The objective is to allow French people to use their bikes more often, more easily and more safely in daily life.

Could be targetted, for the next (five ?) years, an increase of bike use in our cities. 5 points for each city would enable the national result to reach 10 % (in 2012 ?). The action plan has to contribute to this target and to the above-mentioned objectives which are primarily of local authorities responsibility.

For this purpose, the State can suppress or reduce the judicial obstacles, deliver a selective financial support, ask the State-owned companies (railway, waterway ...) for a commitment in ambitious bike policies etc...

The following list, in four chapters, indicates the themes of Mr. Vélo's (and his team's) work:

A – The State sets up the frame for local action.

A.1 – Street code

A.2 – Bike storage in collective housing

A.3 – Fiscal measures

A.4 – Eco-districts in cities

A.5 – Urban and spatial planning

B – The State involves itself in partnerships with local actors

B.1 – Veloroutes and Green Ways (VVV) policy

B.2 – Contribution of cycling to developing and improving public transport networks, attraction and services

B.3 – Support for « more cycling cities »

C – The State assumes its responsibilities as an operator

C.1 – Bike and carbon balance

C.2 – Research, innovation ...

C.3 – National roads network

C.4 – Cycling and health

C.5 – Bike policy of ministries in charge of national education and universities

C.6 – Bike and driving education

C.7 – Contribution of State-owned companies ( railway, waterway, Paris transport, developers for strategic urban districts )

D – The State communicates and encourages communication about cycling

D.1 - Communication approach

The text above hardly reflects the richness and variety of the initiatives and actions led, locally or nationwide, by users, local authorities, transport or housing actors, and by many private firms.

It tries to show how all these actors learn to co-operate, each in its peculiar role, widely open-minded and curious towards actors and policies throughout Europe.

These european examples, more or less successful, have proved important for the improvements, the « steps forward » of bike position in France, within a somewhat and sometimes difficult context. They will certainly be as important for the progress still to be done... - for example about health for which the ruling opinion is indifferent to daily physical activity, yet so easy for ordinary cyclists.

Mr. Vélo and his teams shall keep on working with all european connections and people who could be interested.

## **Cycling strategy for the metropolitan area of Hannover Braunschweig Göttingen**

*Robert Krieger, City of Braunschweig, Germany*

### **Abstract**

Hannover Braunschweig Göttingen is one of 11 metropolitan areas in Germany with a special status of European importance. It has a population of about 4 million and covers 19,000 sq km, which represents nearly half of the German Federal State of Lower Saxony. Since 2006 various regional institutions, municipalities, associations as well as private businesses across the area have been working together on a project to develop an area-wide cycling strategy. The project aims to set up a framework with regard to local implementation of the overall national cycling plan as established by the federal government. The outcome of these joint efforts, that focus both on process development and actual work activities, is an implementation model for coordinated promotion of cycling. The key goal for this model is that it is generic enough to become re-usable in other (metropolitan) areas. Funding provided by the Federal Ministry of Transport, Building and Urban Affairs is a testimony to the importance of this project at the federal level.

The priorities of the cycling strategy are as follows:

- development of cycling routes network across the metropolitan area,
- agreement on common (homogeneous) standards for infrastructure, service and marketing,
- stimulation of cycling tourism, and
- development of suitable communication network.

Coordinated by a steering committee, around 50 participants from across the metropolitan area work together in different work groups.

Extensive coordination efforts have already resulted in a network structure of metropolitan cycling routes, compliant with the required standards. The next step in the project implementation is to carry out quality control as well as to remove the identified shortcomings. Furthermore, feasibility of introduction of fast cycling routes into the everyday traffic is to be evaluated on the basis of several test cases. The work groups have been set up to work together towards standardized rules regarding bicycle admission on public transport facilities and legal responsibility for maintaining cycling routes safety. Finally, there are plans to develop a marketing strategy.

The work groups communicate their progress in workshops, by a newsletter and on the internet ([www.metropolregion.de / Projekte / Radverkehrsstrategie](http://www.metropolregion.de/Projekte/Radverkehrsstrategie)).

The project also aims to support the work carried out at the local level, while making implementation of cycling plan easier and faster. In particular, it advocates the significance of cycling in the local transportation planning.

Upon the project funding by the federal government exhausts at the end of 2007, new targets are being set up for the year 2008. Those include:

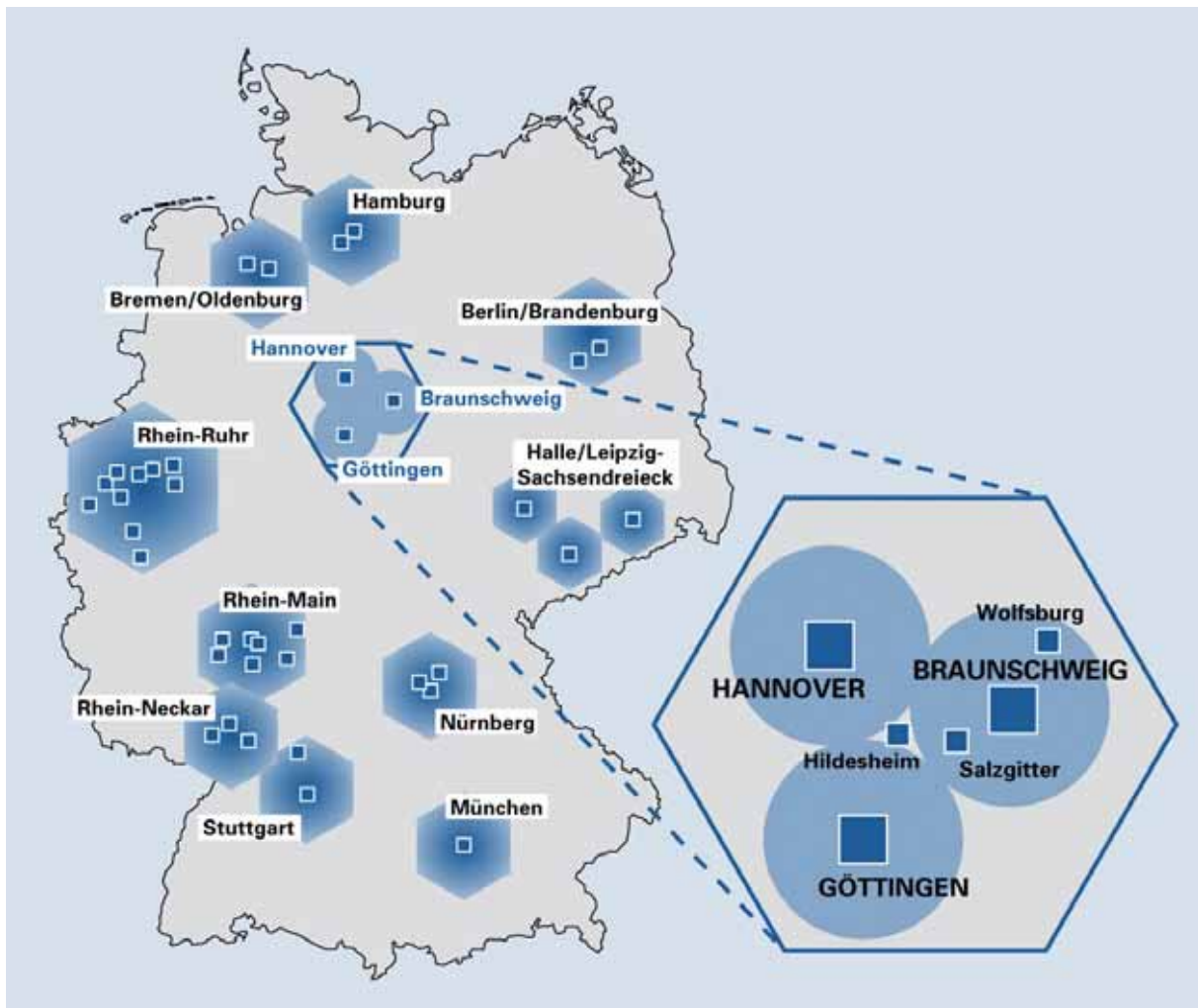
- maintenance of the created communication networks
- implementation of the planned project activities (from theory into praxis)
- further conceptual development of the framework
- application for funds

Up till now, the project has succeeded in building up a network, where all the relevant parties, including both the planning experts and touristic managers, across the metropolitan area work together on the common cycling plan. Furthermore, the project holds a strong potential to leverage internal marketing of the Hannover Braunschweig Göttingen area.

## 1 The metropolitan area of Hannover Braunschweig Göttingen

The metropolitan area of Hannover Braunschweig Göttingen is one of eleven recognized metropolitan areas in Germany. It was created in 2005 to strengthen the economic, scientific and cultural potential of the individual municipalities and sub-regions as well as to bring them together in one powerful unit. Since then, 72 members have joined the metropolitan area, including counties, bigger cities and minor municipalities, the Region Hannover (cooperation of the city of Hannover and surrounding municipalities and counties), the Zweckverband Großraum Braunschweig (cooperation of the city of Braunschweig and surrounding municipalities and counties), the Regionalverband Südniedersachsen (cooperation of the city of Göttingen and surrounding municipalities and counties) as well as universities and colleges from the region. Currently, private businesses are in a dialogue with the area representatives to identify their involvement possibilities. Founding of Metropolitan GmbH (private limited company) by summer 2008 is the expected outcome of the process. Establishing a GmbH will provide the metropolitan cooperation unit a legal organisational status, which among other things is a precondition for applying for funds.

The metropolitan area comprises one third of the area of the German Federal State of Lower Saxony (about 19,000 sq km) with around four million inhabitants. Composition of the metropolitan area is rather heterogenous, ranging from the two biggest cities of Lower Saxony (Hannover with about 500,000 inhabitants and Braunschweig with about 245,000) to rural areas in the Harz region. Indeed, this polycentric and heterogenous structure distinguishes this metropolitan area from the majority of others.



Map 1: The metropolitan area of Hannover Braunschweig Göttingen; source: "Bildung einer Metropolregion Hannover – Braunschweig – Göttingen von europäischer Bedeutung", ed.: Städtenetz EXPO-Region, 2004

A variety of economic, scientific and cultural projects are developed and supported through cooperative efforts in the metropolitan area. Currently, there are a number of on-going projects, as follows:

- metropolitan ticket (one ticketing system for the public traffic in the area)
- China initiative (better positioning of the metropolitan area businesses in China)
- mobile economy (cooperation in the field of mobility, i.e. motor traffic)
- climate protection (different smaller projects, e. g. use of geothermy)
- regional knowledge networking (better internal cooperation of businesses with universities and other scientific institutions)
- internationalization (welcome desk for foreign workers)
- cultural networking
- cycling strategy

It should be pointed out, that the above projects often have different organizational team structures. Depending on the project's focus, some teams may be dominated by public institutions, while others be stronger represented by scientific institutions or private businesses.

This paper focuses on the project known as „cycling strategy“. Due to its bottom-up approach this project has proven to be the best known in the metropolitan area, thus playing a key role in promoting the metropolitan area in the public awareness.

## **2 The Project „Cycling strategy for the metropolitan area of Hannover Braunschweig Göttingen“**

### **2.1 Origin and development of the project idea**

The team of the “cycling strategy” project is made up of six persons who geographically represent most of the metropolitan area. The team members represent only public or semi-public institutions: the towns of Braunschweig, Göttingen and Hildesheim, the Region Hannover, the Zweckverband Großraum Braunschweig and the economic development agency of the county Hildesheim.

It was the project team who conceived the very idea of the metropolitan cycling strategy and has further developed it. One of the project's mid-term objectives has been to offer cyclists in the metropolitan area an integrated “bicycle traffic” system, which would essentially make it easier to use bicycle in both everyday and recreational traffic. And thus contribute to a profiling of bicycle traffic inside and outside the metropolitan area. The concept of an integrated system thus does not limit bicycle traffic to infrastructure only, but rather extends it to include public relations and service as essential components of the strategy.

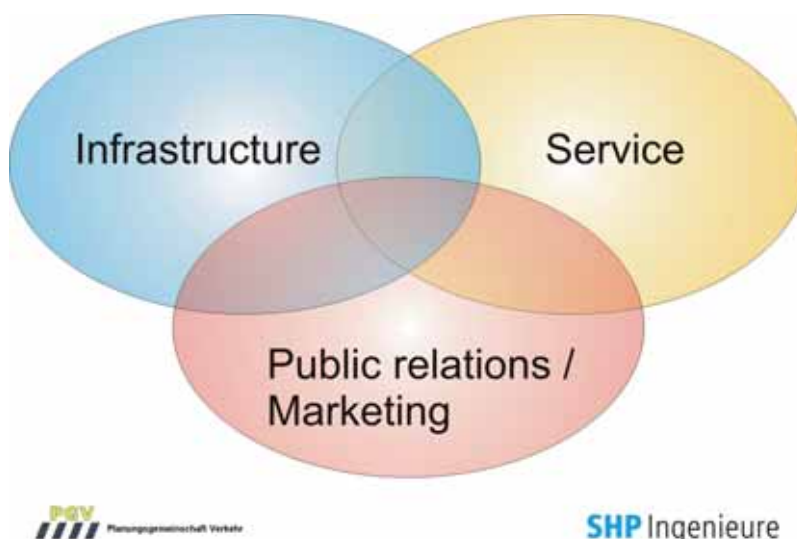


Figure 1: Bicycle traffic as integrated system



Another important objective for the project has been to ensure that as many stakeholders from all over the region as possible are involved into the process. In this sense, the project has been envisioned as a bottom-up, grass root initiative. The project team assumed a role of initiators and supporters, while the real project participants were expected to eventually buy into the project and take over its further implementation. With this purpose in mind, stakeholders from the entire metropolitan area joined an extended workshop, in March 2006, to discuss the key objectives and address most urgent questions as well as identify further actions.

The key project element – establishment and coordination of sustainable implementation process and communication infrastructure – has turned out to be a challenge. What could unite such a diverse group of stakeholders, ranging from municipalities, public institutions, representatives of tourism sector to the user of the routes, the cyclers (represented by the corresponding cycling and other associations) – in one project? The challenge amplifies further when one considers the spectrum of coordination efforts that span across infrastructural projects, agreements on region-wide standards and common marketing activities, integrated financing models and funding applications.

Funding by the Federal Ministry of Transport, Building and Urban Affairs of a feasibility study, that focused on comprehensive approach to a cycling strategy, has been a considerable advantage to the project. Both the feasibility study and the project itself have offered solid proof that the federal idea of a national bicycle traffic plan “as system” can be successfully implemented in a regional context.

Priorities of the cycling strategy are as follows:

- development of cycling routes network across the metropolitan area,
- agreement on common (homogeneous) standards for infrastructure, service and marketing,
- stimulation of cycling tourism, and
- development of suitable communication network.

The above elements are the key value proposition of the cycling project.

Furthermore, as the feasibility study has initially aimed at building a model of coordinated promotion of bicycle traffic by means of integrated project activities and processes, this model becomes applicable in other (metropolitan) regions.

## **2.2 Organisational and communication structure**

The scope of the feasibility study, which started in the beginning of 2007, included establishing a framework with a number of innovative elements concerning the project implementation. Setup of communication levels and organisational structure as well as establishment of a steering committee are among those elements.

In addition to the six persons, mentioned earlier, the steering committee consists of representatives from the two consultant companies, namely SHP Ingenieure and Planungsgemeinschaft Verkehr (PGV), which accepted the bid for the concept study. The steering committee is responsible for the project coordination, forwarding of invitations and papers, moderation of the work groups as well as preparation of and follow-up on the workshops.

Based on the identified focus areas, seven work groups were formed with the total of about fifty members from different municipalities, associations and the private sector, which has infused the project with high level of engagement and technical knowledge across the board. With this in hand and after two more workshops, the work groups delivered feasible results readily applicable in the metropolitan context, thus avoiding the entire project turning into yet another top-down initiative. This approach has also laid the foundation for future project success, where continuous dialogue among all the stakeholders has allowed to identify further project priorities. The work groups will continue project work also after the concept study is completed in spring this year.

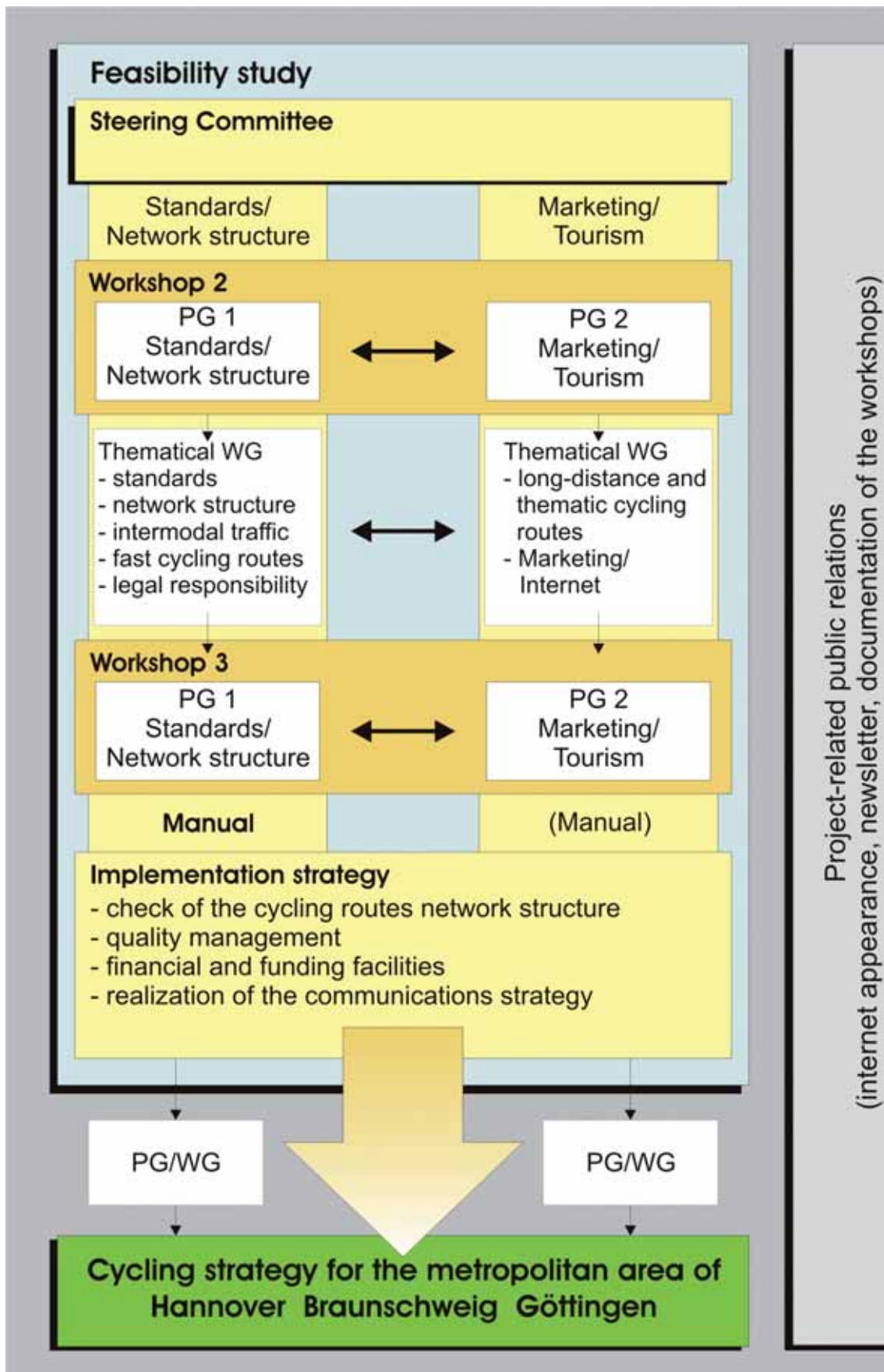


Figure 2: Organisational and communication structure

### 3 The work groups

The following seven work groups are responsible for implementation of the feasibility study and the project:

- standards,
- networks,
- admission of bicycles to public transport system (intermodal traffic),
- fast cycling routes,
- legal responsibility for maintaining safety on cycling routes,
- long-distance and thematic cycling routes and tourism standards, and
- marketing and internet.

The work progress is continuously communicated across the work groups, in the workshops, by a newsletter and over the internet.

#### 3.1 Work group „Standards“

Standards are essential with regard to:

- quality management
- admission to the „metropolitan network structure“
- use in marketing
- funding

The key objective of the work group has been to set up standards for the metropolitan cycling system, with main focus on the infrastructure. The work started from the participating consulting companies introducing a configuration matrix, which was based on the analysis of standards from other German Federal States resp. other local authorities. The matrix was then further elaborated by the work group.

The scope of the “Standards” work group has to be considered together with the scope of the “Long-distance and thematic cycling routes and tourism standards” work group, who are jointly responsible for a common framework of standards. However, while the “Standards” work group has mostly focused on infrastructural standards, the other work group’s main concern are standards for services and marketing.

The matrix can be split into three categories as follows:


- infrastructure, e.g. barrier-free access, attendance/control, sign-posting, connection with public transport
- services, e.g. presentation on maps, requirements for the internet publishing and the route planner, bicycle admission to public transport facilities, service-hotline, repair emergency services
- marketing, e.g. flyer with maps, target group, holiday package

The above three categories were rated on three levels: basic standards, premier standards and standards for fast cycling routes.

- basic standards: those have to be met by all routes to be included into the future metropolitan network structure
- premier standards: meeting those standards sets the routes in question apart from the bunch of routes which only fulfil the basic standards
- standards for fast cycling routes: a set of special standards applied to routes to be qualified as fast

The categories and the standard levels have been combined in a matrix, which allows evaluation of the metropolitan cycling routes along the above-mentioned standards. The following is an extract from this evaluation matrix:

Grouping		Subpoint	basic standards
1. Attributes of the route network		road safety	routing of the cycling tracks mainly separated from motorized traffic, on roads with little traffic no sections out of town without facilities for cycle traffic no unsecured crossings
		routing of cycling tracks	references for alternative route versions: sign-posting / cartography
		social safety	avoidance of fear areas
		barrier-free access (trafficability)	safe trafficability no stairs / steps accessible by-passing of barriers continuous trafficability also with trailer, luggage or tandem
		surface condition	little road resistance predominantly all-weather capability of the route (after drought or rain) predominantly plane, waterbound surface in very good condition
		minimum width	minimum 1.6 meter in one-way-direction minimum 2.0 meter in two-way-direction
		service / control	centrally organized, regular service (sign-posting, attendant infrastructure, one time a year)
		service hotline and reaction time	24h/7 days: answering machine and e-mail



Planungsgemeinschaft Verkehr




Figure 3: Section of the matrix for standards

### 3.2 Work group „Networks“

The goal of this work group has been to develop a network structure for the metropolitan cycling routes with focus on leisure time, local recreation and tourism. SHP Ingenieure and Planungsgemeinschaft Verkehr have produced a draft of a network structure for the whole metropolitan area. The work group has then focused on matching the relevant connections between the destination network and the secondary network.

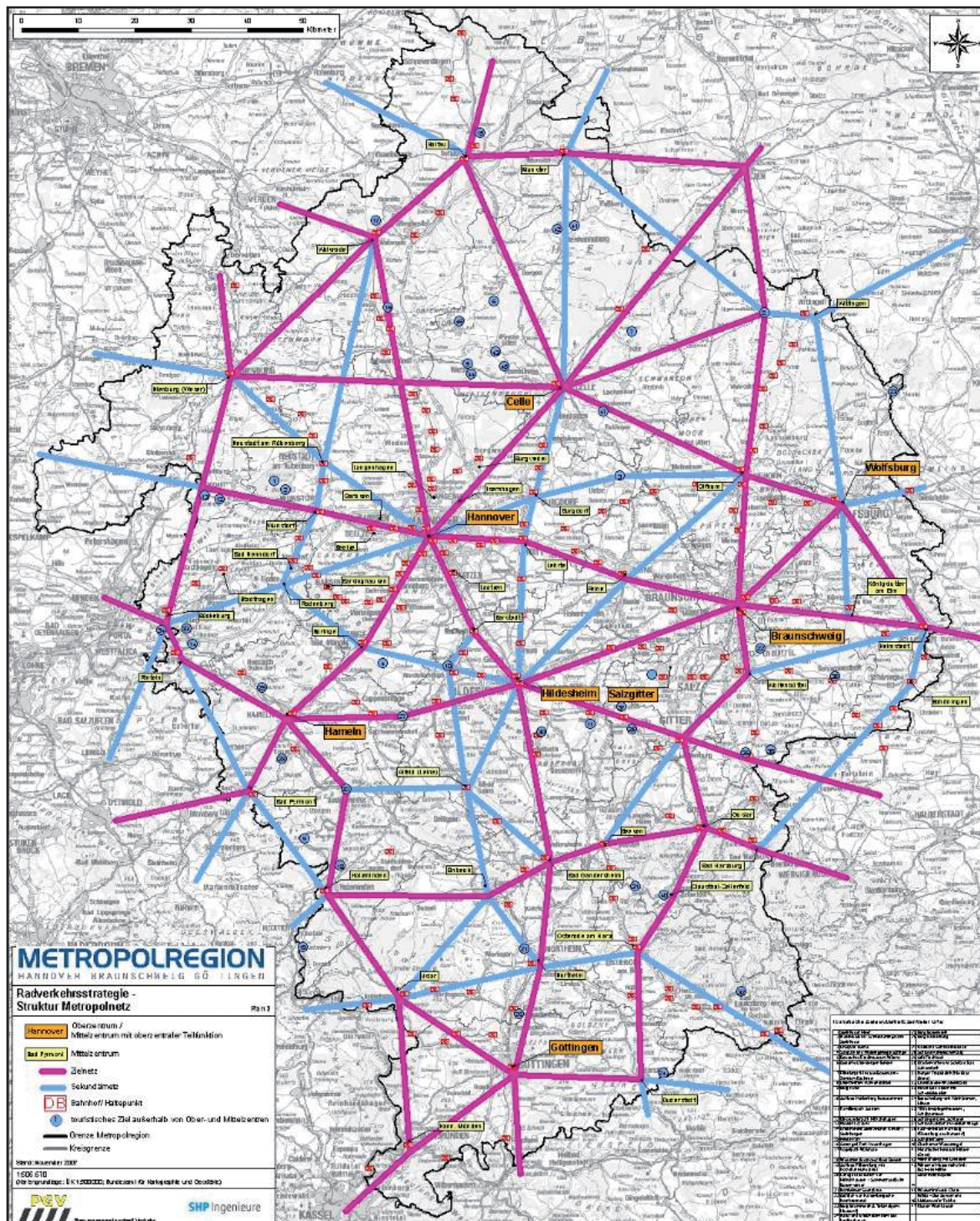
The destination network (in map 2, pink)

- spreads over the whole metropolitan area, provides connection between bigger cities and accessibility of main tourism sites,
- must be realized on basic standard level and represents the spine of the metropolitan network structure,
- should preferably be realized on premier standard level.



The secondary network (in map 2, blue)

- offers municipalities the possibility to densify the network structure,
- is not necessarily needed for the functioning of the metropolitan network structure,
- might be adjusted depending on the local situation,
- must also be realized at least on basic standard level.



Map2: Network structure of cycling routes within the metropolitan area

### **3.3 Work group „Admission of bicycles to public transport system (intermodal traffic)“**

The long-term goal of this work group is to achieve consistent regulation across the entire metropolitan area with regard to bicycle admission to public transport facilities, e.g. rates, boarding time and standards.

As the first step, the work group evaluated the existing regulations across the various public transport systems, transportation companies and the Weser-shipping companies. Next step is to establish standard requirements for the bicycle admission across the metropolitan area. Finally, the work group will examine the possibilities of extending the regulations currently found in the German Federal State of Hesse (which is a free of charge bicycle admission to public transport) across the entire metropolitan area.

When the regulations will be updated, the work group plans to identify bus routes where bicycle trailers are already in use as well as those with growing demand for bicycle admission.

The future activities of the work group include:

- definition of consistent standards,
- collection of field reports from other German Federal States with regard to the free of charge bicycle admission,
- extension of railway tickets validity to bus services,
- resuming high-level talks with the Landesnahverkehrsgesellschaft Niedersachsen (company of the German Federal State of Lower Saxony for local traffic affairs) concerning the free of charge bicycle admission.

### **3.4 Work group „Fast cycling routes“**

The scope of this work group has included investigation of development for fast cycling routes - an innovative project aiming at the everyday traffic in the metropolitan area - and eventual development of such routes. SHP Ingenieure and Planungsgemeinschaft Verkehr have delivered a preliminary work that first considers standards for fast cycling routes and then suggests possible connections between a few destinations.

At present, the group is in the process of drafting an application for another feasibility study to the Federal Ministry of Transport, Building and Urban Affairs. Five cities in the metropolitan area have already indicated their interest with regard to participation in the feasibility study.

### **3.5 Work group “Legal responsibility for maintaining safety on cycling routes“**

This work group wants to ensure that the German Federal State of Lower Saxony develops a clear position with regard to legal responsibility for maintaining safety on cycling routes. Currently, there exist a number of different regulations in this area. The work group aims at removing any constraint for licensing agreements which are at a disadvantage for the municipalities. A survey, carried out among the members across the metropolitan area, attests to the fact that the municipalities differ in their approaches to the legal responsibility and emphasizes the necessity of one consistent approach.

More details about the activities of this work group are described in chapter 4.1 of this paper.

#### **3.5.1 Work group “Long-distance and thematic cycling routes and tourism standards”**

This work group has discussed standards with regard to long-distance as well as thematic cycling routes as seen from tourism point of view. A survey, run with the counties and the bigger cities of the metropolitan area, has identified existence of different standards concerning long-distance and thematic cycling



routes. With this in hand, the work group has been able to suggest a foundation for high quality standard cycling routes.

Approach and results of this work group are shown in more details in chapter 4.2 of this paper.

### **3.6 Work group „Marketing and internet“**

This work group works on the fundamental assumption that internet is an essential marketing component in the joint cycling strategy. To start with, the group has looked into existing tourist internet sites across the metropolitan area and identified best practices.

With regard to the future tourist information on the internet the group has agreed that it would be more reasonable to leverage existing portals with sites related to cycling tourism rather than to open a new portal. The following are examples of relevant portals: an internet site supported by the Tourism Marketing Lower Saxony (the tourism agency of the German Federal State of Lower Saxony), regional sites maintained by smaller bodies, home pages for long-distance cycling routes as well as the portal geolife (kind of route planning system of the State Mapping Agency of Lower Saxony).

## **4 Two subprojects: Activities, results and challenges**

The following two chapters contain a more detailed description of the process and challenges identified in the course of the two subprojects: “Legal responsibility for maintaining safety on cycling routes” and “Long-distance and thematic cycling routes and tourism standards”.

### **4.1 Legal responsibility for maintaining safety on cycling routes**

Scenically attractive cycling routes often run along the so-called „actual public tracks“, such as countryside, forest and water reservoir operation tracks. It is in this area that one often finds challenges with regard to unclear legal responsibility for maintaining safety on cycling routes. As a result, when cycling routes are marked on maps, and especially when the routes are to be sign-posted, disputes between municipalities and property owners arise.

The initial discussion and later a survey across all metropolitan member cities and counties have shown that the municipalities deal with this problem in a very different manner. While some municipalities have already agreed with property owners on either license fees for contracts of up to 2,500 € or compensation fees of up to 3,000 € a year, others are still in search of an appropriate solution. The situation complicates further due to that the German Federal State of Lower Saxony offers no clear recommendations to the municipalities in this area. Similarly, guidelines by the Kommunalen Schadensausgleich (insurance company for municipalities) on the matter are insufficient. Accepting the license agreements on payment regulations, in the form they exist today, would mean high financial and administrative costs for the municipalities. This results in a current situation where development of the cycling tourism in Lower Saxony is hindered.

Survey results, experiences of other German Federal States and joint discussions have allowed the work group to conclude that:

- unidirectional license agreements on behalf of the municipalities will be rejected;
- regardless of the seemingly fair contract terms, agreements have to offer advantages to both parties involved, and
- fees shall not be paid for either the signing of a contract or for the use of the tracks.

In spite of a series of discussions throughout the recent years municipalities still could not agree on a satisfying and consistent solution. As part of ongoing “cycling strategy” project, the metropolitan area has decided to bring the interests of all involved parties together and enter anew into negotiations with the German Federal State of Lower Saxony. The survey has clearly identified that the municipalities, that are interested in supporting cycling, employ very different approaches and the challenges this creates. Representation of municipal interests under the umbrella of the metropolitan area has fundamentally stronger weight. Nevertheless, the outcome of this initiative is currently unknown.

## 4.2 Long-distance and thematic cycling routes and tourism standards

This work group includes representatives of municipalities, tourism organizations, private consulting companies and the German cycling organization ADFC.

As mentioned earlier, the main objective of this work group has been two-fold: 1) to specify standards for long-distance and thematic cycling routes with focus on tourism; 2) based on these standards, to identify the routes within the metropolitan area that could be designated as touristic „metropolitan cycling routes“.

A tourism standards matrix developed by the SHP Ingenieure and Planungsgemeinschaft Verkehr (refer to chapter 3.1 above) served as a starting point for the project. However, initial discussions regarding a set of relevant criteria revealed certain disagreements within the work group. While criteria for long-distance cycling routes were defined rather quickly, definition of the thematic cycling routes posed a number of questions. For example, how long should a thematic cycling route be to be part of the metropolitan network? Is 4 km an appropriate length or should it be longer? Are the routes mostly meant for foreign tourists or the metropolitan inhabitants with interest in recreational cycling? The work on defining standards for thematic routes is still ongoing.

A survey – based on the initial set of tourist standards and covering counties and bigger cities across the metropolitan area – is expected to result in a collection of long-distance and thematic cycling routes. The first run of the survey has been completed, with at least one more round to follow. However, not knowing the exact criteria, e.g. existing bicycle parking facilities or inns along the route, has caused respondents certain difficulties when filling in the questionnaire.

## 5 Future Work

Further discussion sessions are expected to result in establishment of a metropolitan cycling network as well as the required standards, as based on existing cycling routes. Quality control of the infrastructure and removal of potential shortcomings are the key factors to project implementation. Furthermore, the relevant work groups will assess feasibility of five fast cycling routes in the context of everyday traffic and will continue work towards consistent regulation in regard to bicycle admission on public transport facilities as well as to the legal responsibility for maintaining safety on cycling routes. Parallel to this, discussions on the marketing strategy will continue.

Upon completion of the feasibility study, the prime objectives in the year 2008 will be:

- maintenance of the created communication networks
- implementation of the planned project activities (from theory into praxis)
- further conceptual development of the framework
- application for funds

It can be concluded that the metropolitan cycling project in its entirety has succeeded to create a well-functioning body, where all important stakeholders across the metropolitan area, ranging from public consultants to the tourism organizations, are actively involved in all stages of the project.

Project implementation stage in 2008 includes the following tasks:

- tightening of structure as well as technical and scientific steering of the cycling strategy
- apply for funds for a feasibility study on fast cycling routes
- evaluate network structure and quality management
- develop a funding brochure in connection with EU-funding
- develop a high-publicity brochure containing initial project results
- ensure internet presence

## **Bicycle policies in Basel, Switzerland**

*Babara Auer, ransport and Traffic Engineering Section of the Department of construction, Basel / Switzerland*

### **Abstract**

Basel with 170'000 inhabitants is the centre of an agglomeration of communities in Switzerland, Germany and France with a population of more than 0.5 million people. Bicycle use is actively promoted in Basel as part of a healthy and sustainable urban transport system, secured in the environmental protection law of Basel from 1991 and in the traffic plan 2001 of Basel. One of 5 trips of the inhabitants of Basel is done by bike!

The success of bicycle as a mean of transport in Basel is based on a long practice of promoting bicycle use in the last 35 years. Planning and construction of bicycle facilities were based on financial funds of CHF 25'000'000 for the years 1989 to 2004. Bicycle measures have included the construction and signing of the network as a kind of separated bicycle tracks, bicycle lanes, one-way streets to be opened for two-way bicycle traffic, zones with speed restrictions of 30km/h in residential areas and combined bike/bus lanes as well as the settlement and improving of parking spaces for bicycles. The bicycle station at the main train station in Basel with a capacity of some 1700 parking spaces is the biggest one in Switzerland.

Networking with other cities and countries is important, as it's shown in the fact that the delegate for bicycle planning in Basel figures as Co-president of the Swiss organisation of professionals named "Velokonferenz Schweiz".

As the fund has been used by the year 2004 a new credit had to be approved by the parliament. In the scope of the preparation, the authority has carried out an audit on the quality of our bicycle policy, called BYPAD. The results have contributed important factors to the strategic paper about future bicycle planning and to receive new financial resources. Bicycle strategy has been expanded from infrastructure to "soft policy"-measures, such as marketing, data management and education in order to increase bicycle traffic even further. With another 8 Million Swiss Franks there is a good base to reach this goal. The annual admin overall coordinated programming and budgeting allows best use of the funds.

## **1 Initial situation in Basel**

### **1.1 Geographical and topographic situation**

Basel is located at the border triangle of Switzerland, France and Germany. It covers only an area of 24 sqm2. Moreover Basel is mostly flat and offers a relatively mild climate with low rain. The town is intersected by the river Rhine and surrounded by small hills, witch together make a great recreation area.



Figure 1: Basel located at the Rhine knee

## 1.2 Population and politics

The municipalities of Basel, Riehen and Bettingen form the canton of Basel-Town (37 sqm2). The city of Basel houses 170'000 of the 190'000 inhabitants of the canton. Due to the differences in size between Basel and the other two municipalities the executive of the canton of Basel-Town is competent for the city of Basel as well.

## 1.3 Structure

With its low extension and counting 7000 inhabitants / sqm2 Basel is one of the densest populated cities in Switzerland. It is therefore called the "city of short distances". Many quarters in town have block structures with high buildings and narrow streets between. The old town is formed by alleys and public squares.

## 1.4 Importance and function

Basel is the centre town of an agglomeration of communities in Switzerland, Germany and France with a population of more than 0.5 million people. It's the attracting working and cultural town of the whole north western region of Switzerland as well as of the wider region Trirhena with a total of around 2 million inhabitants. It provides over 150'000 working places dominantly in high-level sectors, such as in chemical industry, supply of services and education. Thus it is an important Swiss university town with approximately 10'000 students. The wide range of functions in a concentrated area makes Basel a high-density zone of any kind of way.



## 2 Transport system of Basel

### 2.1 Traffic situation

Basel at all times was an important traffic crosspoint of the transportation routes North/South and West/East. Its three train stations offer transport connections to the whole of Europe. The international EuroAirport Basel-Mulhouse-Freiburg complements the transport hub. Basel also has a dense local public transport network, consisting of busses, tramways and a regional train system. A few pedestrian ferries crossing the Rhine complete the range.



Figures 2 +3: Means of transport for commuter traffic in Basel

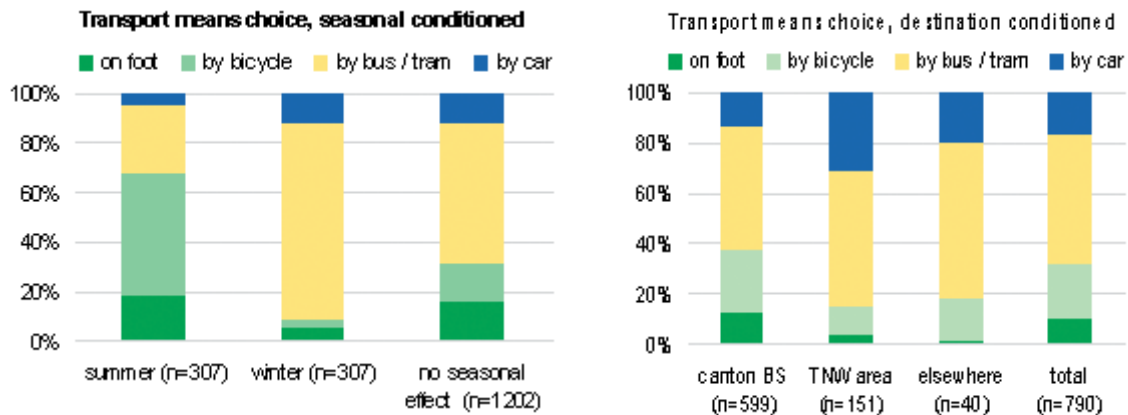
Over 50% of the employees working in Basel (around 85'000) are commuters coming from outwards. From these more than 30'000 are cross border commuters. Approximately 45% of the commuter traffic in Basel is pedestrian or bicycle traffic.

The motorisation is very low in Basel with a 326 cars per 1000 persons. This is indicated in the graphic below about modal split of the inhabitants of the city of Basel from 1991:

Mode of transport	Pedestrians	Cyclists	Public transport	Motorized private transport
percentage	24%	17%	32%	27%

Table 1: Transport means choice (modal split) by trips of the inhabitants of Basel, 1991

83 % of the respondents of the inhabitant census Basel-Town 2007 (circa 1500 persons) cover their daily trips non-motorized or with public transport (see fig. 4). Another result from the census shows that one of 5 trips of the inhabitants of the canton Basel-Town is done by bike (see fig. 5)!



Figures 4+5: Transport means choice (modal split) on daily trips of the inhabitants of the Canton Basel-Town (BS), inhabitant census 2007, Statistical office of the canton Basel-Town (TNW = Transportation network for North-West Switzerland)

## 2.2 Legal foundations

Certain legal regulations as well as basic strategy papers from the Canton of Basel-Town are exemplary by integrating bicycle traffic as an important topic to concern.

### 2.2.1 Environmental law

Promotion of bicycle traffic is secured in the environmental protection law of Basel from 1991. It implements the increase of modal split of the environment-friendly traffic (pedestrian and bicycle traffic and public transport) by preferring pedestrian and bicycle traffic over motorized private transport with constructional, operational, traffic directing or limiting measures.

### 2.2.2 Law of building and planning

The law of building and planning includes requirements concerning the private cycle parking situation and includes a cycle stands directive for new buildings or reconstructions.

## 2.3 Planning basis

### 2.3.1 Strategic paper “Verkehrsplan Basel 2001” (traffic plan)

The strategic plan about traffic development in Basel called “Verkehrsplan Basel 2001” is binding on the public authority of Basel-Town. It requests the co-ordination of the overall traffic system to reach a sustainable development of the city by means of an urban und environmentally compatible mobility. It implies an amended utilization of the available road capacity.

Based on the “Verkehrsplan Basel 2001” the planning office of Basel-Town has revised its over-all directive plan for development whereto the government has given their support a few months ago.

### 2.3.2 Strategic paper “Teilrichtplan Velo 1981” (bicycle traffic partial plan)

Already in 1981 the cantonal cycling routes have been defined in a partial traffic plan in order to improve the situation for cyclists. In addition the necessity for punctual meliorations including bicycle parking places was identified. Also a range of feasible measures was defined. The network then covered 100 km and has been extended in several steps to more than 140 km.

## 3 Development of bicycle traffic in Basel

Basel laid an excellent basis to develop bicycle traffic in the 80s and 90s as given below in the chronology to the first development phase. Improvements were mainly based on infrastructural und operational activities whereby over 80 % of the cycle routes could be allocated. The measures leading to a high level of bicycle use in Basel are described in chapter 3.2. Examples can be found in chapter 5



### **3.1 Chronology phase 1**

- 1975 Promotion of bicycle traffic as a main goal by the government of Basel-Town
- 1981 Concept of the bicycle network (main cantonal cycling routes)
- 1985 Initiative of bicycle organisations to enforce its promotion
- 1987 Motion for a blanket credit ("first bicycle credit") amounting 25 million Swiss francs (approx. 16 million Euros) to improve bicycle traffic situation
- 1988 Approval of the "first bicycle credit"
- 2001 Strategic paper "Verkehrsplan Basel 2001" with explicit improvement of bicycle traffic
- 2002 Opening of the bike parking station with 1100 (now 1700) places at the main station in Basel
- 1988-2004 Improving bicycle situation on "first bicycle credit" account (Chapter 3.2)

### **3.2 Measures of the first bicycle credit (1988-2004)**

#### **3.2.1 Infrastructural**

Infrastructural measures included the realization of the main cantonal network for bicycle traffic of more than 140 km whereof 122 km (87 %) were realized by end of 2003 and a further 10 km were in process. Also local improvements to dangerous crossings or separate bicycle facilities on main streets beyond the official cycling routes have been realized.

Parking facilities for bicycles have been created or improved. Especially worth mentioning is the biggest bike parking station of Switzerland. Situated at the main station of Basel it provided space for 1100 bikes and was enlarged in 2003 and 2007 to approx. 1700 places. Even though not part of the original planning the bicycle station was financed using the first bicycle credit and amounted to half of the fund available.

#### **3.2.2 Operational**

A lot of cycling routes could be allocated by reorganization or regulation of motorized traffic. This included the introduction of low velocity zones (30 km/h) and traffic restrictions in the city centre as well as bicycle admittance on bus lanes.

Two-thirds of the 650 sections of one-way streets have been opened for two-way bicycle traffic to enable cyclist to pass through the living quarters on almost every street.

A special privilege for cyclists at crossroads is the possibility to make an indirect left turn on red lights with special signals for them.

#### **3.2.3 Educational**

Police offers driving lessons to pupils (traffic rules, safe behaviour) as a part of traffic education at school.

The aim of traffic behaviour campaigns is to sensitize cyclists and motorists to each other and to make them aware of pedestrians. Also traffic rules are part of such campaigns.

#### **3.2.4 Promotional**

The previous marketing measures for promoting bicycle traffic in Basel only included a bicycle map (1995, second edition from 2002), a brochure for the velo city conference in Basel 1995. Additionally some newspaper articles informed people on planned or realized cycling infrastructure.

### 3.3 Effects of the first bicycle credit

#### 3.3.1 Traffic accidents

At the beginning of bicycle promotion in 1988 a large effect on the quality and quantity of bicycle use was observed. This is related to the infrastructural and operational improvements that could be realized very quickly and easily at that time. Accidents with pedestrians and bicycles decreased since Basel started in the mid 90ies to introduce low velocity zones (30km/h) and to ameliorate accident spots especially at dangerous crossings (see fig. 6).

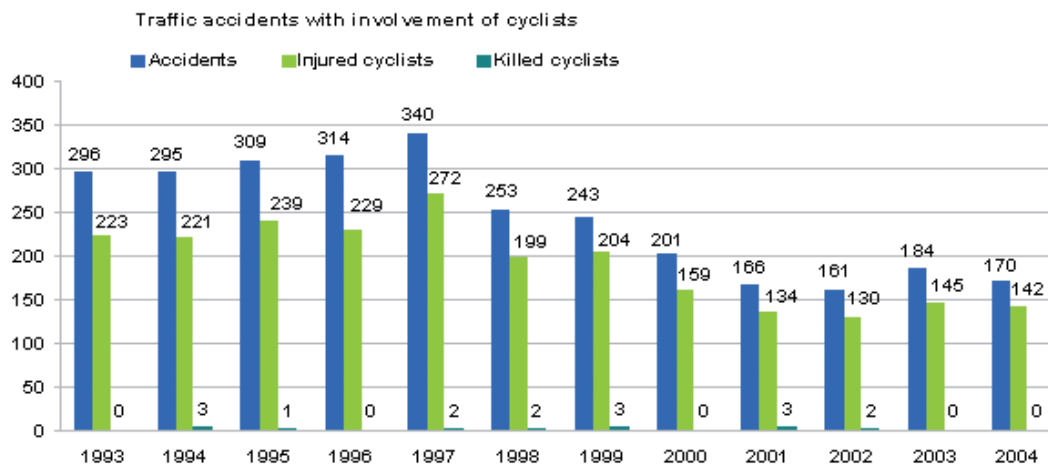


Figure 6: Traffic accidents with cyclists involved in the Canton Basel-Town, 1993 - 2004, Police of the canton Basel-Town

#### 3.3.2 Bicycle traffic increase

To survey bicycle traffic development Basel installed permanent counting locations for bicycle traffic. Five counting devices were installed from 1993 to 1996, another three followed later. They are located on main cycling routes, especially bridges which have to be passed on the way between different areas of the town.

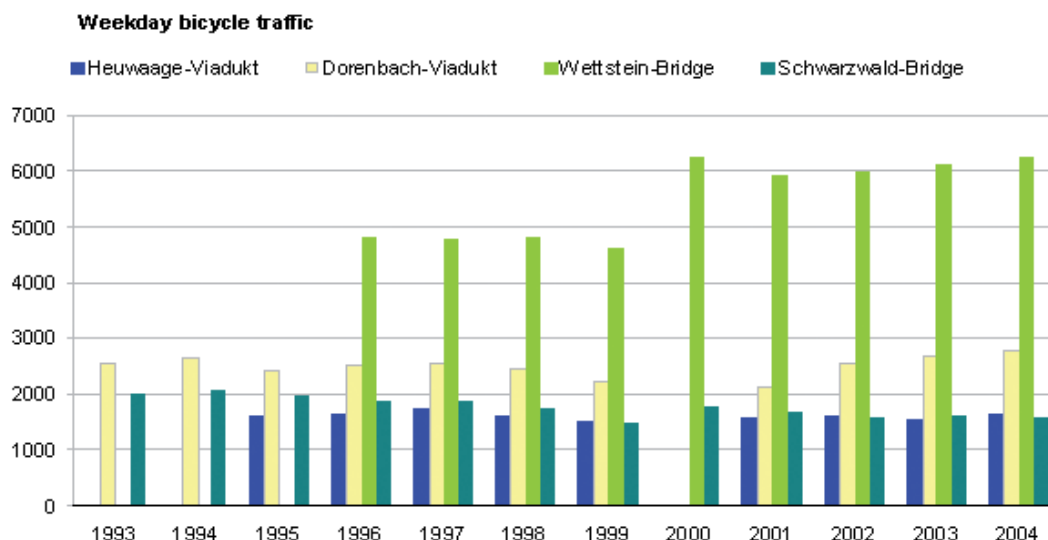


Figure 7: Weekday bicycle traffic at four counting locations, annual mean of monthly averages, 1993 - 2004, Planning office of Basel-Town

As comparative data to the modal split of 1991 is missing it is difficult to interpret the development of bicycle use in relation to all means of transport. It is assumed that only a small relative increase or stagnation of slow traffic on total traffic took place in this period.

## **4 New bicycle policy in Basel**

Less than 20% of the defined cycle routes are missing. To complete them or to promote a further increase of bicycle traffic turned out to be very difficult. Consequently Basel decided based on the proposal of cyclists' user groups to conduct an audit (chap. 4.2). Primary aim was to identify the deficiencies of the previous bicycle policies and to be able to judge how Basel should promote bicycle traffic for further success (chap. 4.5). Examples of the whole range of measures are displayed in Chapter 5.

### **4.1 Chronology phase 2**

2002 BYPAD (Bicycle policy Audit) in preparation for new credit (Chapter 4.2)

2003-2004 Strategy for further bicycle promotion based on BYPAD

2003-2005 Concept for improvement of bike parking situation

2006-2008 Revision of cycle stands directive to improve private bike parking situation

2006 Approval of new blanket credit ("second bicycle credit") over 8 million Swiss francs (approx. 5 million Euros) for further promotion of bicycle traffic

2006-2010 **Promotion of bicycle traffic** on "**second bicycle credit**" account (Chapter 4.5)

### **4.2 Bicycle policy audit (BYPAD)**

BYPAD is a specially developed audit for bicycle policies. It was applicable for the requirements of Basel. The benefit of the audit should be a qualitative evaluation of the previous bicycle policy and a report of account. Further more it was expected to point out new perspectives and objectives for the future bicycle policy. The results should raise political acceptability and find arguments in favour of a "second bicycle credit".

The participants of BYPAD in Basel were a representative of the government, delegates of the administration (police, construction, planning), exponents of bicycle organisations as representatives of the user group and an external moderator.

More information is available under [www.bypad.org](http://www.bypad.org).

#### **4.2.1 Strength of the previous bicycle policy**

According to BYPAD the strengths of Basel's previous bicycle policy were the continuity of cycling promotion over more than 30 years and the financing approach with "bicycle credits" as global budgets (chap. 4.4). Additionally the explicit integration of bicycle traffic in the over-all mobility strategy (chap. 2.3) and the setting of clear guidelines and standards for the defined cycle routes and facilities eased the realization of bicycle measures.

Thanks to the consistent efforts of the administration bicycle traffic became a self-evident integral part of the transport system.

#### **4.2.2 Quality plan for new bicycle policy**

BYPAD delivered the designated assessment of the previous bicycle policy. To rectify its deficiencies a quality plan was drawn up disclosing direction and aims of the new bicycle policy (see fig. 8). Thus the basis to apply for a new global budget was available. Accordingly the audit fulfilled the expectations of the administration of Basel.

<b>Focus of the future cycling policy in Basel</b>	
<b>Improvement of infrastructure</b>	<b>Data / Facts / Evaluation / Monitoring</b> <ul style="list-style-type: none"> <li>- improve base data, esp. with user census</li> <li>- define potentials of cycle traffic</li> <li>- ameliorate data management</li> <li>- evaluate and observe effects of measures</li> </ul>
	<b>User demands / operational management of politics / employees management</b> <ul style="list-style-type: none"> <li>- identify information / know-how and make it available</li> <li>- adjust personal resources / competences to increased requirements</li> <li>- bicycle quality audit</li> <li>- improvement of cooperation between politics, administration and user group organisations (incl. compensation of their effort)</li> </ul>
	<b>Promotion of bicycle with 'soft policy' – measures</b> <ul style="list-style-type: none"> <li>- Publicity, communication</li> <li>- Pupils upon bikes</li> </ul>

Table 1: Quality plan for new cycling policy in Basel as result of BYPAD

### 4.3 Goals of the new bicycle policy

The main goals of the new bicycle policy are simple and logical. They imply the completion of the cycle network as soon as possible, further increase of the road safety for cyclists and the raise of the modal split of the bicycle traffic trips.

### 4.4 Financing instruments

The new bicycle policy will be basically financed by means of the “second bicycle credit” over 8 million Swiss francs which has been approved by parliament at the beginning of the year 2006. Also there are other possibilities – constituted by the parliament on approval of the second bicycle credit – to fund bicycle projects as described below.

#### 4.4.1 “Second bicycle credit”

The “second bicycle credit” is a global budget to finance a programme – the new bicycle policy – over several years. These programme investments can't be accomplished within one (accounting) year. With the approval of the parliament the responsibility and competence to utilize the funds devolve to the cantonal councillors. They regulate on a yearly basis the tranche within the annual budget of the department of construction. The annual over-all budget of the administration has to be approved by the parliament.

The promotion of bicycle traffic can proceed faster due to this blanket credit because the administration doesn't have to apply separately for a credit for each project at the parliament. The yearly decisions contain only ‘what’, not ‘if’ to realize.

Furthermore it allows major flexibility in assigning or changing priorities of projects as a result of changing premises.

#### 4.4.2 Financing on separate accounts

There are some streets or bridges which can only be provided with cycling measures in comparative time and effort in the context of major projects for maintenance or rebuilding. So whenever a road section is to be under construction, bicycle traffic is taken into account in relation to the importance of the section in the local or cantonal cycle route network

Some bicycle measures, such as another planned bicycle parking at the German train station in Basel, are larger investments. Such expenses would bust the second bicycle credit – as happened in the case of the first credit and the bicycle parking at the main station mentioned before. Therefore, exceptional measures have to be financed using a separate credit.

#### 4.4.3 Controlling and attendance

The parliament gets an annual report about the activities in bicycle promotion and especially about the outlay in account of the bicycle credit.

The administration is accompanied by a special project commission for bicycle planning. The representative of the department of construction chairs the commission. In addition exponents of district associations, user groups and traffic organisations as well as persons concerned with bicycle planning in the administration participate at the bi-annual meetings.

#### 4.5 Measures of the second bicycle credit

The second bicycle credit is designated for a wide range of measures for further bicycle promotion. It includes infrastructural and operational improvements as well as data management and ‘-soft policies’-measures (see table 2).

Category of measures	Description	Status	Budget [CHF]
Complete cycle routes (local and cantonal)	<ul style="list-style-type: none"><li>– Complete network</li><li>– Miscellaneous ameliorations on crossroads and main streets</li><li>– Safe way to school</li><li>– Additional measures (e.g. sign posting cantonal or leisure routes)</li></ul>	88 % In planning or implem. “ Done or in preparation	6 Mio
Open one-way streets for two-way bicycle traffic	<ul style="list-style-type: none"><li>– Efficient review of not yet opened one-way streets without in low velocity zones</li><li>– Open sections for two-way cycle traffic on one-way streets with 50km/h by means of constructional or regulating (traffic light) activities</li></ul>	Done  In preparation	0.2 Mio

Create and improve parking facilities for bicycles	<ul style="list-style-type: none"> <li>– Data base and concept for improvement</li> <li>– Fast interventions in case of need for action</li> <li>– Bike parking facilities in city centre, living quarters and at public transport stations</li> <li>– Revise cycle stands directive for new buildings or reconstructions</li> </ul>	Done Ongoing In process  In preparation	1 Mio
Establish and maintain data management	<ul style="list-style-type: none"> <li>– Concept of data management and base data</li> <li>– Map cycling infrastructure in GIS</li> <li>– Census, counts and interrogations</li> <li>– Evaluations and controlling</li> <li>– New permanent counting locations</li> </ul>	Done In planning Ongoing Open In planning	0.3 Mio
‘Soft policies’-measures	<ul style="list-style-type: none"> <li>– Campaigns + events</li> <li>– Information (poster, flyer, Brochure, maps)</li> <li>– Education, consultations, prevention, safety (children, migrants)</li> <li>– Coordination + cooperation with other departments (e.g. Police, health, schools, environment)</li> </ul>	Ongoing “ “  Reorganisation in preparation	0.5 Mio

Table 2: Measures and associated budgets of the second bicycle credit (CHF = Swiss francs)

## 4.6 Demands on cycle infrastructure

There are different quality standards for cycling infrastructure depending on significance, frequency, users, decisive case of encounter and location of the route or facility. They are based on conception approved, e.g. testing facilities for bike parking.

Important criteria for cycling facilities are traffic safety and security in public space but also directness, coherence, comfort and accessibility.

### 4.6.1 Standards on cycling routes

Normally cycle routes are on-road facilities preventing conflicts with parked cars (passengers getting out) or pedestrians on their often narrow pavements. It is more flexible for cyclists turning into side streets and therefore more safe and comfort (right of way) crossing intersections of side streets. There are exceptions of cycle connections on separate or with pedestrian shared tracks, e.g. in parks along the river or on bridges.



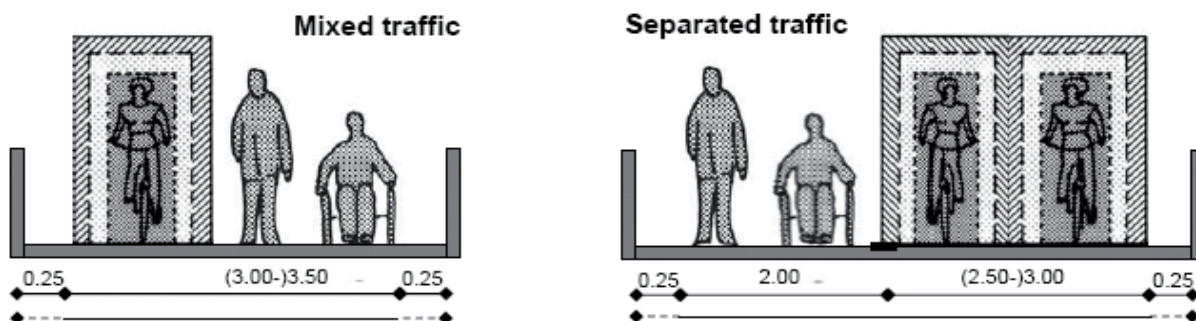


Figure 9: Standards for communal bicycle and pedestrian tracks (middle to high frequency)

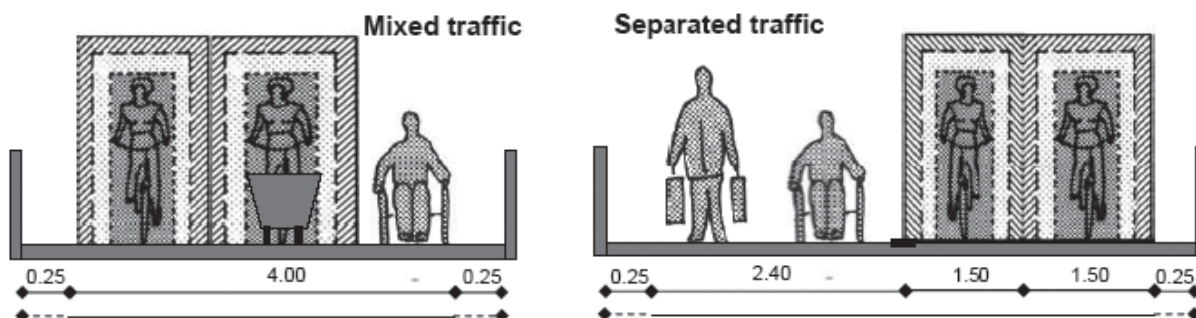


Figure 10: Standards for cantonal bicycle and pedestrian tracks (middle to high frequency)

For cycle lanes 1.50 m are provided. Along obstacles like parked cars or walls as well as in ascending slopes or curves a width of 1.80 m should be reached.

Conforming to Swiss standards a gradient of up to 10 % is possible for bicycle traffic ramps on a length of max. 20 m. On longer sections the gradient shouldn't exceed 5 %. Experiences and tests in Basel have showed that ramps to bicycle parking stations are exceptional as gradients up to 16 % are drivable and therefore better accepted than a staircase.

#### 4.6.2 Standards for public bicycle parking

Administration developed a strategy to improve the bicycle parking situation in Basel. This includes an approach for analysis, planning and realization of the improvements. The goals of the over-all concept are

- Optimisation and differentiation of the existing range of parking sites
- Substantiated data and planning basis for efficient allocation of resources
- Incentives for bicycle usage to go to work, school or shopping
- Definition of focal points for parking sites and
- Principles of placement and furnishing
- Providing adequate quantity and quality of public parking places
- Increase of traffic safety

Different aspects have to be taken into account to define the requirements of a specific bicycle parking sites. Parking sites on the street and on the sidewalk are discerned. Of further consequence for placement and furnishing are duration of usage (short-term and long-term sites), destination of cyclists and specific urbanistic site. Peripheral sites are convenient along shopping streets, in areas with supply of services, in city centres, living quarters and expanded sites of university. In contrast central parking places are provided at entrances of public buildings and big companies, at schools, stops of public transport and at recreational, cultural or public sites.

On-road sites are accessible for bicycle and motorbikes as well. Stands suitable for both are used or the site is divided into separate sections. Parking sites on sideways should be obligatory reserved for bicycles and therefore feature accordant stands. At the moment Basel provides five different versions of public parking sites.

- Version for shared (bicycles and motorbikes) on-road sites:



Figures 11+12: Parking site with marking and site with fall arrest system (gap 2.00-3.00 m)

- Model for separated or pure bicycle sites on-road and on sidewalks:



Figures 13+14: Stand "easy" (gap 0.40 m) and stand "cyclemax" (gap 0.45 m)

- Model for large scale plant (only bicycles):



Figure 15: Stand "Beta Parker" (gap 0.4 - 0.5 m)

## 4.7 Exchange and networking

### 4.7.1 Association “Velokonferenz Schweiz”

Exchange and networking with other Swiss cantons and cities as well as with specialists of the private industry are very important for the future development of bicycle traffic in Switzerland. This can take place in the framework of the Swiss professional association “Velokonferenz Schweiz” (Swiss bicycle conference), a politically neutral national organisation for bicycle traffic planning. Members have to be the person in charge for bicycle traffic at administrations or a specialist for bicycle planning in private offices. Memberships are individual-related and subject to contributions.

As its delegate is in co-chair the city of Basel is strongly committed to the “Velokonferenz Schweiz”.

### 4.7.2 Objectives

The objectives of the “Velokonferenz Schweiz” are manifold. Obtaining acceptance of bicycle traffic as an emancipated means of mobility is brought forward by:

- the build-up, spreading and integration of the expert knowledge on bicycle traffic planning,
- the coordination and know-how transfer amongst experts and specialist departments,
- the creation of secure and attractive basic parameters to the bicycle traffic and
- the initiation of scientific research.

### 4.7.3 Organisation

To achieve the purposes of the association the “Velokonferenz Schweiz” has different institutions (see fig. 16). It has set-up an agency. In addition it has a chair (at the moment co-chair) and a steering committee with eight persons. This is structured into separate departments. To work on specific themes task groups consisting of members and exponents of the steering committee are set up.

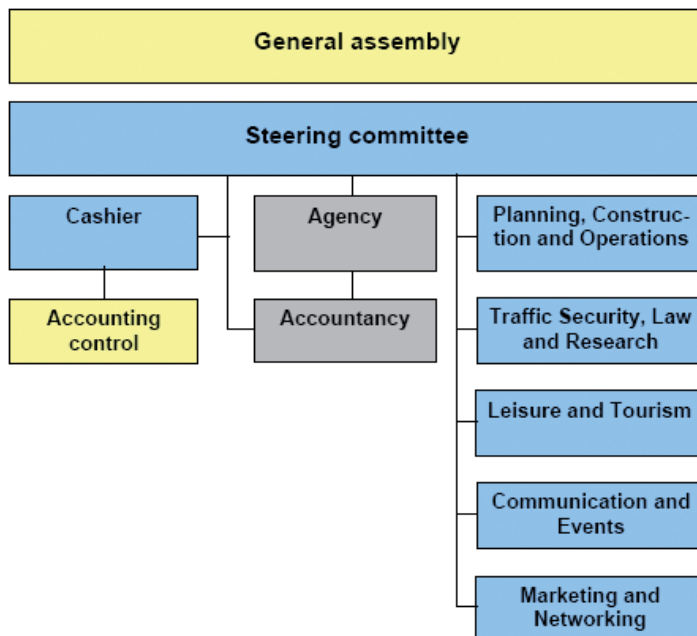


Figure 16: Organigram of the “Velokonferenz Schweiz”

### 4.7.3 Duties and responsibilities

External functions of the steering committee are to work out manuals, to coach research assignments as experts and to organise annually a conference or excursion. Furthermore it coordinates the association members for statements to new Swiss laws, regulations and norms.



Internal functions include consulting services for members and ensuring the information flow, also between the Swiss Federation or other professional (traffic) associations and the members. A bi-annual journal and the internet of the “Velokonferenz Schweiz” support the tasks. The annual general assembly of the association controls the committee and chair, which prepare the budget and the annual plan for approval.

Further information is available under [www.velokonferenz.ch](http://www.velokonferenz.ch).

## 5 Examples

### 5.1 Infrastructure

#### 5.1.1 Cycling routes on main streets



Figures 17+18: dyed bicycle lane between two traffic lanes, Elisabethenanlage – Heuwaageviadukt, Basel



Figures 19+20: Bicycle lane in one and bus lane with cycle admittance in the other direction, Holeestrasse, Basel



Figures 21+22: Access to the main station from the West on special bicycle lane with admittance of right turning vehicles (Viaduktstrasse) and from the South on bicycle lane (Meret Oppenheim-Strasse), Basel

### 5.1.2 Cycling tracks



Figures 23+24: track with two-way bicycle traffic on bridge, Dreirosenbrücke, Basel



Figures 25+26: Access to the bicycle parking station from the city centre on two-way track along Aeschengraben, Basel

### 5.1.3 Cycling measures at intersections



Figures 27+28: Indirect left turn (Steinenring) and separate crossing only for cyclists (Meret Oppenheim-Strasse), Basel



#### 5.1.4 Two-way bicycle traffic in one-way streets



Figures 29+30: Secured oncoming bicycle traffic at intersections of one-way-streets (50 km/h), Weiherweg and Mülhauserstrasse, Basel



Figures 31+32: Entrance and exit of a one-way street with two-way bicycle traffic in a low velocity zone (30 km/h), Brantgasse Basel

#### 5.1.5 Sign posting of cycling routes



Figures 33+34: Signposting of cantonal. National and European cycling routes in Basel



### 5.1.6 Bicycle parking spaces



Figures 35+36: Ramp with gradient of 16% and drivable entrance to the chargeable part of the bicycle parking at the main station, Basel



Figures 37+38: Chargeable part of the bicycle parking at the main station and test model of the enlargement 2007, Basel



Figures 39+40: Improved parking site at the university quarter at Petersgraben (testing three different stands) and in the city centre at Blumenrain (stand cyclemax), Basel

## 5.2 Data management

### 5.2.1 Census of inhabitants

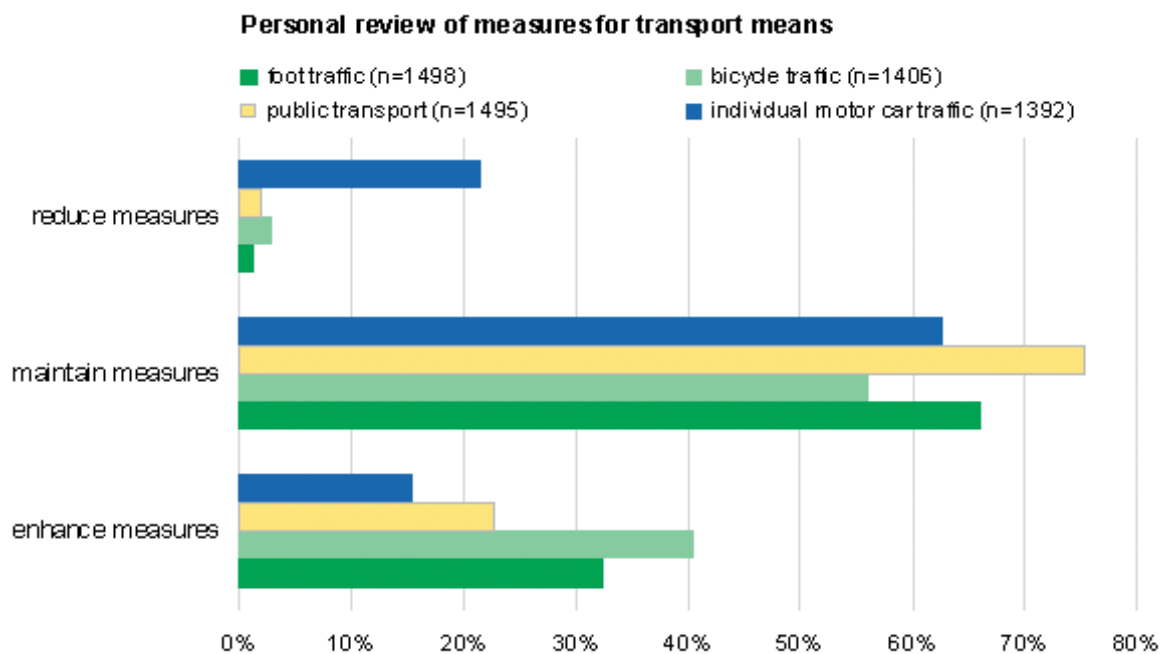


Figure 41: Measures for all means of transport, personal review of the inhabitants of the Canton Basel-Town (BS), inhabitant census 2005, Statistical office of the canton Basel-Town

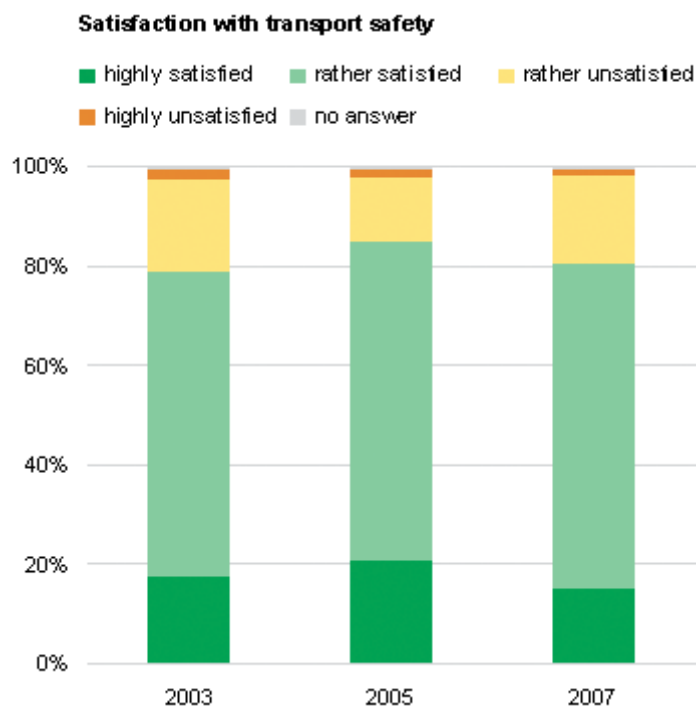


Figure 42: Transport safety, satisfaction of the inhabitants of the Canton Basel-Town, inhabitant census 2003 / 2005 / 2007, Statistical office of the canton Basel-Town

## 5.3 ‘Soft policies’ - measures

### 5.3.1 Information brochure



Figure 43: Information brochure “Basel fährt anders – Basel fährt Velo!” (Basel drives differently – Basel rides a bike) about bicycle policy in Basel, department of construction, planning office, Basel-Town, 2006

### 5.3.2 Cooperation at education campaign “Veloparcours”

The education campaign includes a concept to prevent children from less exercise and the implementation of two cycling exercise facilities for children to learn riding a bike before driving in traffic. It is a cooperation of the Police, the department of education (delegate for school sport) and the delegate for bicycle promotion.

## **Developing Stages of Change Model for Marketing Cycling**

*Author: Adrian Bell, Active Travel Development Manager, Cycling, Walking and Accessibility Team, Transport for London, GB*

### **Abstract**

London claims to be the fastest growing cycling city in Europe, however despite more than 100% growth in cycle trips since 2001, cycling still only accounts for 2% of traffic. Over the coming decade it is expected that some 800,000 new residents will come to London increasing the 26m daily trips to the point where public transport cannot alone provide the capacity needed. As such cycling, and walking, must take a greater share of the burden.

Detailed analysis of growth and potential has indicated strongly that cycling could provide a 5% modal share in London. However to do so, the number of regular cyclists must increase from the current 5% to around 20% of all Londoners. This change is far greater than the growth experienced so far and requires a more sophisticated mobility management campaign.

To achieve a shift in behaviour from occasional cycling to regular cycling throughout the year it is proposed to use the stages of change approach developed for transport by the EU INPHORM and TAPES-TRY projects. This approach will provide a framework for mobility management work packages which will be further refined by market segmentation. The new approach will avoid past reliance on mass media marketing (television and radio) in light of recent research showing the lack of salience of such messages to people who require greater support to gain the confidence and skills to ride a bicycle other than for leisure in a busy city.

A range of information, interventions and support projects will be initiated by Transport for London in 2008 under a new 3m€ programme specifically aiming to address specific personal barriers and offer supporting services (cycle trial, peer support and training) to build confidence. The programme builds from successful pilot projects over the last two years including community cycling grants, the London workplace cycle challenge and school curriculum pack. The more specific nature of the programme also benefits from the general populations greater awareness of cycling, particularly in the centre of London and major events in 2007 including the Tour de France Grand Depart and London Freewheel mass public cycling event.

The specific intention to use the stages of change model as a framework for the promotional campaign also provides the link between TfL's Travel Demand Management programme of travel awareness and the London cycling infrastructure programme. This link of supporting and promoting measures is peculiar to cycling amongst a low level of existing use because awareness of the many benefits alone is unable to overcome the perceived barriers and real skill and equipment needs that cycling requires for safe, comfortable and reliable cycle journeys.

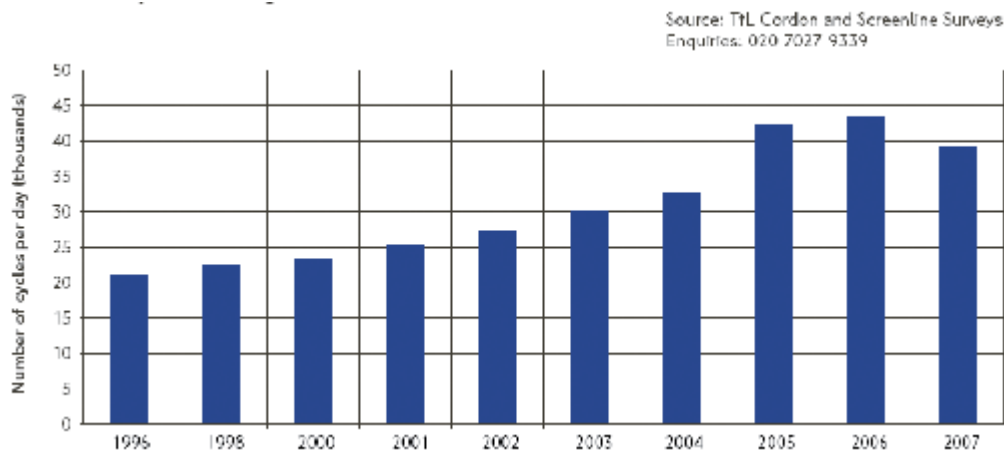
The paper will explain in detail how the stages of change model can be interpreted in a practical sense to define a composite package of measures to deliver substantial and targeted growth in cycling from a low base.

### **BACKGROUND**

Between 2001 and 2007 cycling in London increased by 83%. This increase is faster than any other city in the United Kingdom and believed to be faster than any other major city in Europe. This significant change does however conceal the fact that the base was very low at around 1.3% modal share. Politically this growth is heavily supported and on the achievements so far, The Mayor of London Ken Livingstone has set an ambitious challenge of reaching 400% growth from 2001 figures by 2020.

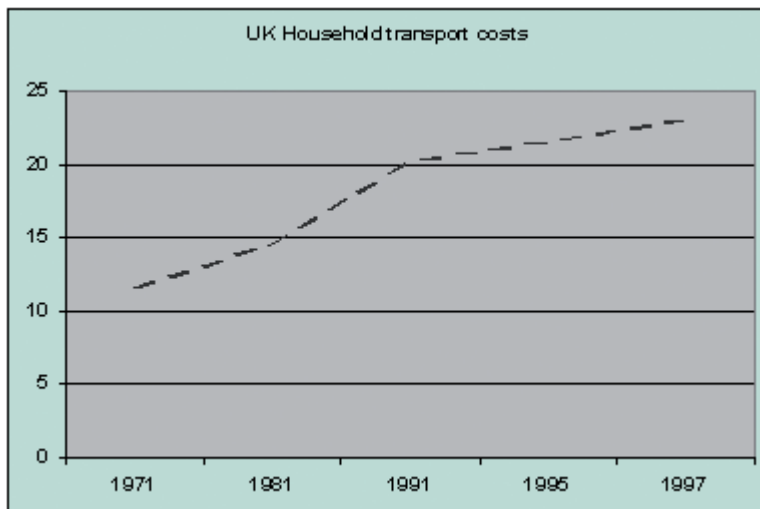
Understanding the market for cycling in London and where the growth might come from has been a focus of activity at Transport for London, the regional transport authority. Working from such a low base and with the anonymity of cyclists preventing systematic analysis, the attention has fallen to market research techniques to supplement what counting has been available.

In absolute terms, there are some immediate conclusions in respect of the existing cycling population. There is certainly a geographical split in where cycling is most popular. The reasons for the emphasis in the south west seem to reflect the demographics of residents in this part of London and existing cycling commuters – who are often more middle class than average. There is also a favourable pattern of roads from the south west radially into the centre of London against a relatively slow public bus and rail network, limited Underground services and heavy traffic congestion.



Graph showing cyclists crossing River Thames screenline

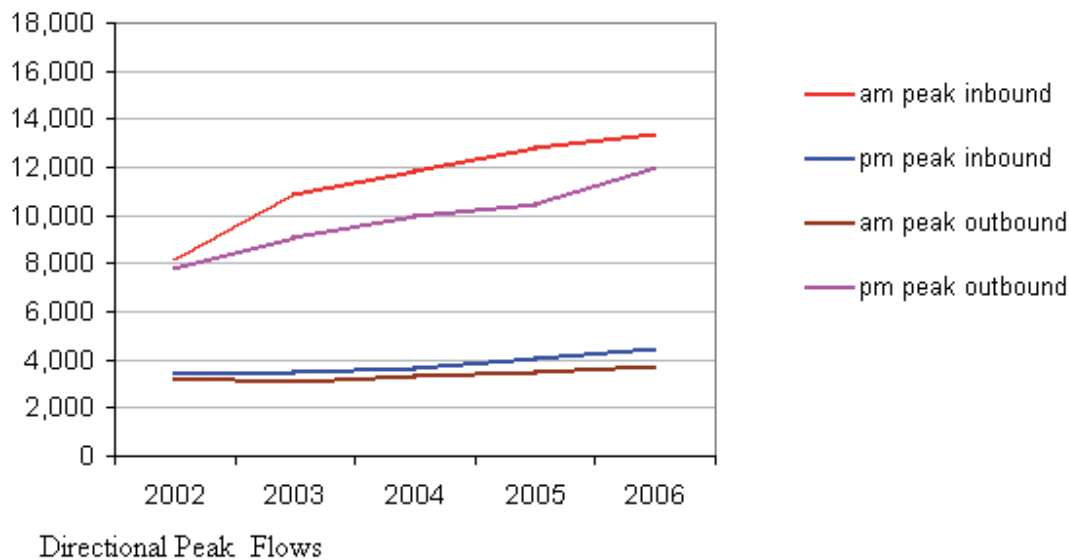
It is also clear that the major growth in cycling has been for commuting journeys. The reasons for this are varied and difficult to disaggregate however, rising transport costs as a proportion of household income, the media coverage of environmental and health issues and congestion are all mentioned in public surveys. It is also true that the London-wide programme of cycle promotion, construction and education has supported external factors which have made cycling a choice for some.



Graph showing trend in UK household expenditure on transport



The increase in cycle commuting has been most obviously observed within the Congestion Charging Zone.



### Cycle flows into and out of the Congestion Charge Zone

However, in many suburbs of London seeing a cyclist is still often a relatively rare sight and future efforts to achieve a tipping point to create a natural growth in cycling will need to make changes in the hinterland of Greater London.

### PROMOTING CYCLING

Transport for London has used marketing to promote cycling since 2005. The first campaigns were very much awareness based, reminding people that they may well have an unused bicycle hidden in the garage or shed. Encouragement was given to the easiest possible route into cycling, for leisure and especially to families with children. Images used in television advertising focused a positive image of London as a place to explore on a bike. Posters and newspaper advertisements carried simple statements to stimulate the most accessible market using health benefits as a 'hook'.

There was a positive reaction to the first campaign largely because no other authority in the UK had the resources to consider a mass media campaign for cycling before and hence TfL's work was ground breaking in many ways. However, the campaign was naïve in its approach to the barriers that exist to most people around cycling in London. Whilst, there was an anecdotal increase in families cycling in London's parks on a sunny weekend, the campaign did not address the safety concerns which meant cycling for functional journeys was not considered by the vast majority of the population.

The cycling campaign in 2006 was a development in that there was a greater division of promotion between commuters, families and young people reflecting further research about the different needs of these groups. It also recognised the apparent growth in female cyclists – approaching 40% of cyclists in some areas. This was a healthy indication that cycling was no longer the sole preserve of younger professional men.

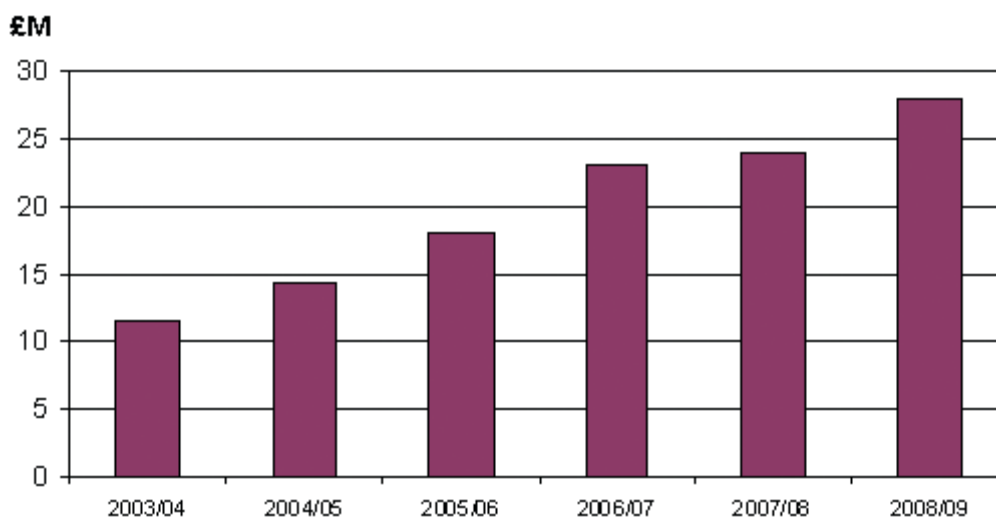






However, the campaign still did not link sufficiently with the programme of work to improve cycling in London being undertaken by TfL and the boroughs. The disconnection between investment in cycle lanes, cycle parking and training missed the opportunity to prove to potential cyclists that alongside attractive images cycling was also becoming more accessible and safer. This is important because from such a low base many people in London have not ridden a bike since their childhood and so require more than a message to encourage trial and change.

The programme for cycling in London was by 2006 a fast-growing investment plan. The budget for cycling in London in 2001 when TfL was formed was around £5m but by 2006 it had grown to over £25m due to high level political support. This budget was largely distributed to boroughs for development of the 900km London Cycle Network plus, for school child cycle training and cycle parking projects across London. Many innovative programmes were also supported through the growth in funding including a grant scheme for small scale community schemes, participation events such as Bike Week and sponsorship of cycle sport events such as the Tour of Britain.



Graph Transport for London Business Plan for cycling programme 2003-2009

With the background of activity across London, the marketing campaign in 2007 began to focus ever-more on the specific barriers and benefits of cycling. 2007 was also a momentous year for cycling in London with the Grand Depart of the Tour de France in Westminster.



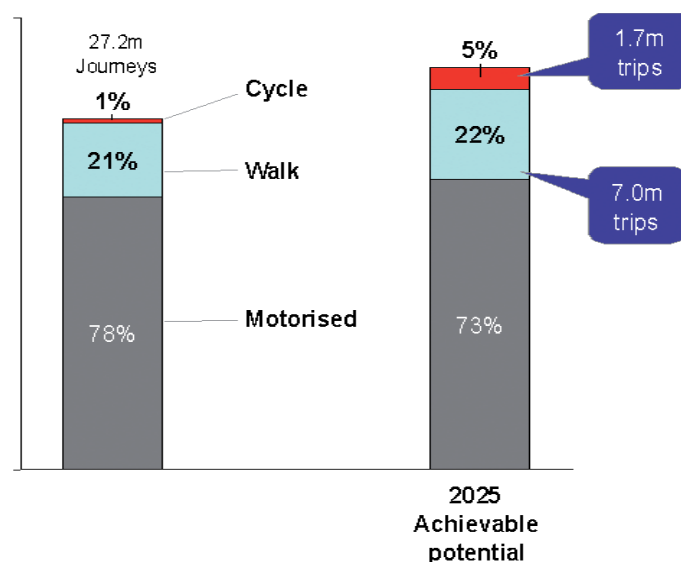
The campaign work together with the Tour de France and a late summer mass participation ride in central London which attracted 40-50,000 people made 2007 the best year yet for raising the image of cycling as a London phenomenon. Media coverage increased with cycling being described in lifestyle magazines as fashionable for the first time. Regular cycling columns and literature also started to appear encouraged by ever increasing attention on climate change and obesity. In central London, celebrities began to be seen on bikes and interesting sub-cultures started to emerge such as 'courier-chic' and a huge increase in sportive events.

While 2007 may have been the highlight of cycle promotion to date, the growth in cycle journeys began to flatten. There is a feeling that much of the latent potential for cycling has been absorbed and that to reach more significant targets a more inclusive and sophisticated approach was needed.

## NEW CHALLENGES, FIXED IDEAS

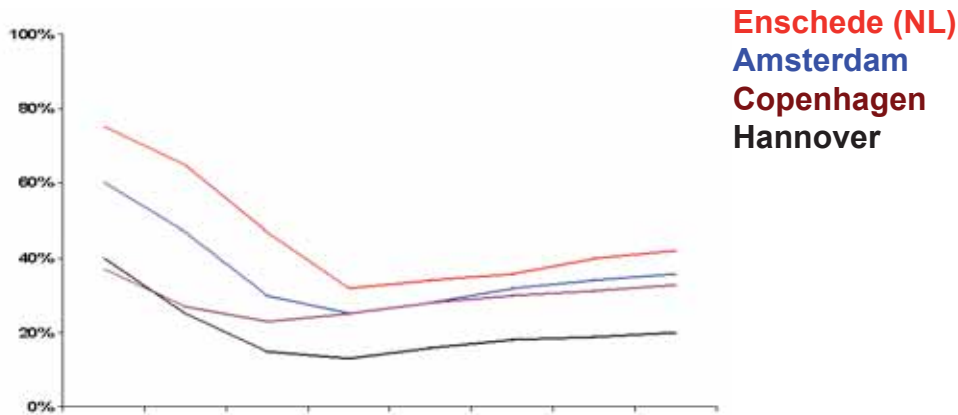
Planning for 2008 started in October 2007. The TfL Cycling, Walking and Accessibility team expressed the desire to ensure that awareness campaigns for cycling were more closely related to other physical and support initiatives to produce more lasting habitual shifts.

The impetus for this more integrated approach was research TfL had conducted into transport priorities to 2025. The Transport 2025 Strategy indicated that the population of London could be expected to increase by some 800,000 to over 8m with two decades with a predictable increase in demand for jobs and housing. The transport demand of such growth it concluded; was more than the potential capacity of public transport and road space could accommodate alone. Cycling had to meet a greater role in the resilience of London's transport system to maintain a world class city vision. Indeed, the Strategy suggested that cycling could and should represent at least 5% of journeys.



Graph Assessed Potential Modal Split London 2025

Whilst a 5% modal share is at the lower end of the best examples of urban cycling culture from mainland Europe, it was a radical advance on the achievements so far which had brought cycling to around 2% modal share in the capital. The underlying challenge to this modal share was also the fact that the variation in travel mode for different journey purposes meant a far greater proportion of Londoners needed to be regular cyclists to allow a 5% average share on the road. The estimates based on existing behaviour surveys suggest that between 10 and 20% of the citizens of London would need to be cycling 2-3 times per week to create 5% modal share. In 2004, only around 3% of Londoners cycled this frequently.



Graph showing levels of cycling in four sample cities – in all cases investment was required to increase cycling against a decline, but in none did cycling fall below around 10% mode share

To stimulate such a radical change in everyday behaviour, it is essential that people believe there is a personal benefit as well as acknowledging the wider societal or environmental contribution. It is notable that in a number of recent pieces of Government research regarding climate change, that ordinary people feel the issue is still too far removed from everyday life to influence their habits beyond that which is very easy to do. Examples of this passive contribution include recycling where all that is required is simple sorting of waste by the user, the consumption of low energy products where the industry is offering choice and more recently industry-led reductions in the free distribution of plastic shopping bags in the UK.

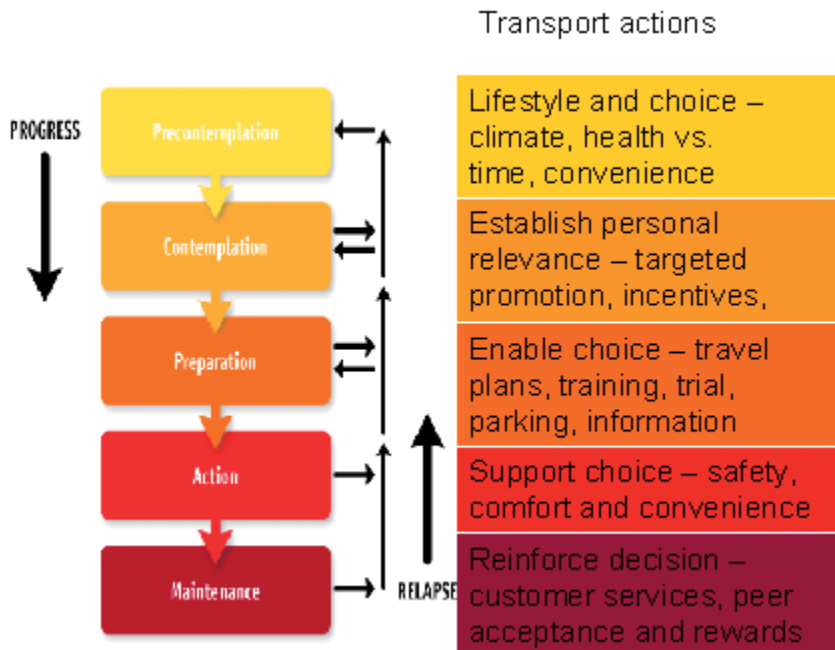
Whilst commendable, the worrying issue with such passive contributions is that they fail to change habit beyond the margins of impact. There has been much less success with larger targets for change particularly reducing consumption of finite resources and consumer demand for cleaner energy where cost remains the driving choice factor.

Against this background cycling which requires skills, equipment and for many in the UK, a return to an activity last experienced as a child. There is a considerable gap to cross. However, in general terms walking and cycling are acknowledged as the greenest and healthiest forms of transport. This provides the opportunity to link this headline awareness to more personally relevant interventions.

## STAGES OF CHANGE

The transtheoretical model of behavioural change comes from medical research on addiction. It has been applied to sustainable transport research through the EU funded INPHORM and TAPESTRY projects to create a stages of change framework.

The stages of change model builds on addressing personal behavioural barriers to progressively move towards a different set of habits or a new lifestyle. An important element is the capture of relapses in behavioural change. In the same way that a smoker trying to give up cigarettes can relapse through temptation or reliance on a stress relieving habit, so a poor experience of cycling or the temptation of the car can create a relapse to previous transport habits. It is important therefore that a programme based on behavioural change theory offer programmes at all levels to offer progression and support for relapse.



Stages of change model as applied to cycling

## MARKET IDENTIFICATION

Traditional market segmentation would look to socio-economic, demographic or geographic factors. The profile of cyclists in London whilst slightly biased towards men aged under 45, the profile is not greatly different to the average. A different approach recognizing the low base of participation, skills and physical aspects of cycling indicate an alternative segmentation based around potential. A descending list of most amenable groups for cycling promotion might be:

Group	Characteristic
Committed cyclists (+ hobbyists)	Advocates and activists (can reduce appeal to others)
Children (5-15)	Highest cycle owning group (but under parental license)
Cycle commuters (25-55)	Functional cycling (capacity to increase but vulnerable)
Families with younger children	Leisure cyclists (off road)
Non-cycling Men (25-35)	Fitness, sports, value (low risk perception)
Non-cycling Parents	Child health concerns, school run hassle (time/money constraints)
Non-cycling Women (25-35)	Health, (aesthetics, high risk perception)
Non-cycling Men/women (35-55)	Large number of potentials (high risk perception, skills, peers)
Non-cycling Older people (55+)	Health + referrals (mobility, highest risk perception?) – little data
Non-cycling Young people (16-24)	Life changes, self image, peers
Cycling rejecters	55% of Londoners

Table of potential cycling markets ranked by opportunity

The knowledge for survey work that trial can overcome perceived barriers amongst most groups<sup>2</sup> supports the stages of change model and that the aim of the cycling promotion programme should be to increase trial and scope of cycling for travel at the level of the individual. Examples of interventions which enable trial and scope for cycling include:

Focused personal interventions such as

- group activity (e.g. community events, activities and local advocates)
- individual training and mentoring (professional assistance)
- availability of equipment (hire, loan or grants)
- storage (cycle parking facilities – at home, work or local destinations)
- information, tips and support (recover relapse and for confidence)

Increasing the scope for travel requires wider work such as:

- information (e.g. tips for cycling in bad weather)
- guidance tools (maps, journey planning)
- support ('buddying' for transition from leisure cycling to commuting or school run)
- other routes into cycling – for instance preventative health advice (e.g. 'cycling on prescription')
- role models (peers, celebrities and others changing the perception of acceptability of cycling relevant to the individual)
- facts and public information (addressing myths, rebutting safety concerns, confirming choices)

The potential interventions cover a wide range of delivery partners, not all within the realm of transport bodies. It is hence necessary to consider partnerships as well as single promotional programmes to maximize impact. Key relationships are with larger campaign messages – such as health promotion and climate change/CO<sub>2</sub> reduction, and specific delivery channels such as local groups, community leaders and peer groups. Linking the big message with local advocacy can effectively change opinion and create the environment for habitual shifts. It is this sort of approach which has been the model for community regeneration and large scale health education.

As a result of the linking and enabling opportunities it is not necessarily a sensible use of transport resources to maintain large-scale mass media promotion. The earlier TfL cycling campaigns did focus on television advertising, which whilst reaching a large number of people, was restricted in the detail of the message by the format and also could not be correlated with change on the streets. Its primary benefit of mass media work from TfL's own market research, appears to be strongly connected with public awareness of TfL's role in promoting cycling and to reinforce existing beliefs – that cycling was healthy and green<sup>3</sup>. The net result is that the high cost of such activity was unlikely to be directly linked with behavioural change to any greater extent to other external factors driving changes in mobility. It is also known that the public are uneasy with branding and image marketing when undertaken Government agencies. Credibility is a critical issue when trying to change the image of a minority activity.

Aside from the wider support for cycling as a healthy and green method of transport, it is also important to appreciate the emerging role of cycling in London life. In developing campaign work the specialisation of interest in cycling should not be ignored and can be built upon in terms of London's image. Sporting events and fashion have been included within TfL's range of cycling promotion. Media interest suggests that it would be possible to consider aspiration as well as the functional and wider benefits of cycling in pitches for promotional work.

## **2008/09 LONDON CYCLING PROGRAMME ELEMENTS**

The impetus for this more integrated approach was research TfL had conducted into transport priorities to 2025. The Transport 2025 Strategy indicated that the population of London could be expected to increase by some 800,000 to over 8m with a predictable increase in demand for jobs and housing. The transport demand of such growth it concluded was more than the potential capacity of public transport and roads could accommodate. Cycling was one area where a greater role was an essential potential to explore. The Strategy suggested that cycling could and should represent at least 5% of journeys.

To achieve a modal split of 5% for cycling will however require a significant increase in cyclists. At present only some 5% of Londoners cycle 3 days or more per week<sup>4</sup>. This creates a modal split of around 2%

The 2025 strategy led to a series of new initiatives to be identified for walking and cycling which would add to existing investment in cycle infrastructure, training and promotion to enable a more radical increase in the pace of growth. Three cycle projects were identified for implementation from 2010. These were announced by the Mayor of London Ken Livingstone on 11th February; they are:

- Cycle Hire – A central London project similar in concept to the Parisian Vélib project.
- Bicycle zones – local projects in suburban town centres which focus on developing a cycle culture through a combination of infrastructure and behavioural interventions
- Cycle corridors – radial commuter cycle routes from the suburban areas of London into the central business district which link with the London Cycle Network plus but prioritise commuting traffic and aim to provide for high tidal flows of cyclists and hence encourage new cyclists through the principle of ‘safety in numbers’

All three of these new flagship projects require development over the coming months, but all require a significant element of mobility management to capitalise on investment in new facilities and support increased levels of cycling amongst potential cyclists.

The stimulus of the new flagship projects together with the development of the marketing campaign over three previous years indicated the need for more sophisticated approaches to promotion to ensure marketing extended beyond awareness and supported long term habitual change.

The London cycling campaign brief for 2008/09 and 2009/10 has significant differences to previous years. The key elements are:

**Objective** – to provide a progressive and integrated series of campaign executions which support the flagship projects, exploit existing investment programmes and other interventions to present a call to action which is fulfilled with a range of products encouraging more cycling amongst low users.

**Messages** – You’re Better Off By Bike

Calls to actions

- cycling is safer than you believe,
- cycling easier than you think,
- cycling is relevant to you and to London

**Campaign Elements** – a mixture of advertising (specifically in respect of the personal benefits of cycling), information sources (factual/ dispelling myths), asset promotion (awareness of investment) and support activities (training, personalised support and tailored programmes).

**Channels and Partners** – using a variety of channels and partners to ensure messages and support reach target markets in a way which influences behaviour and is accepted as credible. The partners include promotional agencies, London boroughs and cycling campaign groups (NGOs -Non-Governmental Organisations)

**Monitoring** – measurement of campaign elements for effectiveness against stages of change. That is to understand the effect of measures within the campaign which assist with progression along the stages of change model (from precontemplation to maintenance) for whom and how.

The campaign elements which will populate the campaign strategy provide interventions at each stage of the change model. However, the campaign does not set out to provide awareness at the first ‘pre-contemplation’ stage as this is the domain of wider messages which create the environment for more specific actions to promote cycling. The topical examples of the wider awareness campaigns include climate change, obesity and sustainable development.



The following table indicates the range of activities planned and the classification against the stages of change model:

Stages	Activities
Pre-contemplation	London-wide or national awareness campaigns (Climate change, health, mobility)
Contemplation	TfL web/print information for cycle route information, tips and incentives for registered users, Direct/viral marketing (CRM), London Freewheel and Bike Week mass ride events
Preparation	Workplace and school travel plan cycling information and incentives (cycle parking grants, curriculum resources and 'challenges'), school and adult training, cycle maps and guides
Action	Personalised support – advocacy, small group work, Community grants, Bike IT (Sustrans charity school project), young adult's engagement project, flagship cycling projects
Maintenance	Mutual awareness campaign for road users (Share the Road), TfL web site and information, information about cycling groups

Many of the elements of the programme are not new to mobility management. The difference is to see them in the context of a single approach. Matching infrastructure investment programmes with support initiatives and marketing is not well developed in transport. However, the selling of products which must be identified as desirable in the market is the basis of sales. London needs to sell cycling, recognizing that there are many barriers even if, as is the case, cycling has moved significantly in terms of public acceptance in the past five years.

## Value for Money and Monitoring

The wide variety of projects supported by Transport for London builds upon the activity of cycling groups, London boroughs and other agencies (such as Government health and Mayoral climate change initiatives). Monitoring value for money in the programme is complicated by a number of factors:

- Aggregated effect of other initiatives
- Long term process of habitual change
- Technical difficulties in assessing change (observed behaviour is expensive to survey)
- Under and overstatement of intention in attitudinal surveys

New monitoring techniques are hence also being developed which will seek to measure changes in attitudes and progressively, behaviour against the stages of change framework. Longitudinal surveys amongst stable cohorts of people is the preferred approach. However, London has a high level of population change and to run such a longitudinal group over several years will require large sample groups and sophisticated survey techniques. This area of work will be developed during the coming year alongside trials of the new campaign elements.

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## **Cykalk – a CBA tool for cycling measures**

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### **Abstract**

Along with increasing concern for climate change and negative health effects from physical inactivity, cycling measures have been put on the agenda in many municipalities and countries as part of the solution. However, with a few exceptions these measures still have large problems to keep up with the competition for infrastructure funds. One crucial reason for this is that cycling measures very seldom can show large socio-economic benefits. Not because their costs commonly exceed their benefits, but because their benefits are very seldom analysed.

To put cycling on the transportation modes map, instead of in its margins, it must be given the proper prerequisites. In most western countries this includes that the socio-economic profitability of cycling measures must be appraised through cost-benefit analysis, CBA. A CBA helps to structure benefits and costs and serve planners and politicians in their decision-making. A limited number of bicycle CBA:s have been carried out in different countries. But for the methodology to be really useful and allow for comparisons between measures, it needs to be performed in a standardized way. Standardization also decreases the risk of making mistakes and decreases the effort needed when complicated bicycle networks or many measures are to be analysed.

WSP Analysis & Strategy has developed a CBA tool for cycling measures, Cykalk 1.0, based on Excel/VBA. The tool is to be used in Swedish transport investment appraisal, primarily by the Swedish National Road Agency, SNRA, who commissioned the project. However, Cykalk is flexible in order to fit different needs, and to enable further development as more knowledge becomes available.

## **1 Introduction**

In the wake of an increasingly car-dependent society, concern for climate change and negative health effects from physical inactivity have given cycling increased attention. Even so, bicycle measures have in most countries and cities still large problems to keep up with the competition when communities and transport ministries choose where infrastructure funds should be invested. One crucial reason for this is that cycling measures very seldom can show large socio-economic benefits. Not because their costs commonly exceed their benefits, but because their benefits are very seldom analysed and therefore very seldom known.

To put cycling on the transportation modes map, instead of in its margins, it must be given the proper prerequisites. In other words: To facilitate for planners and decision-makers to choose between cycling measures and other types of infrastructure – as well as to prioritize among different alternatives for cycling infrastructure – they must be appraised on similar accounts.

In this paper, I begin with giving a short introduction to the concept of CBA, and to the benefits and costs of bicycle measures (2). I then present four reasons to why the CBA methodology should be applied to bicycle measures far more often than what is the case today (3), and three reasons to why it should be standardized and facilitated with the help of a CBA tool (4). Finally, the first version of the first Swedish CBA tool for cycling measures, Cykalk 1.0, is briefly presented (5).

## **2 Back to basics**

### **2.1 What is a CBA?**

CBA stands for cost-benefit analysis and is a methodology used to help decision-makers and planners with their jobs. It can be applied in all sectors. In practice, however, it is most widely used within the transportation sector. This is probably also the only sector where the methodology has become standardized, even though the use differs between countries.

In a CBA, the total socio-economic costs of a measure (that could be an investment, a tax etc.) are compared with its socio-economic benefits. Some effects may have “price-tags”, which is the case with investment costs and other market goods or services that can be bought and sold on a market. But sometimes there are no proper price-tags, as is the case with time, comfort, accidents, and health. For these parameters, artificial price-tags have to be created, estimating their values. Quite often, some effects can not be valued, and have to be described verbally.

Future effects are discounted with a discount rate. This means that their values are made lower the further in the future they occur, to reflect that most people tend to value costs and benefits higher, the closer in time they can expect them. The actual discount rate varies between countries; in Swedish infrastructure planning it is set at 4 %.

The result of a CBA is presented as a benefit/cost-ratio (B/C-ratio), i.e. the sum of the measure's discounted benefits are divided by the sum of its discounted costs. When the ratio is larger than 1, the measure is socio-economically profitable, giving net benefits that exceed the costs. A BC-ratio of 2 means that for each invested Euro, the measure gives net benefits worth 1 Euro. A BC-ratio of 0,5 means that for each invested Euro, the measure gives net costs worth 1 Euro.

However, since the valuation of non-market goods is a tricky business, and since it is common that some effects can not be (or are not) valued at all, a B/C-ratio should NEVER be the sole basis for a decision! Also, the CBA-methodology does not include aspects of allocation, political goals or standards. The results of a well-made CBA should be viewed as one out of several means of support for planning and decision-making.

## 2.2 The benefits and costs of cycling measures

The costs of cycling measures can be divided into three categories:

- Investment and maintenance costs
- Vehicle costs (valued per km)

Vehicle costs may include purchase, maintenance, fuel, insurance, taxes, and parking. Both bicycle and car costs should be estimated and included in the CBA, since car drivers get different costs when they leave their cars and start cycling.

Tax effects

There are three types of tax effects: A) Tax incomes decrease when car drivers start cycling instead. B) The investment cost is multiplied by “Tax factor 1”, assuming a socio-economic alternative cost – or shadow price – when public resources are used. Tax factor 1 is in Sweden 1,21, estimated from the average VAT. C) The investment cost may also be multiplied by “Tax factor 2”, the marginal cost for public means, which is used to compensate for public investments decreasing production and consumption in the economy. Recently, this was set to 1.0, meaning that it is no longer used in Sweden. As is the case in other countries.

The potential benefits of cycling measures can be divided into five categories:

- Safety (accidents)
- Decreased negative external effects from car traffic (marginal emissions, noise, accidents, wear of road surface)
- Time gains
- Comfort and security (smooth surface, secure parking, separation from other modes, etc.)
- Health (physical activity)
- Effects on public transport and on school transport for children may also be included; preferably verbally since they are at least so far more easily connected with political goals than with monetary values.

## 3 Why one should make CBA:s of cycling measures

In many western countries, CBA:s and their B/C-ratios play a part in the appraisal of infrastructure investments and measures. Where this part is large or fairly large compared to other decision criteria, as in Sweden, a measure without a B/C-ratio usually falls into the box of “lesser measures” that are put into

the plans only when – and if – there are funds left at the end. It is also the first to be erased from the plans – should it have succeeded to be squeezed in – when more expensive projects exceed their budgets. Unless, of course, the measure in question is politically favoured for some other reason. But so far, cycling measures have in most cities and countries not been politically favoured other than occasionally. (The same counts for measures for walking.)

The still quite small number of CBA:s that have been performed on cycling measures have showed large socio-economic profitability. Considering the comparatively low investment costs of cycling infrastructure, as well as the potential benefits it may give, this is no surprise. (But please note that this does not imply that all cycling measures would show profitability!) Even though political interests are regularly more important than B/C-ratios when it comes to decision-making, it seems reasonable to believe that applying the CBA methodology on cycling measures would increase their competitiveness visavi other types of infrastructure, and at the same time enhance the bicycle's chances of being considered as a serious means of transportation.

Beside this rather “offensive” motive for performing CBA:s, there are at least three other good reasons to use the methodology. First, it offers a framework in which to consider and list benefits and costs in a structured way. A quality that should not be underrated. For even if one cares little for B/C-ratios, the methodology demands that intertwined balls of effects – pulling in different directions on the good-bad-perhaps-both scale – are sorted out and sized up. The exact monetary value of an effect may be impossible to estimate, and even if a monetary value is estimated, it should often be considered as an approximation. Still, appreciating which effects are large and which are small may often be good enough. Also, the monetary values that are used and the result that the analyses give may serve as bases for discussions on political goals and standards.

Secondly, and as a result of the above, the CBA methodology offers help when choosing among measures.

Thirdly, provided that the analyses are well made, the results give clues of how much money it is reasonable to spend on cycling infrastructure.

#### **4 Why one should use a CBA tool for cycling measures**

Assume that you have decided to do a CBA of a measure to improve your local cycle network. Now, you could always do it manually, using a CBA guide and a calculator or Excel. At least as long as your cycle network is small and simple, consisting of one or a few links.<sup>9</sup> But most cycle networks are more complicated than that, making it terribly easy to make mistakes. Especially, it will be tricky to get the benefits right and avoid double-counting of the trips on different links.

A CBA tool is also important to increase comparability between different CBA:s, done by different people. While Agatha will interpret the methodology in one way, it is likely that Buster or perhaps Charlotte will do it somewhat differently. In the decision-making process, the CBA:s (or their respective B/C-ratios) will be compared, which is of course made more difficult if each analyst has done the job in his or her way.

In addition, infrastructure appraisal is often a business of considerable proportions, implying that large numbers of measures have to be analyzed. And even if too much standardization will probably erase the good purpose of the appraisal (because good appraisal needs nuances and human thought), it can certainly do well and be made easier to handle with a little.

At least in Sweden, the CBA tools that are already used for appraisal of road (i.e. motor vehicle) infrastructure cannot easily be made to fit for cycling measures. One of them, Samkalk, has been constructed to suit relatively large projects and to model large numbers of vehicles/trips, while the other, EVA, only considers effects that concern already existing traffic, and not new trips or trips that are relocated within the infrastructure system.

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<sup>9</sup> A link can be defined as a stretch/part of an infrastructure route, which is homogenous when it comes to type (mixed traffic, cycle lane or cycle track etc.), and number of trips per day. A link can include one or several crossings, as long as it is (fairly) homogenous all along.

## 5 Cykalk

### 5.1 Background

In 2005, the Swedish Environmental Protection Agency (SEPA) published a report called “The socio-economic benefit of cycling measures”.<sup>10</sup> In this report, the benefits and costs of cycling measures were identified and quantified. Time, comfort, safety, health, and vehicle costs were valued according to the best knowledge available (time and comfort were valued together, with differentiation according to type of cycle track). Two CBA:s were later made based on the recommendations in the report; of the plans for improving cycling infrastructure in Stockholm and the northern Swedish town Piteå.<sup>11</sup> In 2007, the Swedish National Road Administration (SNRA) commissioned WSP Analysis & Strategy to evaluate the SEPA report and create a CBA tool for cycling measures.

The result was Cykalk 1.0. The name alludes to Samkalk, which is a much more complex CBA tool used for large infrastructure projects in Sweden. Cykalk is made in Excel and coded in VBA (Visual Basic for Applications), and its main purpose is to be used by the SNRA, on its own or in combination with other CBA tools used for road traffic. During 2008, it will be a part of the tool box in the making of the national transport investment plans for the period 2010-2019. Where interest arises it may in time be used also in municipalities.

Our primary goals were to make Cykalk flexible, to make it carry out the calculations in consistence with economic theory, and to make it simple enough for a non-expert to use it (at least after having read the manual). Time and comfort benefits are calculated for each link in the network that the user describes, allowing for differences in type, speed, and number of trips in different parts of the net. Health and safety benefits are calculated for the whole network. The calculation of safety benefits is so far quite simple (accidents per million cycle km times average accident cost), since the available data on improvements in safety associated with different types of measures is partly based on numbers of cars rather than numbers of bicycles. A research project aiming to improve this data will be carried through later this year, allowing for more accurate estimations.

Although Cykalk 1.0 is constructed to follow the CBA methodology correctly, it is neither very fancy-looking nor very sophisticated. However, our hope is to update and improve it as new knowledge becomes available.

### 5.2 Estimating effects on demand

In Cykalk, the user describes each link in the net in terms of length, type (cycle lane, mixed traffic etc.), speed, and waiting time, and specifies the number of trips before the measure. The user then has to describe how this information will have changed when the measure has (hypothetically) been implemented. This time stating the additional number of trips that are made on the link due to cyclists changing route, as well as the number of new trips (that would not be made – at least by bicycle – without the measure). This implies that assumptions will have to be made of the change in demand.

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10 In Swedish: Den samhällsekonomiska nyttan av cykelåtgärder. (Naturvårdsverket rapport 5456.) A sister-report was later published in English, called CBA of cycling and published by the Nordic Council of Ministers. This includes texts on CBA methods and policy relevance written by Swedish, Norwegian, Danish, Finnish, and British experts.

11 Both of them showing positive B/C-ratios.

In the evaluation preceeding the construction of Cykalk, the SNRA hoped to find more or less fixed percentages of the increases in demand that could be expected for different types of measures. However, a general and fixed change in demand for a certain type of measure should never be assumed. It depends! Especially, it depends on the following factors:

- The actual improvement may vary in different applications of a certain type of measure, even if the measures share classification (i.e. are of the same type). The reason may for example be that the original standard on the links differed.
- The average valuation of the same objective improvement may vary between different locations, e.g. due to cultural or socio-economic reasons.
- Different populations may vary in how sensitive they are for a certain average improvement in standard.
- The improved alternatives may originally have differed in competitiveness, i.e. in the market structure between different transport modes.

Most important is perhaps the last alternative, the “market structure” between different transport modes in the area before the measure is implemented. A cycling measure is more likely to give a large (absolute) effect on demand if the original market share of cycling on the link (or route or network) is moderate, but a small effect if the original market share of cycling is either very small or very large. That is, the effect will be small if either a small or a large percentage of trips in the area is made by bicycle before the measure is implemented.

To avoid grinding teeth, Cykalk’s manual includes a support to the user when having to assume changes in demand.

### 5.3 Values to be used

The actual values to be used, as well as discount rate, time period etc., may be decided by the user. However, default values are included, and to make fair comparison between CBA results possible it is strongly recommended that the same values are used for all the measures that are to be compared. In Cykalk 1.0, the following values (price level 2006, 1 Euro = 9,45 SEK) are used as defaults:

- Vehicle costs: € 0.06 per cycle km, € 0.32 per car km. The cost per cycle km was suggested in the above mentioned SEPA report (2005), and includes bicycle purchase, reparations, and insurance. The cost per car km was estimated from an average use of an average car in the Swedish car fleet.
- Safety: € 53 200 per accident. This average value has been estimated for cycle accidents by the SNRA, but is based on the VSL (value of a statistical life) that is used in Sweden. Since many slight bicycle accidents are never included in the statistics, this cost is probably an overestimation. On the other hand, these slight accidents are not likely to be included in Cykalk.
- External effects from car traffic: € 0.11 per car km. This value has been calculated by the Swedish Institute for Transport and Communications Analysis (SIKA) and is valid for the average petrol or diesel car in densely populated areas in Sweden.
- Time and comfort (valued together): € 8.0-11.5 per hour, € 16.2 for waiting time. These values were suggested in SEPA:s report, and are based on assumptions on how cycling time on cycle tracks, cycle lanes, in mixed traffic, and in tunnels is likely to be valued visavi time spent on other transport modes. Since the comfort value depends on the time spent on the link, improvements in comfort in isolated points, such as safe cycle parking, cannot yet be valued. During 2008, WSP Analysis & Strategy will carry out a Stated Preference study on cyclists’ valuation of time and comfort, after which the default values might be changed and perhaps made more differentiated.
- Health: The principles for the calculation of health benefits due to physical activity have been borrowed from WHO’s tool “HEAT of cycling” (2007), which is a “semi” CBA tool for cycling, since it calculates only health benefits. We have adjusted it slightly though, to fit the needs of



the SNRA and Cykalk's structure. While in HEAT the maximum time period is 25 years, Cykalk allows for 30 years (which will be SNRA standard for cycling measures) or longer. Also, the number of days that benefits are counted is different. In HEAT, the default number of days per year is 124. In Cykalk, the default number of days per year with "peak" traffic in the net is also 124. But since there will be cyclists on the net on other days too, a share of the "peak" number of cyclists will be assumed on the other days of the year. This share has been estimated from national travel surveys and is currently set to 45 % (which might be changed). These "off-peak" days are reverted into (a lower number of) "peak" days and added to the original number. The sum, currently 232 days using the defaults mentioned above, is used for all costs and benefits in the calculation. Since the underlying connection between physical activity and health benefit is linear, this involves no problem other than that the health benefit per cyclist will have to be calculated "backwards", when the total benefit has been calculated.

- An inconsistency in the health benefit calculation is that an increase in average speed on the link – which would presumably be a good thing in terms of physical activity – decreases the health benefit. This is because the benefit only depends on the number of minutes cycled per year. In future developments this relationship may be made more complex.

Please note that these values are "valid" in Sweden. In other countries, the proper values might be either higher or lower.

As more knowledge becomes available, Cykalk will be updated and made more sophisticated. Hopefully it may contribute to increase the bicycle's chances of being seen as a serious mode of transportation!

## **Bicycles as public-individual transport – European Developments (Meetbike Conference, Dresden 2008)**

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### **Abstract**

Can the bicycle become an element of the public transport system of European cities? It seems that it can. Currently the concept of public bicycles is spreading throughout Europe and adds a new element to the public transport system of many cities.

Public bicycles are innovative schemes of rental or free bicycles in inner urban areas. They differ from traditional, mostly leisure-oriented bicycle rental services as they provide fast and easy access and can be used for daily mobility as one way use is possible. The success of the concept has for example been proven in Lyon, Paris, Munich and Barcelona, where large scale and automated bicycle rental services have been implemented and offer thousands of public bicycles to the citizens.

The concept of public bicycles has been analyzed in the NICHES project (2005-2007, funded by the European Commission), which elaborated guidance documents on the planning and implementation process for different innovative urban transport solutions, including public bicycles (see [www.niches-transport.org](http://www.niches-transport.org)). Within the project, public bicycles received high attention from cities all over Europe and even from North and South-America.

Since 2006, there has been a real boom of public bicycle systems in some parts of Europe. Particularly in France and Spain it seems that nearly every larger city wants offer such a service. These countries do not have a pronounced bicycle culture yet, but there is much discussion about the important role that the bicycle could play in urban transport as a new form of individualized public transport. In Spain, the concept is even promoted on the national level.

In Central and Eastern European countries, the interest in the bicycle in general seems to awaken slowly, but public bicycles are no big topic yet. The concept might, however, have potential for cities in these countries that are already working on improving the cycling conditions (e.g. infrastructure) and want to achieve a “change of mind” regarding the possible role of the bicycle in urban transport.

While there is much enthusiasm about Public Bicycles and much potential to make such schemes a success, it also seems that the concept has become very “fashionable”. This can be a danger as it may sometimes hinder the view on the complexity of planning and implementing a public bicycle system, which only works in an integrated strategy hand in hand with accompanying measures (e.g. bicycle infrastructure, traffic education, bicycle training, marketing). The costs of starting and maintaining a public bicycle system also need to be analyzed carefully. This makes the exchange between forerunner cities and newcomers to the topic particularly valuable.

Public bicycle schemes have the potential to achieve a change towards a more sustainable multi-modal travel behavior (“the right mode for the right trip”), if properly implemented. They can be part of the “bigger puzzle” of an integrated urban transport strategy, which enables cities to reduce motorized traffic and its environmental impact.

### **1 The boom of public bicycles**

Over the last years, Europe has seen a real boom of public bicycle schemes, which make the bicycle accessible as part of the public transport system. During the last years the number of cities that already implemented or plan to do so, increased strongly. The scale of the systems has also reached new heights, with Paris offering around 20,000 public bicycles at 1450 stations. Beyond Europe, the interest in the concept of public bicycles is also rising, e.g. in the US, in Canada, Australia, Argentina or Israel.



Figure 1: The boom of public bicycles (selected cities with existing services or planned schemes)

## 2 Characteristics and examples

The Vice-president of Grand Lyon, Gilles Veso, was one of the driving forces behind the implementation of the successful Vélo'v scheme. He commented on the concept:

"Very quickly, we've moved from being a curiosity to a genuine new urban transport mode. We invented the public-individual transport."

The European NICHES project, which examined public bicycle schemes in Europe, characterized the concept as follows.

Public bicycles:

- are innovative schemes of rental or free bicycles in urban areas;
- can be used for daily mobility as one-way-use is possible and they can be seen as part of the public transport system;
- differ from traditional, mostly leisure-oriented bicycle rental services as they provide fast and easy access;
- have diversified in organizational layout, the business models and the applied technology towards "smart bikes" (automated rental process via smart card or mobile phone).

### 3 Examples

Some cities in Europe have implemented large scale public bicycle systems and proven that the idea has high potential to successfully establish the bicycle as urban transport mode if combined with other measures and if planned appropriately. The most successful schemes offer the service for a moderate subscription fee and at least free use for the first half hour, which may explain part of the success.

It needs to be stressed that these cities did not implement the schemes as isolated measures, but within integrated packages to facilitate safer and more convenient urban cycling.

#### 3.1 Lyon – Vélo'v scheme

The showcase of Lyon was probably one of the reasons for the current boom. Vélo'v was implemented in 2005 and the scheme is very successful. The Vélo'v bicycles have become part of the city's image.

Some numbers:

- 3,100 bicycles in use
- 340 stations
- > 100,000 users
- 16,700 rentals per day
- 80% increase in public and private bicycle use



Picture 1: Vélo'v station (Photo: Rupprecht Consult)

### 3.2 Barcelona – Bicing

Barcelona implemented the Bicing scheme in March 2007. High acceptance and demand led to a continuous expansion of the service:

- Spring 2008: 6,000 bicycles, 400 stations
- 118,000 registered users
- 13-15 rentals per bike/day
- Main motivation for use: travel time, sport, comfort, ecology, practical, cheap



Picture 2: Bicing station (Photo credit: Bicicleta Club de Catalunya)

### 3.3 Paris – Vélib'

After its implementation in July 2007, Paris offers a public bicycle system to its citizens, which has reached a scale not seen previously. Other measures to facilitate and promote urban cycling combined with the Vélib' scheme had a good impact. The media spoke about the "Vélorution". Some numbers:

- 20,600 bicycles
- 1,451 stations
- 75,000 trips/day (in case of nice weather up to 140,000)

### 3.4 Other schemes

Meanwhile the diversity of larger and smaller public bicycle schemes has increased considerably. The map below shows in which European countries automated public bicycle schemes exist. The table below includes some examples from across Europe.





Figure 2: Countries with public bicycle schemes (note: several cities in most countries) Map and photos: Rupprecht Consult)

City	Name	Operator	started	# bicycles	# stations
Rennes	Vélo à la Carte	Clear Channel	1998	200	25
Munich	Call a Bike	DB Rent	200	2000	flexible
135 places for all over the Netherlands	OV-fiets	Nederlandse Spoorwegen (NS)	2002	flexible	-
Viena	City Bike	Gervista (JCD)	2003	900	53
Lyon	Vélo	JCDecaux	2005	4000	340
Burgos	Bicibur	ITCL	2006	200	8
Brussels	Cyclcity	JCDecaux	2006	250	23
Stockholm	City Bikes	Clear Channel	2006	500	40
Barcelona	Bicing	Clear Channel	2007	6000 spring 2008	400 spring 2008
Paris	Vélib'	JCDecaux	2007	20.600 spring 2008	1.451 spring 2008

Table 1: Examples of public bicycle schemes

## 4 European developments

As with many innovations, public bicycles were also pushed by some forerunners and found followers who looked at successful showcases, while the market uptake is still an ongoing dynamic process.

### “The forerunners”

Early implementation took place on the one hand in cities with a pronounced bicycle culture (e.g. a simple but large scale system in Copenhagen in 1995). On the other hand, there were also cities that recognized early the potential of the concept to promote cycling and saw the added value for the citizens (e.g. Rennes 1998). Public bicycles were also relatively early made available on a larger scale by German Rail (Call a Bike scheme 2000), helping to improve the company’s image as “mobility provider”, or by the Dutch OV-fiets scheme, which was pushed as tailor made service for rail commuters.



Picture 3: DB's Call a bike scheme (Photo: Rupprecht Consult)

### “The dynamic followers”

The real boom of public bicycle systems began with the dynamic followers, who recognized over the last years that the concept can be an effective door-opener to promote urban cycling, if combined with other measures (e.g. cycling infrastructure). Lyon, Barcelona, Paris and Sevilla are some of the best examples. Particularly dynamic markets are France and Spain.

### “Awakening interest”

In the New Member States of the European Union, public bicycles are not a big topic yet, but it seems that interest in the concept and in cycling as transport mode is growing (e.g. Krakow tendering a public bicycle service).

Regarding the service operators, one can see a few big players in the market, which is becoming increasingly competitive. There are many mature schemes available which are constantly improved. Since last year, the number of providers has been growing considerably (especially in Spain).

An interesting initiative is currently being undertaken by the City of Barcelona, which aims at forming an European network of cities with public bicycle systems. Such a network could help to exchange knowledge.

## 5 Success factors and challenges

Some selected factors for a successful implementation can be summarized as follows:

- Well thought-out layout and scale of scheme and (nearly) free use (e.g. Lyon)
- Integrated approaches to cycling and overall transport strategy (e.g. Paris)
- Stakeholder cooperation, example Barcelona: Comissió de la Bicicleta de Barcelona (e.g. Strategic plan), Intergrup de la Bicicleta de Catalunya (delegates of regional parliament)
- “Local champions”, e.g. local politicians who promote urban cycling and push the idea of implementing a public bicycle system
- Promotion and communication in advance and during the implementation process.
- In the case of Spain, the promotion of the concept on the national level had decisive influence on the dynamic development (IDAE Action plan to promote the public bicycle: funding, national conference, guidance document), while many cities are committed to also make local resources available to enhance conditions for urban cycling.
- There are, however, also manifold challenges for the implementation of a public bicycle system, as for example the following:
  - Getting it started is not as easy as it seems (need for integrated approach, infrastructure, scale of scheme and layout, traffic safety etc.). Cities need advice to avoid mistakes.
  - Financing model is key. There are many options, which should be thoroughly evaluated by a city before tendering and contracting a service:
    - PPP: outdoor advertisement contract (e.g. Rennes, Lyon)
    - Service paid through parking revenues (e.g. Barcelona, 10 years - 22,3 Mio. €)
    - Advertisements on bicycles (e.g. OYbike, Next)
    - Others (e.g. backed-up by operator)
  - Automatic systems are often not very suitable for small and medium cities, which are well advised to also look at tailored manual systems if the aim is to enable the citizens to get to know the bicycle as urban transport mode.
  - Achieving real long term impact needs continuous development of urban transport strategies. The direct impact of public bicycle schemes regarding the reduction of motorized traffic in the city centers and of CO2 emissions is limited. In the mid- to long run however, public bicycles can be an important building block towards a multi-modal and more sustainable travel behavior (“using the right mode for the right trip”).

Please see the NICHES guidance brochure on Public Bicycles for more details on success factors and challenges for planning and implementing a public bicycle scheme. The document is available for download on the NICHES website ([www.niches-transport.org](http://www.niches-transport.org)).

## 6 Integration with public transport

Public bicycles have become a part of the public transport system in some cities. But in how far are they already been integrated with other public transport modes?



Picture 4: Vélo'v bicycles at a transport interchange (Photo: Rupprecht Consult)

Intermodality, i.e. using the public bicycle in a travel chain combined with other transport modes, is in most cases not very pronounced (with few exceptions such as OV-fiets or Bikey). In Barcelona for example, 71,63% of “Bicing” trips are mono-modal, i.e. not combined with another transport mode. 28,37% of the users combine “Bicing” with other transport modes (especially Metro and train). Therefore, public bicycles can rather be seen as an element of multimodality, i.e. they help to augment the available mobility portfolio, giving people more options. To a big share, public bicycle users are also public transport users. In Lyon, 94% of “Vélo'v” clients are public transport users, 57% take the bus, tram or train daily or at least once a week.

Integration in ticketing is still not common, while some cities such as Lyon enable holders of a public transport pass to use it as access medium to the public bicycles (e.g. Lyon, Carte Técély).

In many cities, websites with travel information of the city or transport operators include links to public bicycle services. Often, maps are also available, which include the main public transport network/ stations and show the public bicycle stations in relation to them (e.g. Bicing).

So far there are only few integrated “mobility providers”, which offer a variety of transport services, including public bicycles, under one roof (e.g. call a bike within DB Rent and German rail). Some schemes have a specific intermodal layout at rail stations (e.g. OV fiets, Bikey).

## 7 Future developments

It seems that the boom of public bicycles will continue and reach new regions (worldwide). Smart Card based systems with fixed stations have a relatively strong position. Public bicycle schemes will further be optimized in their technology and layout as well as disposition systems. The diversity of providers and financing models will increase. With batteries becoming cheaper and more efficient, electric bicycles might also find their way into automated public bicycle systems. Many cities have realized that an integrated package of measures is necessary to promote urban cycling. Public bicycles can be one element of such an approach. A current example is London, which assigned £500 million (652 million €) to a “cycling and walking transformation” over the next decade, including 6,000 bicycles by 2010.

## 8 Conclusions

Public bicycle schemes have become increasingly fashionable. However, they need careful planning and implementation to avoid failure and the creation of “bicycle cemeteries”. This calls for integrated packages that create comfortable and safe cycling conditions and promote urban cycling as daily transport mode.

While public bicycle systems have little direct impact with regard to the reduction of motorized traffic in cities and CO2 emissions, they have considerable potential as “door opener” to promote urban cycling in general and to change people’s travel behavior. They can be one element of an augmented mobility portfolio (besides e.g. car sharing and good public transport), that enables citizens to use the car less and choose the “right trip for the right mode”.

As cities like Lyon, Barcelona and Paris show, public bicycles can become a well accepted element of the local public transport offer.

Clearly, public bicycle systems are not for free, but have a high added value in the long run if properly implemented. They can help to come to a real “bicycle culture” and to change people’s travel behavior.

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## **Viewpoints and necessities from the perspective of cities in New EU Member Countries**

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### **Abstract**

Poland is a country without a rich bicycle history. Just like some other European countries, which have been under the Soviet influence there were no friendly conditions for the development of bicycle mobility. The situation has changed, however, after the political turn-over, after appearance of the free market economy, liberty of gathering and especially later on - after joining the European Union in 2004. We have been facing challenges, which are common to new member countries of the European Union: traffic jams, air pollution, noise, occupying more and more of a public space by cars. Has a bike a chance to become a popular mean of transport in a country without a bicycle culture?

This paper presents a short history of bicycle mobility focusing on recent best cycle practices. It shows future perspectives of the development of bicycle law regulations, strategies, plans and infrastructure, including the biggest partnership project on bicycle tracks ever done in the European Union with the co-financing of structural funds.

### **1 Background information**

Poland is a country without a rich bicycle history generally speaking, which could have created a bicycle culture there.

Similar to some European Union countries, which were under the Soviet influence, bikes used in the past were just basic, cheap models of low quality, even though it wasn't easy to buy them.

The purposes and the frequency of using bikes were differentiated depending on the urban or non-urban areas. Bikes were quite popular in the countryside, where public transport network wasn't developed enough and cars weren't accessible for majority of the citizens at that time. Bicycles were considered there as a mean of transport just as much popular as walking. Using a bike was mostly a necessity in the villages. Sometimes bicycles were used for economical reasons. Definitely, people weren't riding bikes neither for healthy nor environmental reasons.

In the cities there was another phenomena: bicycles were a desired child's gift for the day of First Communion. They were mostly used for riding around kids' block of flats since there was no cycling infrastructure. They were simply perceived as children's toy and if they were to be qualified to either means of transport or recreation, they would certainly be qualified to means of recreation. There was one exception – the City of Stalowa Wola where over 50% of adult population was using bikes as everyday mean of transport.

Bike was not a topic, not an issue at these times, nobody talked about bicycles strategies, plans, infrastructure, there were no heavy traffic on roads since it was so difficult to get a car and non-governmental organization were not existing at these times just like self-government concept and many other things without which we cannot imagine our reality today.

The situation has changed after the political turn-over, appearance of the free market economy, liberty of gathering and especially later on - after joining the European Union in 2004.

Poland just like some other new EU member countries had to start from the scratch!

The number of cars grew so rapidly and it is still growing. Nowadays it is difficult to meet a family without a car, sometimes even more than one. That was not a case 10 years ago.

Cities have become car cities. Traffic jams has become nightmares. Public transport's hasn't changed enough to be competitive towards cars. No wonder its popularity has gone with the wind.

Mayors of many Polish cities have been thinking about solving traffic problems via building and widening of new roads, tunnels under the cities, constructing new parking places. The public space has been shrinking, car facilities have been expending. Government does not have visions or plans to deal with the situation in the right way.

No ecological education has been introduced to schools in the country where ecological awareness of population has been on a very low level. It is relevant to mention here that the main causes of deaths in Poland are heart and blood circulation diseases now.

There is no body to take care of promoting bicycle transport. Ministry of Infrastructure writes it is re-

sponsible for road transport, rail transport, air transport, spatial planning, architecture, development of construction sector, housing, marine economy and so forth. Bicycles are not regarded as transport by this Ministry! After ngos interventions and some individual citizens this Ministry has decided to create bicycle policy, yet it has been working on it already more than 2 years. Ministry of Transport elaborated, however a project of a program of bicycle transport development in Poland. This is just a project. There have been also very interesting works started recently by this Ministry on the Program of Traffic Calming Down for 2009-2014. Again, these are just documents in the preparation phase.

It looks like the most bicycle friendly Ministries on the level of TO-DO-THINGS are the Ministry of the Environment and forced a bit but really doing well the Ministry of Regional Development.

Things have been changing for better though – too slowly for many cyclists in Poland – but they really are! No doubts that Poland's entering to the European Union helped a great deal to initiate these positive changes.

It is hard to estimate the share of bicycle trips in Poland in all trips since there are no complete statistical data. It can only be estimated at between 1 to 5% in general trips, according to the Ministry of Infrastructure. In big cities it is usually about 1-3% of such trips and it varies depending on year seasons. In villages it can even be 20%.

Strengths	Weaknesses
Huge willingness to ride a bike despite bad or lack of infrastructure	Lack of national cycling strategy and lack of body responsible for cycling issue
Popularity of bike as a mean of recreation, sport and tourism	Lack of planning traditions
Presence of few active organizations and cities Creation of many bicycle greenways of C standard also thanks to participation in LEADER EU initiative	Lack of cycling infrastructure technical standards on national level, Low ecological awareness of citizens and decision-makers
City of Gdańsk as a case study and a leader of bicycle infrastructure	Looking at bicycle mostly as just a recreation mean in cities
Existence of city with long cycling history and cycling culture without any methodology to create it: Stalowa Wola a bicycle city	Lack of cycling culture
Case study – bicycle audit in the city of Cracow	Lack of complex data of bicycle share in transport Lack of public bikes (this may change soon)
Case study – cycling policy of the city of Kielce and safety improvement plan of bicycle movement	High level of bikes' robberies and vandalism Legal barriers and omitting of regulating many aspects of bicycle traffic and infrastructure in law regulations
Opportunities	Threads
Creation of one, big project for 5 regions of Eastern Poland co-financed with EU funds	Resistance to engage third sector or cyclists in the process of bicycle audit
Suggestion to design bicycle lane while building or re-building any road supported by the EU funds	Just few bicycle sensitive traffic planners and road engineers, majority is against regarding bicycle as a mean of transport

<p>Critical mass movement in most of the bigger cities in Poland</p> <p>Informal links between cities which would like to become more bicycle friendly</p> <p>Elaboration of cycling strategies, plans and technical bicycle standards on municipal levels</p> <p>Transport policies in most of cities</p> <p>Lack of funding of bicycle infrastructure by local governments is more an excuse than a fact</p> <p>A precursor of public bikes – the city of Poznań Big potential of bicycle traffic - it could in reality exceed 10 % of total number of trips in some cities, it does exceed 10% in the city of Stalowa Wola</p> <p>In 2008 for the first time in the history of Poland a Member of Polish Parliament put on the agenda cycling issue – getting rid of green lightening arrow under traffic lights</p>	<p>Polish technical universities do not educate cycling friendly engineers</p> <p>Quantity over quality, an attitude of many local authority that if there is too much pressure of cyclists or media – just do something and do it relatively quick</p> <p>Very little interaction between theory staff and practice staff</p> <p>Not treating cycling issue seriously, under-estimating bicycle mobility</p>
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Table 1: mini-SWOT analysis for Cycling Poland, source: own elaboration

## 2 Best bicycle practices in Polish cities

### 2.1 Cycling policies, cycling plans

Although there is no cycling policy on the national level, there are some cycling strategies, politics and plans on the local levels.

Kielce City was the first city, which elaborated Cycling Policy for Kielce City for 2007-2013 in October 2006. It was done under the Interreg IIIC UrBike project, thanks to the involvement of Cities for Bicycles' active cyclists PhD. engineer Tadeusz Kopta from Cracow. Cycling policy was an extended elaboration of what already had been included about cycling in the Sustainable Transport Policy for Kielce Metropolis. In the same year, also under the UrBike project, there has been elaborated another program with a very close collaboration with municipal police: 'Safe by Bike – the Cycling Safety Improvement Program for the City of Kielce for 2007-2017'. Some of the tasks written in these documents have already been implemented:

- installation of 10 bicycle parkings in the strategic places,
- construction of new bicycle road along one of the main city streets,
- preparation of full documentation for 3 new roads,
- preparation of applications for EU funding,
- coordination of designing of bicycle routes planning between Kielce city and 10 surrounding municipalities. Kielce has a leading role in this process.

Nowadays these 2 documents: cycling policy and safe by bike program have being updated.

Cracow city has a Bicycle Master Plan with an ambitious goal that in a long term 100% of travel sources and destinations must be accessible by bicycle and that the integrated bicycle system will include traffic calmed streets, small roundabouts, segregated facilities. Cracow has a feasibility study and Cycling Infrastructure Standards as well. It is also the first city, which implemented the Bicycle Audit procedure. Following Gdańsk example, there has been a very strong Cycling Task Force created in Cracow chaired by Deputy Mayor. Cycling Task Forces exist also in other Polish cities such as: Wrocław, Poznań, Przemyśl and Opole.

In 2007 Poznań has elaborated program of bicycle infrastructure development for 2007-2015.

It is worth to mention that Ministry of Transport requests from every municipality wanting to obtain money from EU funds (priority 'Urban Transport in Metropolises, Operational Program Infrastructure and Environment) passing local plan of sustainable development of transport where bike transport must be included. Yet, it is just this priority, besides - having a program doesn't mean implementing it!

## **2.2 Bicycle transport promotion**

Today, inhabitants of many cities want to ride on bikes. It is not a promotion that is the most urgent need in Poland. It is the infrastructure that is highly desired. There are proves that if the infrastructure is present, cyclist appear immediately (Gdańsk example). There is also one opposite case – if there are many cyclists the infrastructure starts appearing – Stalowa Wola.

I would risk a thesis that generally bicycle is still mostly looked at as a recreation mean or a summer mean of transport.

Bike as a year-round mean of transport can be most frequently met in the countryside. Yet it is a poor's men mean of transport there. Its popularity has decreased in the last decade although its quality and accessibility has increased, so has the quality and accessibility of cars.

In the cities bicycle has become a very popular mean of recreation. Many people still see it there as just a mean of recreation in the nice, warm days. There is however a trend of using bicycle as a mean of transport, which has been growing and developing nicely.

One phenomenon where a bike has been a significant mean of transport for many years is the City of Stalowa Wola.

### **2.2.1 City of Stalowa Wola phenomenon**

It is one of the youngest cities in Poland situated in the Eastern part of the country. It has a population of around 70 000 of inhabitants. It's an industrial city with its main factory – Stalowa Wola Foundry. Almost all the employees of Stalowa Wola Foundry used to cycle to work every day. More than thousand of bikes occupied roads when the Foundry started and finished its work. There was no promotion, no bike infrastructure there, no health reasons, no environmental reasons behind it. The situation has changed when the cars became accessible but still there are many cyclists there – according to the City Hall more than 10%.

### **2.2.2 European Car Free Days and European Sustainable Mobility Weeks**

The first Car Free Day was organized in Poland in 1987 by Polish Ecological Club (branch of Friends of the Earth International and the mother organization for Cities for Bicycles).

However, the annual organization of these European Commission's campaigns has started in Poland since 2002. There were 73 Polish cities joining that campaign in 2006 and 74 in 2007, including the city of Kielce. These campaigns are strongly promoted via national and local media. Bikes are always spoken about these days. Many Polish citizens heard for the first time about the connection between climate change and driving their cars. Many people got the right message thanks to these September days. Cities coordinating events on local level involve ngos, public transport companies, public railways companies, kindergartens, all levels of schools, libraries, houses of culture, city guards, Police, fire services, private enterprises, forest managements, local and regional media.

Local coordinators mostly organize such activities as:

- Closing chosen streets,
- Announcing finishing of some investments, eg.: bicycle tracks, introducing of limited traffic zones, building pavements, changing of public transportation schedules and - very popular these days - bicycles racks,
- Bicycles rides,
- Feasts, competitions, sport games,
- Marking of bikes,
- Cheaper prices or free public transportation,
- Distributions of posters and leaflets,
- Exams for bicycle license and many more.

### 2.2.3 Bicycle Critical Masses

Hard to say when and where they started, some are more, some are less organized. They take place in many bigger Polish cities. Some happen few times a year, some happen regularly. They do have the same goal though – to pay attention to cyclists as equal participants of traffic.

“We want the car drivers to know that we are not potato beetle, which get out on the Earth in spring” – say participants of CMs, of whom many are car drivers as well.

The most legendary Criticas Mass in Poland is a Warsaw mass. It attracts often more than 2 000 of cyclists and it is probably the largest event of this kind in Central Europe. Now, the society understands more the reasons while so many cyclists block streets for couple of hours but in Warsaw in 2002 there was a heavy battle with the police during one CM and several riders were arrested. It has become much more civilized (and bigger) since that time. It takes place each last Friday of the month, yet in winter time there are much less participants.

Kielce has a big Critical Mass as well for a city of such population. Last time more than 700 of inhabitants out of total number of 200 000 participated.

Bicycle Critical Mass in Warsaw

### 2.2.4 Ngos, informal associations of cities, which want to be bicycle-friendly

Polish Ecological Club from Cracow was the initiator of creation of bicycle initiative ‘Cities for Bicycles’ (Miasta dla Rowerów). Their competent staff trained abroad (road engineers including) were the only ones in Poland to bring new topics, new ‘fashion’ from the west. Soon, they managed to involve ngos from other Polish cities, which involved their local authorities. Gdańsk, Poznań, Wrocław were the most heard about in this context. Krakow helped Gdańsk to grow and today it is not possible to speak about bicycle infrastructure in Poland without giving Gdańsk example of best practices.

When Kielce was interested in this network it was too early for Kielce’s authority to pick up the bike enthusiasm and no the network is not coordinated at all. In 2003 Kielce joined Interreg IIIC UrBike project and since that time the bike issue has been growing in the city policies. In 2006 with the strong support of UrBike partners, Kielce organized a seminar combined with international fairs TransExpo where there were informal links with Polish cities established. Gdańsk, Kraków, Olsztyn and Suwałki (second Polish city in another Interreg project titled: “Baltic Sea Cycling”) were present there and willing to support one another in all kinds of bike activities.

## 2.3 Bicycle infrastructure

Cycling infrastructure was an unknown term in Poland before the 90’s. There were just 2 exceptions to this rule in the city of Nowe Tychy and Nowa Huta (from 70’s and 50’s). These were not good exceptions, not used according to their destination. Later on, in the 90’s few cities decided to build some bike infrastructure and install some bike racks. These were mainly demonstrations on how not to build bicycle routes and what kind of bicycle racks shouldn’t be installed. Bike routes were mostly made out of cobblestones (they still are), they had many gaps, they led to nowhere, bicycle racks allowed just to lock one wheel, nothing else. The most famous deviations from this norm were Gdańsk Infrastructure and promotion project, riverbank routes in Warsaw, Cracow, partly Kielce.

No wonder cyclists have been disappointed with little cyclists-oriented approach resulting at wasting some public money on infrastructure.

It is hard to say how many bike routes we have in Poland because of the lack of one coordination body that could hold some statistics and collect data. Fragmentary data are held by some bike active cities. In addition to that, the criteria: what is a bicycle route and what is not are not elaborated. Because of the lack of common technical standards, many communes just introduce some signs and that’s all – without even improvement of an existing surface, which can be inaccessible in a rainy weather. There can be around 1000 km of bikeways, however this number can also be quite different.



### 2.3.1 Gdańsk Bicycle Infrastructure and Promotion project

Gdańsk - a big and a very popular tourist city situated at the Baltic Sea coast is a part of a well-known in Poland so called "tri-city" together with smaller cities of Sopot and Gdynia. Maybe because of its close neighborhood with cycling cultures: German, Danish, Swedish, English, maybe because of quite big mobility of inhabitants abroad (it is closer to Germany than to Warsaw from there), maybe because of belonging to Euro-region and gaining western know-what from there, surely thanks to people from Polish Ecological Club from Krakow, Gdańsk's inhabitants has become extremely bicycle oriented.

Gdańsk project is the first and the only such a successful bicycle project in Poland on such scale. It is a real breakthrough for Poland. It is absolutely the only one, fantastic example of a grass-root initiative. Gdańsk's cyclist community developed this project, they involved municipality and got a funding of 2.5 million US dollars. It is also so revolutionary for Poland because it is the first complex cycling activity of local government that is user-oriented and quality-oriented.

"The Gdańsk project in fact created a model for co-operation and project management cycling Package that seems to work well, is easily understood by potential beneficiaries, fits the Polish legal framework and is being implemented in other cities" – evaluate cyclists from Krakow.

Gdańsk has most cycling desiring community in Poland. The inhabitants of the city were very actively involved into lobbying on the local level before the project started. Gdańsk's inhabitants convinced their Mayor to have Cycling Task Force, the first in Poland. Nowadays, 3 cities composing "tri-city" Metropolis share the same functional structure, elaborate common investment plans, prepare common investment projects.

In 1999 cyclists organized by the Local Environmental NGO (Obywatelska Liga Ekologiczna) from Gdańsk, collected over 1 000 of people convincing local politicians to stop talking and start working concretely. First, fundraising opportunities were searched for and the project was submitted to Global Environment Facility (GEF) as fitting into mitigating climate change induced by transport priority. Gdańsk was granted a medium sized grant. This project funds let:

- Construct more than 30 km of Dutch quality segregated bike roads
- Calm down traffic on 70 km of existing streets
- Raise public awareness via public participation campaign in Gdańsk
- Disseminate know-how and project replication (10 workshops for local authorities across Poland and consulting)

Today, with these bicycle infrastructure a recreation cyclists' mobility can overcome 300 of cyclists of all ages per 1 hour according to the information from Gdańsk Cycling Manifest from September, 2006. Gdańsk wants to reach 10% of shares of bike trips in all trips in a longer time.

### 2.4 Public bikes

There are no public bikes in Poland at this moment. However, there is a project, which has a chance to develop into public bikes and there are some plans to introduce this system as a whole. Plans has Cracow, they are quite advanced. Plans have also cyclists from Gdańsk, who proved to be very effective with convincing local authorities to implement their plans.

Poznań has an interesting new project. At the end of September, 2007 the city of Poznań launched a free of charge public bike system, that could be the first successful public bicycle example in Poland or even maybe in Central and Eastern Europe.

Poznan's project is addressed mainly, not exclusively to students. It was established when a new university campus was opened quite far from the downtown. The tram lines finishes itself about 1 kilometer from the new headquarters of the university campus, yet the journey takes longer than it should because of lack of comfortable crossing. The city has no plan to extend tram line in the nearest future, so there was a decision to reach out for bikes. It is also maybe the only one existing in practice example of integrated transport in Poland: tram and bike. Poznań built a bike path and bought 25 bicycles (200 were planned to be bought, yet it was too expensive to do so at the end). These 25 bikes can be taken freely by every pass holder of MPK - Municipal Public Transport Company. According to information from Internet news titled: 'Local initiative in Poland uses public bikes to get students to class' "during the system's first month of operation, nearly 300 users signed up. Except during bad weather, almost all the bicycles are used all the time".

This project is treated as a social experiment. If successful, it will be further developed and if not – Municipal Public Transport Company wants to shut it down. In this point I would like to mention that in Lithuania in Vilnius in 2001 there was a trial to set up public bike system. There were bicycles bought, system was launched and it was closed after couple of days because most of the bikes were stolen. Development of community bicycles in other Polish cities may depend indeed on the success of Poznań's experiment. Cyclists of Poznań are a bit disappointed that the bike renting wasn't always possible during winter time. Some of them even suggest changing it into 'Bike&Ride' safe parking.

## 2.5 Bicycle lobbying on the local and national level

Cyclists, scientists, non-governmental organizations and local authorities keep lobbying on the national level. The results have been very unsatisfying until last year. Last year has been a real success, which has been looked forward for a very long time.

### 2.5.1 Priority V.2. Bicycle Routes

In the Operational Program Development of Eastern Poland for 2007-2013, which has been implementing by Polish Ministry of Regional Development, after lobbying of cyclists, there has been created a priority V.2. Bicycle Routes and 50 millions of Euro has been reserved for this project. It will be the biggest project taking into consideration the geographical area and number of partners (local and regional self-governments) included ever done in Poland. It will be a very innovative project in its idea, its management, its methodology of preparation and implementation. It will be the biggest tourist infrastructure project even implemented in the European Union.

There will be ONE, complex project of constructing bicycle routes in 5 regions of Eastern Poland together with the infrastructure: cycling services, parkings, etc. These happy 5 regions are: warmińsko-mazurskie, podlaskie, lubelskie, świętokrzyskie and podkarpackie. In the cities bike roads will be constructed, in the natural parks (and there are many on the way via 5 regions) they will have a natural surface.



Source: Conception of preparing bicycle routes for Operational Program Development of Eastern Poland for 2007-2013, Foundation VeloPoland

Estimated funding proportions are:

42,5 millions of Euro (85%) – from European Regional Development Fund

5,00 millions of Euro (10%) – national budget

2,5 millions of Euro (5%) – beneficiaries (almost exclusively local governments)

This project has already being prepared. The concept of it has been developed by the Foundation VeloPoland from Warsaw and it is now in the last stage of consultations.

Kielce is the most active city from all the potential beneficiaries and, according to VeloPoland, the best prepared for applying at this moment. The first meeting presenting the concept of this project (thanks

to President's of VeloPoland Foundation solidarity with active cyclists) was held in Kielce on the 15th of February, 2008.

Now, the biggest concern of all with cycling sensitivity is the quality of this project!. It is a huge challenge for a country with no common technical bike standards, with hardly engineers who could understand the bike essence, with a big resistance of local administration to involve cyclists into the projects and with many absurd law barriers!

Besides this huge project where lobbying has been done by the Foundation VeloCity, Cracow and its bike star Marcin Hyla does some lobbying on the national level. It is thanks to Cracow cyclists that the first interpellation of MP on cycling issue has taken place very recently. It regarded getting rid of the green arrow lightening under traffic lines.

Lobbying on the local level takes place all the time. It takes a form of: Bicycle Critical Mass, creating cycling pages where all the letters to and from local authorities are published, complaining on laziness of local government via newspapers, forcing creation of task forces, bike standards, etc. Gdańsk's cyclists are the top of the top in this discipline.

### **3 Necessities, what should be done**

The strategy of 'Cities for bicycle' Poland, which can be found on [www.rowery.org.pl](http://www.rowery.org.pl) is still valid although elaborated some time ago:

CYCLING POLAND - strategy in brief:

- To change the Highway Code and eliminate its discrepancy with the Vienna Convention of 1968 on national regulations ratified by Poland in 1985 and to improve legal framework for cycling in Poland (Article 16.2. - on the priority of cyclist on a segregated bicycle track over cars turning right or left into the road that the cyclist is crossing). Other proposed changes include new traffic signs and legalization of white flashing LED headlights use by cyclists.
- To change the law on technical standards for road infrastructure where it refers to cycling. Money is not a problem. Quality of product and process management is
- To develop National Cycling Strategy by the Ministry of Infrastructure and to implement it by the government and local authorities; NCS should include pilot cycling projects in the National Development Strategy for EU structural funds and make provisions for Good Practice guidance, national touring cycling routes system and cycle ways financing as the key issues. At the moment there is no national cycling policy, no obligation on part of the local authorities, no quality control schemes, no mechanism that help getting synergistic results just from better cooperation of various institutions
- At local level: to create Task Forces in all interested communities, to adopt Cycling Infrastructure Standards by local authorities, to implement Bicycle Audit procedures and develop new cycling infrastructure projects, following the Gdansk infrastructure model.

Besides, it is necessary to:

- Elaborate, with the cooperation with local and regional self-governments and such ngos like: National Forest Holding, Polish Tourist Country-Lover's Society and others, records of bicycle routes
- Introduce categories connected with priority of the particular road in the local, regional, national system. Not every road has to have the same priority given although is constructed from the same material analogically to road system. Such categorization could determine bicycle routes maintenance and it should be done taking into consideration Complex Traffic Surveys, which should mark that cyclist's measure results can be very different depending on the season of the year and the hour of the day. It is not such a difference for cars.

- Many supplements should be introduced to Polish law regulations and some regulations should be erased, just to name some:
  - a) Polish construction law
    - there are no minimum width for two-ways bicycle and pedestrian routes,
    - using cobblestones is recommended by this law on the equal level as bituminous surface,
  - b) Road traffic law, bicycles are definitely not favored by this law as they are in many EU's Western countries
    - cyclists using a bike-way running along the road have no priority over cars at crossroads,
    - right to use pedestrians' pavements by cyclists is limited
- there is no statement that bikes can have a white LED light in front like many bikes have – so if they don't have white or yellow position lights they can be punished
- there are no regulations for bicycle trailers and there is a statement that children under 7 years old should only be transported on a special chair
- c) Road signs
  - there are such absurd regulations as a recommendation not to mark special bicycle crossing on the road if there is a necessity to lead a bike route across the road in a place where there are no crossroad. In that case, if it is a road with a priority, a bike road should be finished using a special sign and cyclists should cross using pedestrian crossing walking with their bikes
  - cyclists and bus drivers have no chance to use special road lines for buses together according to the law because the regulations are contradictory
  - there should be signed bike parking places in every public parkings
  - it could be good if more and more popular road detectors could sense bicycles, etc.
- It is a very good time to make up for some retardation in bicycle infrastructure on the occasion of building and rebuilding of many roads thanks to the support of EU money. There are some suggestions in operational programs that if possible bicycle roads should also be included but these are not obligations.
- It should be of a reflection point to municipal staff and to traffic planners: why it is happening like that – when new bike routes are constructed it is a more and more due to occupying space for pedestrians not for cars.
- Lack of money, especially in smaller municipalities shouldn't be an excuse against facilitating existence for cyclists, there are some traffic instruments allowing a normal road network becoming more friendly to cyclists, such as: speed and traffic reduction. As cyclists from Gdańsk noticed correctly these can be done in many different ways: speed should be controlled more, Polish drivers do not obey to the road code, it's always been like that. Over speeding should be less socially accepted than it is now, other means of transport than car should be more promoted, it should be difficult to park a car in busy spaces,
- More attention should be put to maintenance of bike routes, in most of the places local authorities just care about new routes to satisfy cyclists.

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# INTERDEPENDENCIES OF BICYCLE TRAFFIC AND PUBLIC TRANSPORT

Proceedings

4<sup>th</sup> April 2008 Dresden, Germany





## Greetings

*Mr Herbert Feßenmayr, Deputy Mayor of City Development, City of Dresden, Germany*

### Dear Ladies and Gentlemen,

I am very pleased to welcome you to the City of Dresden on the second day of the European and at the same time national conference about bicycle transport and its networking with public transport.

Today's headline is "interdependencies of bicycle and public transport use". This is also the name of a big Dresden project and investigation requested by the Federal Ministry of Transport, Building and Urban Affairs which is co financed from a budget of the National Cycling Plan of Germany.

I am very pleased to welcome representatives of the German Ministry of Transport, our partner from Berlin, today.

This project mainly results from Dresden's successful participation in the European project UrBike for bicycle transport promotion, lasting from 2004 to 2006.

UrBike - as reported yesterday – focused on the stronger urban integration of the bicycle. However, a promotion which is only oriented on bicycle transport is not very family-friendly. There are many intersection points between cycling and public transport. These are examined scientifically by the Dresden University of Technology to develop and promote the two related modes objectively and integrated.

The share of bicycle transport in Dresden is already considerable 14%, the public transport share is 21%. These two have together a share of 35% on all distances and they have nearly the same share like motorised traffic, which has with 37% only two percentage points more. These two, bicycle transport and public transport, can even improve their performance together without taking away potentials of each other. If dependencies of these two modes of transport are examined and known, we can offer specific attractive mobility solutions for the citizens. We work on this topic in the city of Dresden, together with the regional transport association Verkehrsverbund Oberelbe, the local public transport operator Dresdner Verkehrsbetriebe and with the big transportation scientific competence of the Dresden University of Technology.

All activities are part of an integrated development of transport and correspond to the Dresden mobility strategy, a methodical planning approach which is increasingly winning a European resonance, e.g. among the partners in the city networks POLIS and EUROCITIES.

An integrated promotion of cycling and public transport has great potentials for many European cities: clean air and less noise, a high road safety and for an attractive, environmentally friendly and socially compatible urban transport. For this objective let us follow new ways together and develop attractive modern offers which make many car drivers turn to alternative modes of transport sometimes or generally.

I would like to tell you something about three Dresden examples strongly used by the inhabitants:

- Bike and Ride facilities at suburban railway stations and public transport transfer points
- Bicycle transportation within busses, trams and trains
- 1,000 new bicycle stands

We have built numerous new bicycle parking facilities at suburban train stations within the last few years, racks for 530 bicycles since 2004. These bike racks are very actively used, even in winter months. Some of them should have been built larger although they were already conveniently planned – the bike racks are just not enough for the increasing number of parking bicycles. Plannings on this are going on.

Taking the bicycle along on public transport vehicles is free of charge for passengers using a season ticket in Dresden and its region. Capacity limits of the vehicles are reached on several lines. Due to our

local situation in the Elbe valley the bicycle transportation within vehicles is frequently used for uphill ways. We would like to solve the appeared problems with benefit for all: the passengers without bikes and the passengers who take a bike with them.

To make bicycle parking easier the City of Dresden established the project "Thousand new cycle stands for the Dresden city centre" two years ago. A very successful action: in many places in the city centre functional stands were built, mostly as steel tubes. These racks enable a safe bicycle parking – by leaning the bike at the rack and lock the bike with the frame and one wheel on it. Even the famous and beautiful Frauenkirche / Church of Our Lady on the Neumarkt is surrounded by stands for 60 bicycles. Now we have already about 900 new bicycle stands in the Dresden city centre. The thousandth cycle stand will be built in the next month up till summer.

I wish you a successful conference, interesting conversations, new contacts and many inspirations for your work. I also hope you will find time for some sightseeing - by foot, by bike or by bus and tram or combining all these modes to get to know the beautiful Dresden. Have a pleasant stay in Dresden!

## **Competition or partnership between public transport and non-motorized modes? – A rhetorical question!**

*Gerd-Axel Ahrens, Technische Universität Dresden, „Friedrich List“ Faculty of Traffic and Transport Sciences*

### **Welcome to our second day.**

I would like to thank everyone for inspiring contributions as speakers, for the up-lifting discussions and for the high level floor contacts. We were glad to observe that international communication of experts and exchange of experiences took place very intensively. In this context I would like to mention and to thank my vip-team for their effort and success: Anne Pitrone, Thomas Böhmer, Marzena Schöne, Susanne Michel, Stefanie Großmann and numerous students who helped.

While half of the first day was financed by EU-Intelligent Energy, the second day is a conference of the research project “Interdependencies of public transport and bicycle use” funded by the German Federal Ministry of Transport, Building and Urban Affairs. Main project partners are the City of Dresden, the public transport operator of Dresden (DVB) and the public transport umbrella organization of the region (VVO). Many thanks to them and all other sponsors.

Every five years the Technische Universität Dresden conducts through my chair a nation wide survey of travel behaviour in German cities. The cities order the surveys and pay for them. In 2003 more than 30 cities participated and we did about 35 000 interviews involving the recording of household features and actual trips of a particular day. The next survey for 2008 is underway in more than 60 cities with about 107 000 interviews. With this we create a very good basis for transport policy, planning and research.

In cities where an increase of bicycle trips was detected, this sometimes lead to mixed feelings among public transport operators. Instead of the desired cooperation, competitive behaviour and defensive strategies against bicycle use could be observed. We think that this is not leading to the best solutions in terms of sustainable modal share in the whole transport system. So we started a year ago with the mentioned research project to study interdependencies of bicycle use and public transport to find inter-related solutions to promote both. You will hear first preliminary results in the next presentation by Anne Pitrone and Thomas Böhmer.

I wish everyone an inspiring second day.



## **First results from the research project „Interdependencies of Bicycle and Public Transport Use“**

*Thomas Böhmer & Anne Pitrone, Technische Universität Dresden, Germany*

### **Abstract**

In order to reduce environmental impacts of traffic, a high share of the environmentally friendly modes like public transport (PT), walking and bicycling is desired. The main purpose of integrated urban and transport planning is the sustainable and efficient use of all means of transportation to ensure mobility of people and goods. Especially the combination and interrelation between public transport and cycling offers interesting potentials, but implies problems concerning the practical application esp. for providers of public transport.

The project “Interdependencies of Bicycle and Public Transport Use” looks at ways for a better coordination of these two modes. The aim is to get a clearer understanding of how the use of bicycles and public transport is connected and what potential of multi- and inter-modal use of these transport means are possible in cities. An increasing share of PT users can not be considered as captive users anymore, but can freely choose between different travel modes according to their current needs. The challenge for PT companies as well as for cities is to offer advantages to such “multi-modal” persons for using PT, bicycle and walking instead of their car. Multi- and inter-modal travel behaviour is currently examined within the project using existing travel household surveys in Germany.

In order to better understand the different viewpoints and problems of public transport providers/users and cycling users, a survey among bigger German cities and PT providers was carried out. In general, PT providers seemed to see more outstanding problems than cities. Especially interferences between cyclists and PT vehicles in small streets or on bus lanes constitute a major problem for them. Cities rather saw problems with abandoned bikes, as well as vandalism at B&R stations.

The project is aiming at suggestions for the optimal combination of bicycle and PT and strategies of transport planning to ensure that, in particular on the field of B&R, bike transport in PT vehicles and bicycle renting schemes.

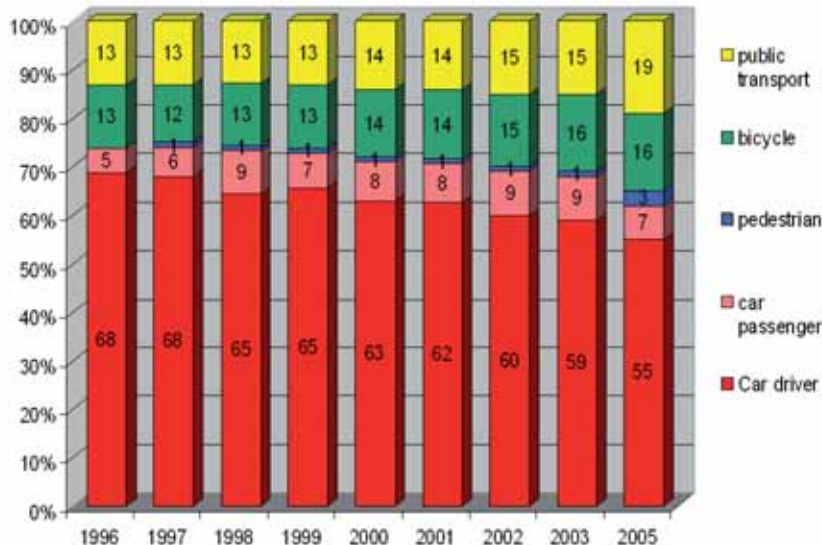
### **1 Background and objectives of the research project**

The main purpose of integrated urban and transport planning, as well as modern integrated system and mobility management, is the sustainable and efficient use of all means of transportation to ensure mobility of people and the necessary commercial transport. In order to reduce environmental impacts of traffic, next to technical improvements at the vehicles, a high share of environmentally friendly means of transport (public transport, bicycle use, walking) is desired. Several examples show that this is an achievable goal, for example the results of integrated mobility management at the factories of Infineon/ Qimonda, located in Dresden, Germany. By a continuous application of several measures since 1996, like marketing and information (mobility team, advisory service for place of residence, mobility days, mobility homepage including carpooling), improving the infrastructure for cyclists (e.g. showers, lockers, drying room, improved bicycle parking), enhanced access through new gates for cyclists or pedestrians and offering a job ticket as well as improved connections for public transport users, the share of people driving to work was considerably lowered. At the same time, the shares of public transport and the bicycle, and even walking on work trips to and from Infineon/Qimonda were increasing. Though this achievement, the company has avoided an otherwise necessary investment in a new car park because of increasing number of workers. The results can be seen in Figure 1:

## Effects of integrated mobility management: Infineon/Quimonda Dresden

→ Win-win situations possible!

Modal share on work trips to the company Infineon/Quimonda



### Continuous mobility management:

- Mobility team
- Mobility days
- showers, lockers, and drying room
- Improved bicycle parking
- Advisory service for place of residence
- Job ticket for public transport

\* ...

Slide 4



Figure 1: Modal share on work trips to the company Infineon/Quimonda in Dresden, Source: Holz-Rau, C., Nickel, W., Rau, P. (2006)

The figure shows that both transport modes PT and cycling can work hand in hand in order to lower the use of cars in non-commercial passenger transport.

Nevertheless, the ownership rates of private cars have constantly risen during the last years and have led to a high availability of cars in households. The trend to even more people who do not share the car with other household members but instead have access to a car at any time is still unbroken. While in the past, the use of a certain transport mode was often determined by the unavailability of another mode e.g. the car, today more and more people have a free choice between the available car, the bike, bus or tram or walking. This leads to the need to think about impacts and possible new potentials of public transport customers or how to increase the share of non-motorised traffic especially with the background of environmental impacts.

In order to successfully promote and support more sustainable transport behaviour, we need to better understand what factors are determining the multimodal use of transportation - that means the combination of different means of transport to satisfy mobility needs, as well as what barriers are hindering it and how these could be overcome. Within this context, this project specifically focuses on the combination and interrelation between public transport and cycling. These two modes offer interesting potentials, but imply problems concerning the practical application esp. for providers of public transport and concerning questions of the allocation of road space. The project is focused on cities because of their problems with traffic emissions and congestion as well as there the expected potentials for a joint promotion of bike and public transport are outstanding.

The results of this project should help to achieve the following objectives:

- Better understanding of the modal combinations in cities esp. in relation to cycling and use of public transport. How is the use of bicycles and public transport connected and what is the current share and potential of multi- and inter-modal use of transport means in cities? Are there typical users who use bicycles and public transport on a regular basis? What are the social variables and experiences of these users? Can we derive target groups for measures?
- Better understanding of areas of competition and possible synergies between cycling and PT use
- Provision of an overview of practical issues of a combined promotion of bike and PT in cities
- Conclusion of effective measures embedded in successful strategies of transport planning and development for a combined promotion of bicycling and PT in cities

This research project was started in May 2007 with a duration of two years. While the first half of the project is dedicated to the problem analysis and theory, the second half of the project will focus on the implementation and monitoring of sample measures in Dresden and selected reference cities. A final workshop and seminar offers will close the project in 2009.

This project is financed by the Federal German Ministry of Transport, Building and Urban Affairs (BM-VBS). Lead partner is the mobility department of the City of Dresden. Besides the Chair of Transport and Infrastructure Planning from Technische Universität Dresden (TUD) who is carrying out the majority of the problem analysis, other project partners are the local public transport company "Dresdner Verkehrsbetriebe AG" (DVB AG) and the regional public transport umbrella organisation „Verkehrsverbund Oberelbe GmbH" (VVO). A steering group of different representatives related to bike and PT in the region is supporting the project continuity.

## **2 What about competition between bike and public transport?**

The successful improvement of cycling in cities is not seen as positive by all local players in a cities' transport field. While the overall improvement and increasing modal share of all environmentally friendly modes is a goal for the sustainable urban transport planning (SUTP), different actors and institutional structures representing each mode implies a competition for funding and users between different sustainable transport modes like bike and PT. Management structures, at least in Germany, lead public transport operators to emphasise on the microeconomic view in favour of their company instead of necessary optimisation of the whole transport system including bicycles. Several conflicts are arising from that which can lead to solitary countermeasures of different actors, limited willingness to cooperate with other modes as well as missed synergies to achieve a highly sustainable and co-modal transport system.

A main research aspect of this project is to enable a better understanding of competition between PT and bicycling in cities. When comparing data on the usage of different modes in cities, it is becoming evident that with a high modal share of cycling, a low share of public transport can not automatically be concluded. Data from the German mobility survey „Mobilität in Städten – SrV 2003" for 24 cities of 3 different sizes was compared (Figure 2).

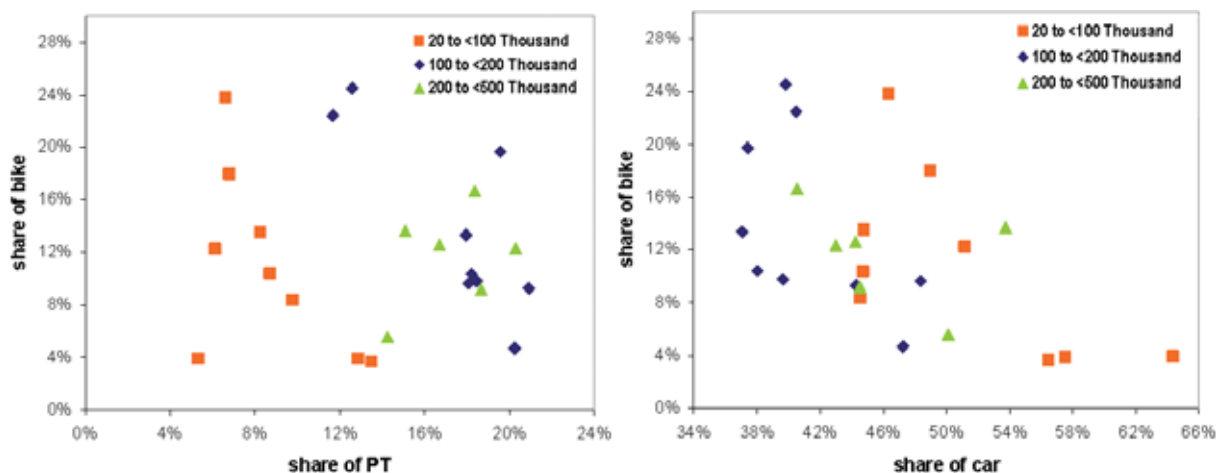


Figure 2: Comparison of cities' modal shares 2003 for cities between 20 000 and 500 000 inhabitants, Source: "Mobilität in Städten – SrV 2003", own figure

There is no principal direct relation between the share of public transport in all trips of the population and the share of cycling. While cities with a very high bike share do not have a very high share of public transport as well, there are cities where both transport modes have rather high shares. The left part of Figure 2 shows that all municipalities with less than 100 000 inhabitants have a rather low PT-share. This is a good indication that the share of public transport is primarily depending on the PT supply (infrastructure and services) which is indirectly linked to the size of the municipality. The larger a city is, the more efficient, more qualified and more attractive a PT system can usually be. Cities of the two larger size groups of 100 000 inhabitants and more show larger PT-shares but a very mixed variety concerning the share of bicycling as well. If taking the general location and topography of the analysed 24 cities into account which is not indicated in the figure, one would also see that the share of cycling is closely linked to the topography and that municipalities with more height differentials obviously have lower shares of cycling. Besides that other factors like the urban structure, the offered cycling infrastructure, the cycling tradition and also the residents' structure in the respective municipality are highly influential for the usage of bikes in a city.

A quite clear idea can be drawn from the right part of Figure 1, showing the relation of the cycling share with the share of car use. Generally, with an increasing share of cycling in a city, the share of car use is decreasing. Especially this proportion of smaller municipalities who have low shares in PT and cycling are dominated by high shares of car use and represent cities in very hilly areas. Concerning the used sample, in middle sized cities (100.000 and 200.000 inhabitants) a generally lower share of car use seems to exist while cycle use is still differing very much. This could be due to favourable city dimensions for cycling, walking and/or PT. The overall goal for each city should be a strong and efficient coalition between walking, cycling and PT to develop a sustainable and environmentally friendly transport system. Nevertheless, the specific ratios of these modes within this coalition can differ depending on factors like city size, urban structure or topography. There is no universally valid ratio model for all cities.

On the other hand, the question needs to be asked, for what specific trips, destinations and trip purposes may cycling and PT compete directly with each other and where can major synergies be used.

## Modal Share in relation to trip lengths

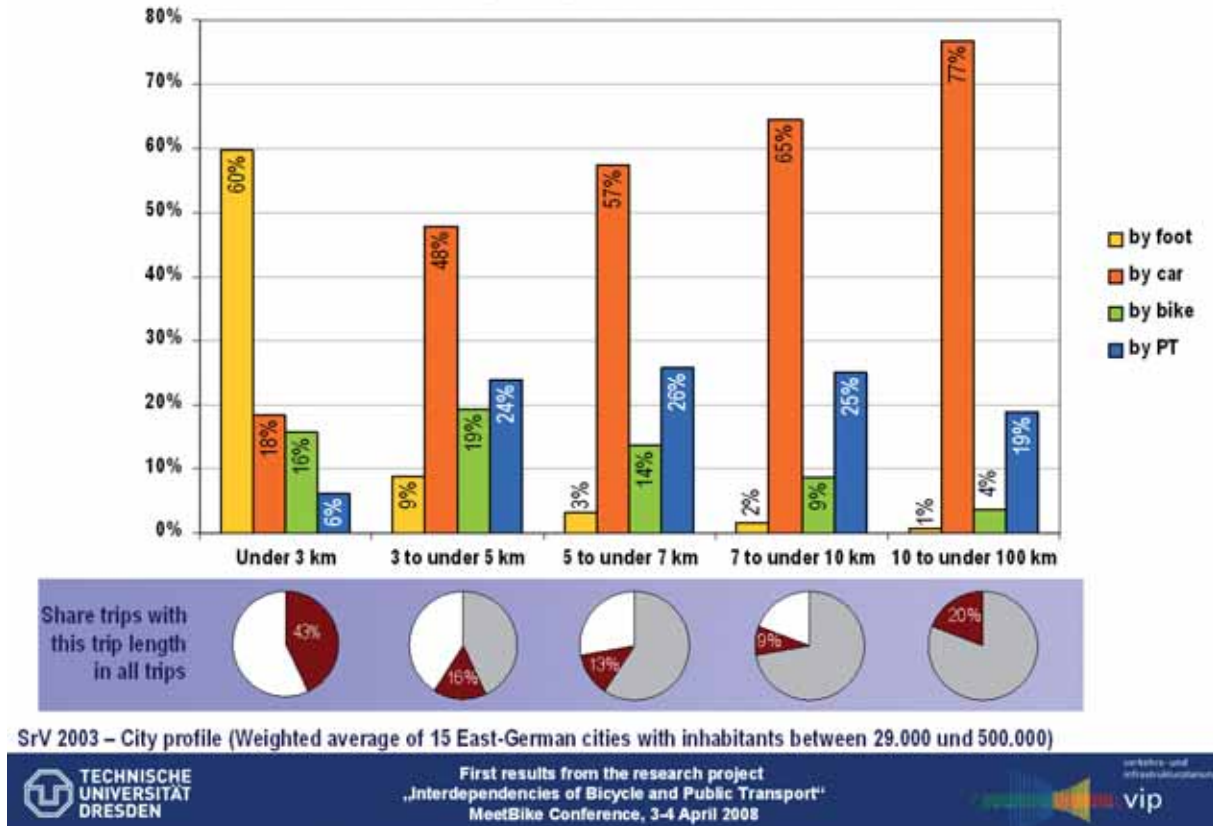


Figure 3: Modal split for different trip lengths for SrV-City profile (weighted average of 15 East-German cities, Source: “Mobilität in Städten – SrV 2003”, own figure

For this reason, several other aspects were evaluated and a major role play trip lengths to answer this question. Figure 3 presents data from the survey „Mobility in Cities – SrV 2003“ as well, but this time for a weighted average of 15 cities in East-Germany, the so called SrV-city profile which enables the observation of mobility developments not only for single cities but on a larger scale.

It is obvious that for very short trips under 3 km, the share of PT is very small while cycling has a considerable share after walking with 60 % and surprisingly car use with 18 %. Considering that this is data for cities, this high use of cars might represent a potential to be replaced esp. for the very short trips. Nevertheless, for these trips, competition between bike and PT seems rather irrelevant. This share of trips below 3 km is of special significance because it comprises 43 % of all trips. Within this distance, cycling is more likely to compete with walking. But for trip lengths between 3 and 7 km, well developed bike and PT systems could significantly „compete“ with each other which could be concluded from the higher shares of both modes for these trip lengths. Of course, this depends not only on the trip lengths, but also trip purpose, destinations and what trips need to be combined as a chain. So to conclude, synergies for a good combination of bicycling and use of PT in cities seem to exist for the shorter trips in enabling cycling to be a good alternative for car use. Additionally, cycling in combination with PT can offer a well working transport system for longer trips within cities.

### 3 What conflicts are we dealing with between bike and PT in cities?

When looking at the practical working of the transport system and specifically at the interrelations between bike and PT, it becomes evident, that conflicts occur in several areas and have to be seen from different perspectives. Good options from the eco-mobility perspective of a city might not work for users. On the other hand, providers of public transport face problems on the organisational side which are not evident for the city's transport planner. For this reason, this research project tries to evaluate conflicts between PT and bicycling in cities from different perspectives. While the user perspective is still being



researched through an independent student project, the view of PT-providers and cities was captured with the help of a survey among those actors in Germany. The transport departments of 60 German cities between 11 000 and 3.5 Mio inhabitants filled a questionnaire with 12 questions concerning bike and PT. A slightly different questionnaire was sent to providers of public transport in Germany of which 22 responded. As one special question, the respondents were asked to rate certain conflicts concerning their relevancy for them. They could name additional conflicts and rate them as well.

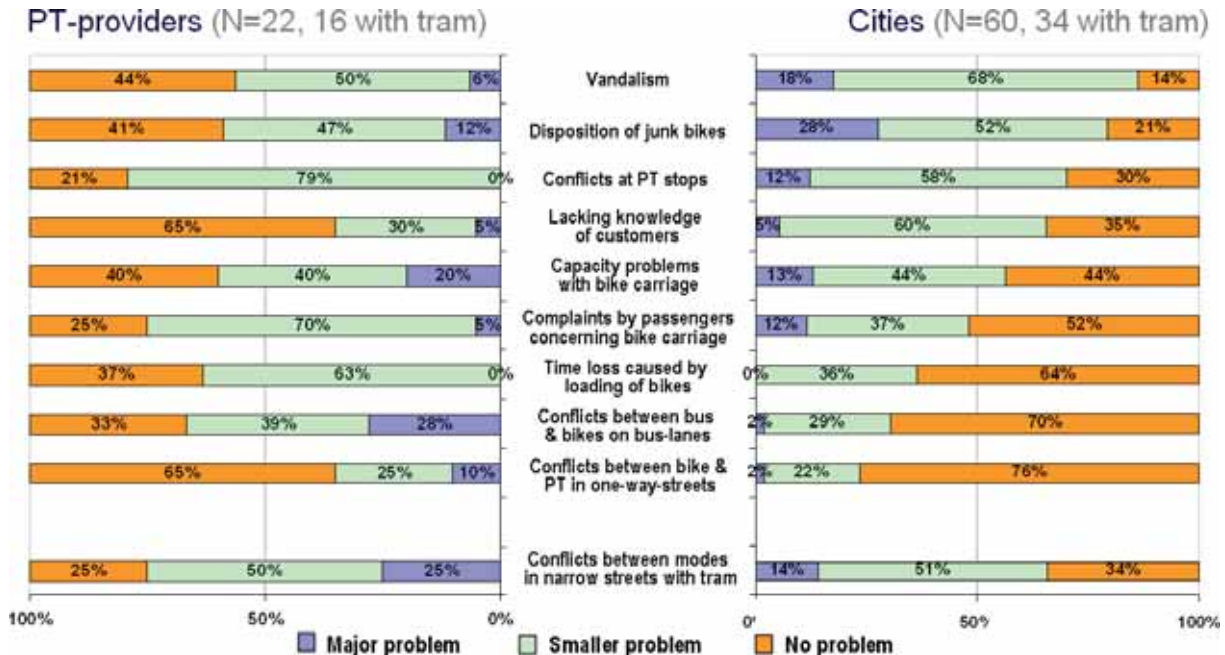


Figure 4: Conflicts concerning cycling and public transport seen by PT-providers and cities, Source: Own survey in Germany, 2007

These conflicts ratings can be compared and in this way give an overview of the different perspectives of cities and PT-providers.

Figure 4 shows the ratings sorted from the most seen conflict from the cities' view (sum of "Major problem" and "Smaller problem") down to the least seen problem. The respective ratings of these conflicts by PT-providers can be seen in the left side of the figure. Distinctive differences can be found. While the most seen conflicts from cities' perspective are vandalism and abandoned bikes at B&R facilities, PT-providers see the most problems with conflicts between cyclists and passengers or pedestrians at PT stops in cities. The higher rating of vandalism and abandoned bikes by cities might be caused by the higher awareness due to often found responsibility of the cities as managers of those facilities. By contrast, PT-providers see major problems with the joint use of bus lanes by busses and bikes as well as conflicts between trams and other modes, particularly cycling, in narrow streets. Both aspects seem to be major issues for some PT-providers and no problem at all for others. This is probably because several PT-providers asked do not have shared bus lanes in their city or do not allow bike carriage. Therefore, these points can not be a problem for them. For this reason, Figure 4 also shows the number of respondents who have tram lines in their PT network and the result in the bottom line excludes cities without tram lines from the evaluation.

In general, PT providers seem to see more outstanding problems than cities. Both respondents groups agreed that time losses caused by the loading/unloading of bikes in PT vehicles do not pose any major problems while capacity problems due to many on-carried bikes in PT vehicles seem to be rather a problem from the perspective of PT-providers.

#### 4 Can multimodal mobility behaviour offer potentials to increase ecomobility?

The potentials for a joint approach in order to reduce automobile shares in transport will have to be looked at the user level, with regards to people's mobility behaviour, its determinants and the prospective developments of these influencing factors. While ecomobility means mobility provided by a strong coalition of walking, cycling, public transport (and car sharing), multimodal mobility behaviour seems to be an interesting aspect to strengthen this coalition.

What do we understand by multimodal mobility behaviour? It refers to the usage of different transport modes during a certain time frame based on a free choice of the most fitting travel mode for the certain trip purpose or destination to reach. Taking a time frame long enough, everybody is a multimodal user because everybody has been using different transport modes throughout a life time. But when multimodality is being defined in a smaller frame, like the usage of more than one transport mode within a week's course it provides a different picture about users and their modal choice. With the increasing car ownership and nearly full bike availability in households, more and more people can access a car, can choose the public transport, take their bike for a certain trip or simply walk. This leads to a higher share of non-captive users of the public transport. But this does not automatically lead to a smaller ridership of public transport. Changes in modal choice are much more difficult because of the different advantages and disadvantages of each mode and aspects like the quality of supply or personal attitudes of users. Figure 5 is giving an example of how multimodal behaviour could look like as well as defining what we understand as intermodal travel behaviour – a special subcategory of multimodality.

Other research (von der Ruhren et al, 2003) is suggesting that multimodal users are usually people who use public transport in situations or for trips for which PT offers more advantages than the car (e.g. shopping in inner city with a lack of parking or no available free parking etc.). Research results showed that even the personal availability of a car does not significantly decrease this decision for PT for these certain trips

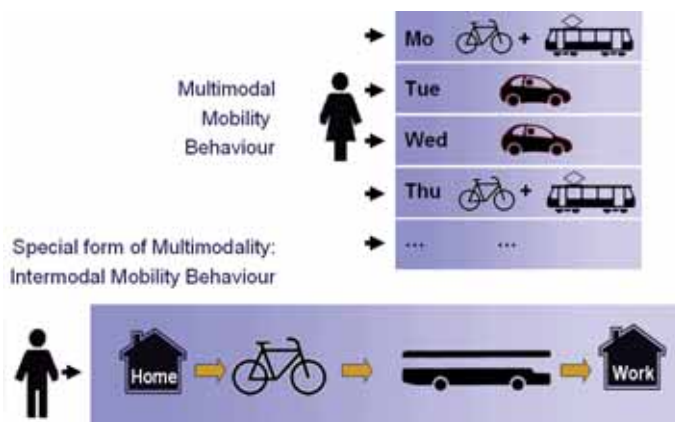


Figure 5: Definition of multi- and intermodal mobility behaviour

Within the research project "Interdependencies of Bicycle and Public Transport Use", multimodal travel behaviour is being evaluated using a data set called „Mobilität in Deutschland – MiD“, results of a German cross-sectional household survey recording mobility of people during the year 2002. The questionnaire included a question „Please indicate how often you are using the transport modes car, bicycle, public transport in your region.“ You could answer with the categories daily/almost every day, on 1-3 days per week, on 1-3 days per month, rarer than that or (almost) never. Based on this question, a definition of multimodal vs. monomodal users was made with:

- People, using two or more transport modes daily or on 1 to 3 days per week being multimodal users and
- People, using other transport modes than a single most preferred one only on less than one day per week defined as monomodal users.

Figure 6 shows that about 50 % of all evaluated people use two or more transport modes on a daily basis or on 1 to 3 days per week. The largest overall share is represented by monomodal car users, that means people who only use other modes than their preferred mode car on less than 3 days per month. This group is followed by people who combine car and bike during the week with each mode being used at least on one day per week. Of course, a closer examination of the ratio of usage of each mode during the week and their usage on weekdays versus the weekend (everyday use and weekend use) is required to make more detailed assumptions concerning this group. It is worth noticing that the group of people who combine bike and PT is quite small with a share of 2.6 % compared to people who combine all 3 modes – bike, PT and car during a week (7.8 %)

Nevertheless, when having a closer look at the distribution of these user groups among different locations and sizes of municipalities, one can easily determine the influence of this aspect (see Figure 7, page 10). While the use of bicycles does not seem to be connected to this factor, the share of groups involving the car is decreasing with increasing city size and the share of groups involving PT is increasing. This shows once again the missing PT supply and offers in smaller municipalities and the strengths of high-quality PT networks and services which can only be offered in more densely populated areas.

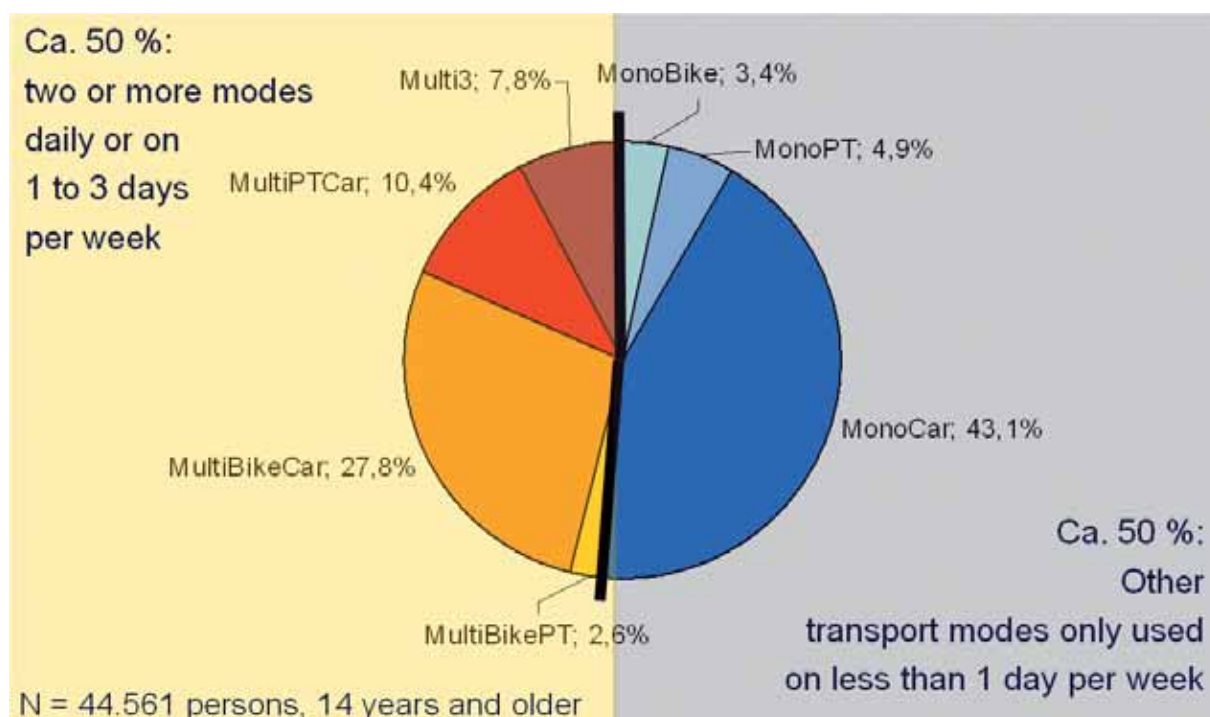


Figure 6: Share of multimodal user groups

In municipalities up to 100 000 inhabitants, monomodal car users are making up approximately 50 % of all users. Only in cities of more than 50 000 inhabitants, public transport is playing a considerable role and the structure of user groups looks much more mixed than in smaller municipalities. This is also, why a higher potential for the multimodal combination of bike and PT, as well as the monomodal use of these two transport modes is seen in cities larger than 100 000 inhabitants. There, efforts to influence the choice of travel modes towards more ecomobility will be most valuable, simply because of more favourable transport related structural and spatial preconditions.

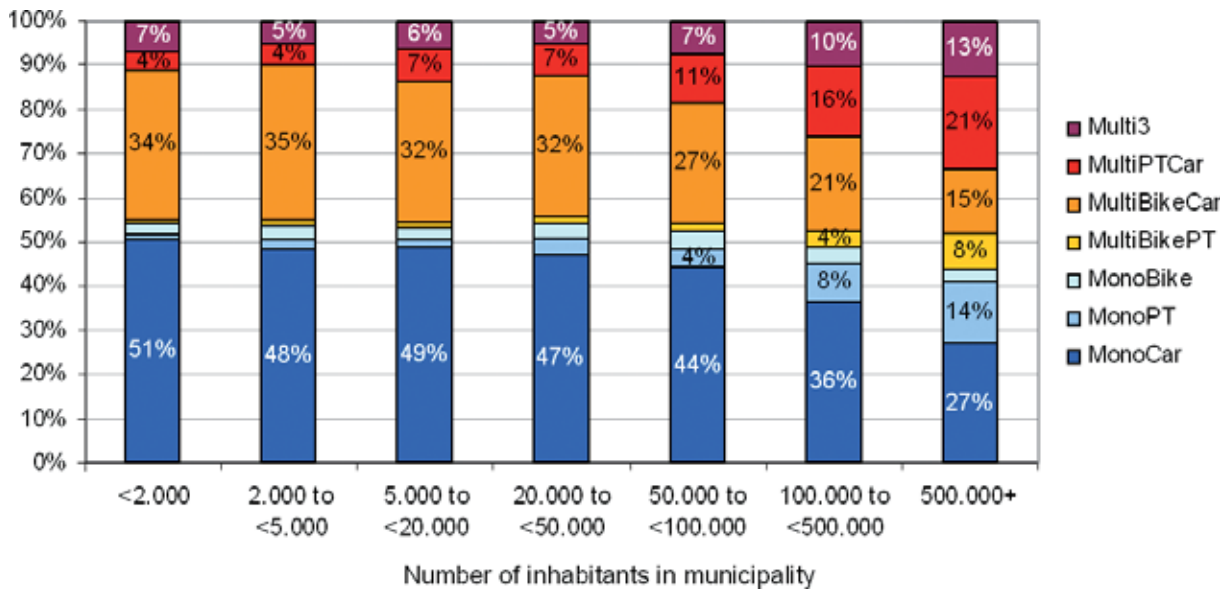


Figure 7: Share of multimodal users in relation to size of municipality

## 5 Conclusions and first ideas for solutions

These results lead to a first conclusion that potentials for improved and more integrated offers to enable ecomobility are existing, but differ for different cities with a higher potential in larger cities. They will require different approaches. While a strengthening of the transport mode bike for a more frequent use and combination with the car or train seems to be a potential in more rural areas and in smaller municipalities, cities over 100 000 inhabitants can offer a more PT focussed approach. In the latter kind, combinations with the car can offer additional potentials to replace the provision of the household's own car(s) by car sharing which could offer that flexibility needed and provided by a car.

But what are advantages of fostering multimodal behaviour? Of course, a multimodal travel behaviour offers an increasing number of trips made by more environmentally friendly modes and the best use of the individual advantages of each transport mode. Besides that, users who already combine different transport modes on a more frequent basis seem to be easier targeted by measures towards ecomobility because they

1. already have experiences with different transport modes and choose the most fitting mode regularly according to their specific needs or trip purposes
2. seem to have for that reason a more flexible mobility behaviour which could possibly be easier to be broken up or being reviewed in case of a new life situation etc.

Especially the habituation of travel behaviours plays an important role when looking for chances to influence people's behaviours towards more ecomobility. It is an automatic process of simplifying the daily decision, for example already knowing what transport modes would be the best for which kind of trip, to reach a certain destination or to connect several trips in a chain. Of courses, the decision depends in the beginning on the user's knowledge of transport offers, experience, preferences, the locations of the place of residence or the destination as well as the existing and accessible transport infrastructures. Changes in life, like reaching the driving age, founding a family, changing the job or simply changing the residential place can be triggers for such a new orientation for options. But after a certain time frame these decisions are not being made for each trip anymore but optimisation is limited to very special trips apart from the norm which limits the suggestibility of modal choice changes. Nevertheless, actions like the multimodal marketing for Munich's new residents show that the moments of change in life can offer a special potential to market a more eco-friendly mobility and mode choice. But this whole aspect requires more research and a better understanding of trip purpose related habitualised use of travel modes and still implies several questions.

Another problem is being posed by the further increasing car ownership which leads to more and more people with a personal car available. Taking into account that prices for provision and operation of a car will increase further as well, this trend might slow down and especially in larger cities alternatives like PT and bike could become more attractive than they are already now. Anyhow, it shows the demand for the flexible availability offered by cars which could offer further potentials for car sharing especially in densely populated areas.

Concerning the better coordination of bicycling and public transport in cities, it seems clear that only a well adjusted and communicated overall strategy can lead to a significant improvement of this intermodal transport segment. This strategy must integrate the six main areas of interrelation between bike and PT:

- Transport planning and financing
- Traffic organisation and management
- Interchanges between cycling and PT
- Taking bikes along in PT vehicles
- Bike rental systems in relation to PT
- Information, communication and marketing

The measures to be applied within these areas need to be coordinated in that integrated approach, and need to be managed by the city government, determined by common and agreed goals and accompanied by a well working participation and communication process integrating all relevant actors. These are just some first conclusions being drawn from the first results of data analysis, literature and best practice review. Final conclusions concerning multimodal travel behaviours and key aspects of successful multimodal transport strategies in example cities will be gathered and presented in the final report for this project in 2009.

## **6 How to proceed?**

This leads to the question of further work steps within the project “Interdependencies of Bicycle and Public Transport Use”. First of all, the understanding of potentials for improvement and influence of the modal choice towards more ecomobility, esp. cycling and PT needs to be enhanced. For this, a major aspect will be to finalise the analysis of the mobility data with most clear conclusions for potentials, where these can be found, what groups of people should be approached and how this could be done best. Multimodal behaviour for particular trip purposes will also be examined by using special questions within the currently running survey “SrV – Mobility in Cities 2008”.

Furthermore, this project wants to learn from successful examples of coordinating PT and bicycling in cities. Therefore, the review of literature and good practice will be finished and used to derive good examples for the integration into the guidelines for planners, public transport operators and users which will be published at the end of the project. These guidelines will compile practice-oriented recommendations concerning strategies and measurements to promote cycling and PT in a joint approach. The project will be completed by practice-oriented findings from the scientific monitoring of currently applied measures in a small number of reference cities in Germany.

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# **Intermodality between Bicycle and Urban Public Transport : some research questions (in the French context)**

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## **Abstract**

Intermodality between bicycle and urban/suburban public transport has recently been improved in some cases in France with the local implementation of new equipment in some areas. But it should be possibly developed on a larger scale in various types of territories: city centres, suburbs, peri-urban and various categories of urban areas.

Several intermodality formulas should be considered, some of them being more limited in terms of quantitative development, but interesting in terms of study or research, and the « addition » of diversified practices should be taken into account.

The research and development works carried out during the latest years or decades in the field of urban public transport enabled system modernization. But despite positive results they now reach their limits. Transversal approaches are now necessary, including the improvement of the access to public transport through the feeder services adapted to the various contexts. The non-polluting aspect and the little space consuming aspect of a feeder service are qualities to be considered.

An important topic is the determination of users or potential users needs by means of surveys and other approaches. Innovation seems necessary in various domains, more especially in the field of cartography, in order to inform potential users on the appropriate routes to reach the stations.

In this context a research project called PORT-VERT is being launched, with the participation of several partners: INRETS, CETE Normandie Centre, MOVIKEN, IFRESI.

Prior to further investigations two preliminary studies have been considered necessary: first qualitative interviews in Marne la Vallée, and second a selective state of the art in Germany, because of the variety of the solutions and studies carried out in this country and because as seen from France the German case is less “inaccessible” than the Dutch case.

## **1 Object and context of new investigations in the field of intermodality between bicycle and public transport**

The success of intermodality between bicycle and public transport depends mainly on political decisions and investment choices, but research can contribute to the improvement of the knowledge, which could help to do the right choices for the future.

Several intermodality formulas should be considered, some of them being more limited in terms of quantitative development, but interesting in terms of study or research, and the « addition » of diversified practices should be taken into account.

### **1.1 Object**

#### **1.1.1 General considerations**

On a theoretical point of view the combination of bicycle and public transport is an efficient solution in order to serve large urban and suburban areas, and reduce the need of private car. On a practical point of view it is necessary to implement simultaneously different measures, so that this solution can become more or less attractive according to the context.

The following intermodality formulas should be considered:

- The parking of a bike at one or both ends of the public transport ride, using various formulas of parking, with or without a guard, lockers, etc...
- Bike renting at the large stations of the public transport network;
- The use of bike fleets with self service (examples: Vélo'v in Lyon and Vélib in Paris), with stations covering the whole city, some of them being close to the public transport stations;
- The loading of a traditional bike, possible during some time periods outside from peak hours only;
- The loading of a folding bike with less limitation;
- Other measures which are useful but cannot be taken into account in the framework of a delimited study: taxis which accept bikes on board, making it possible to help bike users in the case of a mechanical incident, accident or unexpected conditions.

An important topic is the determination of users or potential users needs by means of enquiries and other approaches:

- Are there specific needs in term of bike characteristics? For example how far could new types of folding bikes or electrical bikes facilitate intermodality for some users?
- Which are the most adapted equipment and services in stations? (Many cyclists fear robbery or vandalism, but most efficient equipment cannot always be generalized for cost reasons)
- Which solutions can be recommended to improve cycling paths around the stations?

### **1.1.2 The launching of a new project**

A Call for projects has been launched in 2007 by the French National Research Programme PREDIT ("Programme national de recherche et d'innovation dans les transports terrestres") with the thematic bicycle use, including five sub-themes, among them complementarities between bicycle and public transport. In this framework a research project called PORT-VERT has been proposed by several partners:

- INRETS, the French National Institute for Transport and Safety Research
- CETE Normandie Centre, one of the seven technical centres for equipment, as part of the scientific and technical network of the French Ministry for transport
- MOVIKEN, a small company specialised in the field of cartography
- IFRESI Lille, which is linked to CNRS, the French National Centre for Scientific Research.

Most of the participants are working on other fields than bicycle (a thematic which has been until now little developed, reference: Papon 2002), so that it was necessary to add partial contributions of several partners, on a 30 months duration.

This project has now been accepted by the Ministry of Ecology and sustainable development and equipment / Direction for Sea and Transport. The beginning of the work is foreseen in the next weeks.

Innovation seems necessary in various domains, more especially in the field of cartography, in order to inform potential users on the appropriate routes to reach the stations. Innovations in the field of intermodality devices can also be envisaged, but margin of liberty seems reduced due to various constraints which have to be taken into account. First a state of the art has to be realized, and then a multi-disciplinary approach has to investigate potential improvements on a technical, economical, and ergonomically point of view.

The aim of the present paper is not to present PORT-VERT project, but it is to describe the underlying context and the partial preliminary studies which have already been launched.

## **1.2 Some elements of the underlying context**

### **1.2.1 The context of public transport**

Given the emergency to reduce the dependence on oil and the greenhouse gas emissions, faced to the concern of proposing an actual choice of transport mode to every category of the population, whatever their social situation or age, with the economical potential offered by the development of local services, (and also in the frame of the implementation of the urban planning and local urban transport planning, called "PDU" or "Plans de Déplacements Urbains" in France), the development of the use of public transport seems more and more necessary, even in smaller and smaller agglomerations, in a difficult context (scattered lodging and activities, public financing needs). The research and development works during the latest years or decades enabled to modernize systems (automatic systems, modern tramways, BHLS / Bus with High Level of Service, etc.) but despite positive results they now reach their limits. The system improvements has to be pursued but a priority should be given to urban integration, to the links between urban planning and transport, and to the improvement of the access to public transport through the feeder services adapted to the various contexts. The non-polluting aspect and the little space consuming aspect of a feeder service is a quality to be promoted (reference: Soulas, Papon, 2003).

However the technological developments should be maintained as an element within a consistent set, but the following observation can be done: one of the various underlying criteria in the technological development of the equipments is the accessibility to networks for the persons with reduced mobility (low floor vehicles, the adaptation of connection stations, etc.). Some synergies should be developed between the accesses to public transport for wheelchairs and bikes.

### **1.2.2 The bicycle context**

Bikes have been considered as a less attractive transport mode during the latest years, but it should be realized that its use rate results from a whole set of conditions and not from a couple of conditions. Without referring only to the countries with a strong bike use such as the Netherlands and Denmark, it can be noted that in Germany, the modal share is about 10 or 12% (as an average, with strong differences between the cities and the implemented policies) which is about the same as the modal share of public transport in France in terms of the number of travels, which is considerable. Of course one should be aware of the limits of such a comparison: the absolute value of the modal share depends on the limit considered for the agglomeration.

The decrease trend in France was stopped in the centre of large agglomerations, where the bicycle use has experienced a noticeable increase. But the obstacles to its development in suburbs and peripheries remain and there is still much to do in order to make bicycles more attractive. One limiting factor among other is the severance effect (or barriers effect), as pointed out by recent works (reference: Héran, 2000). The image of bicycle has been in France improved by the recent development of public bicycle fleets (Vélo'v in Lyon in 1995, Vélib in Paris in 2007, etc) but other measures have to be developed in order to significantly improve modal share.

### **1.2.3 The intermodality context**

The public transport /bike intermodality is very much used not only in the Netherlands, where about 40% of commuting train users use bikes as feeder services, but also in other countries as Japan. In France, some local progress can be observed but there is a lack of global approaches.

In the mind of planning engineers as among researchers sometimes, a priority often is given to the private vehicle/public transport intermodality, especially through park and ride facilities. This solution was neglected in the past in France, but since 1990 some works have been carried out (reference: Margail 1996), it should not hide all of the others now, while its limitations can be identified beyond a given threshold in terms of space consumption, annoyances and perverse effects on urban planning (reference: Héran 2003).

The state of the art of the intermodality between bicycle and public transport in France has been analyzed a few years ago in a dissertation (reference: Sebban 2003). Among the various equipment which has been implemented we shall mention the "flot vélo" in Neuilly Plaisance on the RER line A (200 bike and ride places, 90 location bikes): it is not the only one bike station which has been installed in France, but this one is the result of a research project realized with the help of the French National Programme PREDIT (reference: Bérardo 2001).

Intermodality between bicycle and public transport is rarely investigated by itself, but it is sometimes included in global approaches of interchange stations considering all feeder modes (reference: Menerault et al. 2006).

#### **1.2.4 The French context in the field of new public bike fleets**

The most important public fleet is Vélib implemented in Paris in summer 2007, but Vélo'v system has been implemented two years before (in March 2005) in Lyon.

A survey ordered by SYTRAL has been carried out by KEOLIS at the end of 2006 / beginning of 2007: 1000 users have been inquired.

We shall here mention only two results, which seem interesting in the field of complementarities between public transport and bike.

1°) Interchange rate between Vélo'v and other modes

The whole interchange rate is 30,6 % (14,3 % up-side and 16,3 % down-side), with the following distribution:

- 61,4 % with urban public transport network (KEOLIS)
- 10,2 % with train (SNCF)
- 1,2% with Rhône network (suburban busses)
- 3,9% with a private bike
- 23,3% with passenger car
- 

As a conclusion we shall retain that 72,7% of the Vélo'v users have an interchange with a public transport mode, either before their trip or after.

2°) Without Vélo'v which other transport mode would have been chosen?

- Public transport 40,7 %
- Walking 41,7 %
- Private bike 5,6 %
- Car 9,5 %
- Other 2,5 %.

Source: Survey results KEOLIS / Lyon

It means that a significant number of Vélo'v users were formerly public transport users, but many of them keep their pass card, and in this context the development of intermodality between bicycle and public transport is a challenge to increase the percentage of modal shift towards bicycle and public transport.

## **Context of the technical accessibility to public transport vehicles**

Bicycle embarking in the vehicles is not the most important intermodality solution on a quantitative point of view, but on a qualitative point of view it could be one of the important topics in the field of research. Until now many researches have been carried out in order to facilitate the use of public transport for disabled people, and more especially for wheel chair users. During the last years the French National Research Programme PREDIT already mentioned has launched several calls for projects in this field. In this framework INRETS has achieved a comparative analysis between Lyon and Stuttgart policies.

The field of this research was focused on the collective transport systems and on the travel chains including several systems of collective transport. In order to determine the specificity of the national practices and to reveal cultural features, the choice was made to carry out a comparative approach (reference: Marin Lamellet et al. 2006). Two local accessibility policies were studied: those of Lyon (in France) and of Stuttgart (in Germany). Lyon and Stuttgart are both European metropolis where various technological solutions have been implemented (buses, light rail systems, subways, suburban coaches, regional railway system). The observations and analysis showed that both in Lyon and in Stuttgart the “accessibility” public problem has been set of the institutional agenda of the transport authorities. The examination of the situations of Lyon and Stuttgart highlights differences between the two transport networks but also similarities. Accessibility can be thought as a public problem under the influence of various requirements and constraints. Concerning synergy with bicycle embarking one can note that the distances inside interchange stations have been more optimized in Stuttgart than in the general French case.

## **2 Preliminary investigations**

### **2.1 Analysis of the German case**

#### **2.1.1 German context investigation**

Seen from France the German case is interesting for several reasons. First intermodality bicycle / public transport is until now much more developed than in France, even if there are some new implementations and efforts carried out over the last years. Second there are significant differences from “Land” to “Land”, from agglomeration to agglomeration and from location to location. It means that on a strict technical point of view Holland could have been the best example, but it would have been less pedagogical, because there is a huge difference between the contexts of cycling conditions in the two countries. In France the modal part of bicycle is less than 3% in most of the cities (if we except Strasbourg), in Holland it is about 30% in many cities. Germany is an intermediate case with an order of magnitude of 10%, but with significant variations between towns and the areas considered. What is important (for the transposition of experiences to other countries) is not the absolute value of modal part, but the variation according to the local transport policy. For this reason German good examples such as Münster or Freiburg in Breisgau are interesting cases, less for the high modal part than for the evolution of this value during last years. But in Germany we must also investigate other cases than Münster or Freiburg which could be considered as exceptions. For instance it is interesting to note that inside the City of Dresden modal part of bicycle rose from 6,1 % to 12,3 % between 1991 and 2003: the absolute value depends on the limit of the urban area considered but the doubling of this value is an interesting fact.

With regard to intermodality, the empiric approach of “best practice analysis” can be useful and has to be applied to different cases. For example, the bike stations in North Rhine Westphalia have to be examined as an important development (Programme “100 Radstationen”) but it cannot be adapted to all kinds of situations.



### 2.1.2 A selective state of the art

Our objective is not to realize an exhaustive survey, but a selective analysis of the state of the art in Germany which aims at first identifying “best practices” and second identifying some elements which can help to determine research questions which will have to be investigated. For this purpose the investigations can rely on various means: document analysis (including recommendations), identification of implementations in several towns, research projects.

Three types of documents can give useful information:

- Planning guides which take into account all feeder modes for the conception of an interchange station, and which show how bicycle is considered among the other systems. For example the environment friendly station (reference: Christ et al 1995);
- Specific documents focussed on intermodality between bicycle and public transport. Two important documents are the so-called “book 50 / Direkt” (reference: Fromberg et al. 1997) published by the transport ministry, including many recommendations, and the communication of the German public transport association VDV (reference: Blöcher et al. 2002);
- General synthesis documents about cycling development, which show in which context intermodality can occur. For example the so-called “book 59” (reference: Thiemann-Linden et al., 2004).

Realizations can be investigated in various towns such as Dresden, München, Frankfurt, Stuttgart, Köln, ... in different contexts. For example it is interesting to note that there are in the area of Munich about twice more Bike and Ride places than Park and Ride places (about 48 000 compared to 24 000) and that this number could be increased.

Concerning research projects three aspects seems worth to be mentioned:

- One of the tasks of the research project MOBINET (realized in Munich from 1998 to 2003 in the framework of the big programme “Mobility in large conurbations”) consisted in improvements of Bike and Ride equipment. A new bicycle parking house with automatic access was implemented in 2003 at a metro station. Some of the users of this equipment are people who used before to take their car to reach public transport (reference: Mobinet 2003);
- The project “Development of an integrated concept for planning, communication and implementation of a sustainable multioptional mobility culture” has been worked out more especially with the example of bike and public transport in Frankfurt am Main (reference: Deffner et al. 2006). It included also the bike’n ride and bike concept. An hypothesis is that sustainable mobility culture requires intelligent, multioptional and intermodal systems. An addition of different measures is necessary, and communication measures have to be integrated with planning measures from the beginning, rather than being merely an add-on to fully developed mobility services and infrastructure;
- The project “Interdependencies of bicycle and public transport use” which is presented in another paper by the Technical University of Dresden.

## **2.2 Preliminary investigations in Marne la Vallée and Rouen**

### **2.2.1 Marne la Vallée**

Marne la Vallée is a new town in the East suburb of Paris which was created in 1972 by regrouping 26 communes, among them Champs sur Marne located on the RER line A (Réseau Express Régional = Rail Rapid Transit). It is worth to be investigated for several reasons, in a context where cycling is until now not much developed:

- In the surroundings of the station, among other institutions we can find “cité Descartes” with about 15 000 students: some of them could be supposed to be more cycling friendly than other populations (to be investigated);
- The recent creation of the so-called “Pôle de compétitivité Advancity” regrouping private companies and public research centres, including a part of INRETS, with the thematic “town and sustainable mobility” (VMD: Ville et Mobilité Durable);
- The already mentioned “Îlot Vélo” is implemented in the surroundings, but it concerns only one station, Neuilly Plaisance, which is located a few kilometres from Champs sur Marne.

A preliminary study has been carried out in 2007 on the basis of a qualitative approach (reference: Santana 2007). Users of intermodality as well as car users have been inquired, by means of individual semi-directed interviews, based on an interview guide including a list of soft questions. The interview duration is about one hour. The object is to determine advantages and disadvantages of intermodality between bicycle and public transport, seen by cyclists and by car users. The results of this qualitative approach could contribute to the preparation of quantitative surveys, which will take place later on in the framework of the PORT-VERT project. The final objective is to identify and investigate factors which can hinder intermodality or on the contrary favour it.

On a qualitative point of view (as the result of analysing the responses of few users) it appears the importance of topics such as bicycle parking at public transport station and at home, and the lack of cycling paths, ... but other questions have also been discussed. For example some cyclists explain that they don't want to wear a helmet for this kind of urban trip, even if they are aware of the risk of accident (but they use an helmet when they are cycling for sport reasons). Financial aspect is a favourable argument sometimes used for cycling.

In the context of modal shift perspective (towards intermodality between bicycle and public transport) it is important to know how car drivers consider public transport as well as bicycling.

All the types of constraints have been analysed: material, social, temporal, or related to the incertitude (unexpected events). Among the constraints which dissuade car drivers to choose another solution the time appears often as a major factor, at least the time as it is perceived: car drivers are not always aware of the exact travel time of the alternative solutions. On the other hand the price of motor-fuel did not appear as a significant factor to incite car drivers to choose another solution (according to the persons interviewed during the first semester 2007). This was a general trend and was of course stronger in particular cases where car users did not pay the motor-fuel by themselves. Many other knowledge have been noted: they are not considered as final results but as indications in order to prepare further investigations.

### 2.2.2 Rouen

A preliminary study has been carried out by CETE (Centre Technique de l'Équipement) Normandie Centre in the framework of cooperation with INRETS. Whereas the case of Marne la Vallée is focussed on the RER line, Rouen's case is more focussed on buses, with the specific context of gradients. The topography of the town (about 100m altitude difference between city centre and upper part of the close suburb) is unfavourable for bicycle use. Several technical solutions can be imagined in order to improve the situation such as electric bicycles (personal or public bikes) or various intermodality combinations with public transport, without excluding original solutions which are now not much developed, for example new systems similar to the bicycle lift implemented in Trondheim, Norway. The objective is to compare all the theoretical solutions on the basis of a list of criteria adapted to the local context. Most of the solutions consist in combinations of existing systems: completely new solutions are rare and have to be investigated prudently. One of the interesting solutions could be the intermodality between public bicycle fleet and buses, with a new procedure to carry the public bicycles from the lower part to the upper part of the town, for example with a bus trailer conceived as a part of the station, where each user could place the public bike after use. Until now it is only a technical preliminary study, without any political decision (at least in this specific domain of new proposals for getting over gradients).

## 3 Conclusion / Some questions to be investigated

The context of the development of intermodality between bicycle and public transport is relatively difficult if the aim is to increase significantly the use of this solution in the framework of a sustainable mobility, and not only to satisfy specific local needs. Several questions have to be investigated more deeply.

1. Which potential for intermodality between bicycle and public transport?  
To which extent is it possible to increase the use of this solution in areas where cycling is not much developed as it is often the case in France for several reasons: itineraries not safe enough, lack of parking facilities at home or at destination, not adapted road facilities (one way streets, roundabouts, ...) etc.? On the contrary how far could intermodality between bicycle and public transport be an incitation to improve cycling policies, at least in some areas?
2. Which route information has to be implemented, in the context of an heterogeneous quality of cycling itineraries? Which detour ratio can be acceptable in order to avoid critical points of the itineraries? How innovations in the field of cartography can help?
3. Which kind of facilities to protect bicycles at the (numerous) public transport stations where bike stations appears too expensive according to the number of bicycles? To which condition a box could be acceptable? Which innovation could be useful to satisfy all constraints?
4. Which synergy between rolling chairs access to public transport and access of bikes? (In term of consequences on vehicle and infrastructure conception, user information needs, ...).
5. Which place for technical innovation (new electric bikes, diversification of the folding bikes offer, ...)?
6. How intermodality between bicycle and public transport could contribute to optimize the charge of public transport lines which are in many cases overloaded in the centre part of the agglomeration but much less loaded at both ends?

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# **Personal repertoire of travel modes – heavy car users, people who mix all modes and other mover groups in Finnish cities**

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## **Abstract**

How diversely do individuals use the various travel modes and how committed are they to a specific travel mode? This article presents a grouping based on travel habits reported by the respondents, who were profiled into five mover groups: heavy car users, car users, people who mix all modes, regular customers of public transport and people who prefer walking or cycling. The results show that the inhabitants of Finland's six largest cities have diverse travel mode repertoires and are not committed to any single travel mode.

## **1 Introduction**

The objective of the research described in this paper was to examine how committed individual travellers are to using a certain travel mode or a repertoire of travel modes. The question involves the numbers of persons with certain habits concerning travel mode. In conceptual terms, the issue is wholly different from the traditional modal split, which describes the number of trips taken with travel mode.

Alltogether four studies were made on the subject during the public transport research programme JOTU ([www.jotu.fi](http://www.jotu.fi)) financed by the Finnish ministry of transport and communications in 2004–2007. In the evaluation of the programme results of the mover group studies were found to be among the most important.

The research was based on the travel-behaviour data collected in the Helsinki Metropolitan Area (HMA) in 2005 and in the cities of Tampere, Turku and Oulu in 2006. The study population consisted of inhabitants aged 18–64 years.

The HMA consists of the cities of Helsinki, Espoo and Vantaa, which have a combined population of approximately one million. Tampere has a population of approximately 200 000, Turku 175 000 and Oulu 130 000. The share of trips made by public transport is approximately 6 % in Oulu, 11 % in Turku, 16 % in Tampere and 29 % in Helsinki metropolitan area. The share of cycling is 5–7 % in HMA and Tampere, 12 % in Turku and approximately 28 % in Oulu. The share of private car varies between 44 and 50 per cent. The above figures are partly based on rather old data and the intention is only to provide a rough description of the cities.

## **2 Data and method**

The travel habits were examined through a mail-back questionnaire (12 000 questionnaires sent, 4,209 responses, response rate 35 %). The key element of the survey questionnaire was a table asking how often the respondent used each travel mode for different types of trips. This table provided with data that described travel mode choices in general rather than concerning one individual trip or trips on a certain day. The respondents were not forced to choose between travel modes. They were allowed to choose any combination of one or more travel modes and describe the relative frequency each travel mode was used. Abandoning the traditional travel diary provided a great deal of new opportunities but also made for challenges in the analysis of data and interpretation of results. All distributions presented in this article describe proportions of persons, not of trips.

The survey concerned modal choices in five trip types which together cover 80–90 percent of all trips. The trip types studied were:

- daily trips to work (or to study place)
- shopping trips for groceries
- other trips for shopping and errands
- free-time trips made regularly and
- other free-time trips.



The survey dealt with four travel modes: passenger car, public transport, cycling and walking. Respondents were asked about the prevalence of each travel mode in each trip type on a four-level scale: almost always, quite often, occasionally and hardly ever. At its most detailed, the data can be used to define 256 different modal combinations for each trip type. The respondents had very varied travel habits. Practically all possible combinations appeared in the research data.

To aggregate the fragmented data, typically, only a so-called primary mode and the presence of secondary modes was considered, not taking into account what the secondary modes were. A primary mode is defined within a certain trip type and it is the mode that is used more often than other modes.

People were also asked about their socio-economical information (age, sex, family type, car ownership, etc.) and about their preferences and opinions of many subjects related to the matter.

### 3 Results

#### 3.1 The various modal combinations

The use of more than one travel mode was common in all cities and trip types. Upon examination of similar trips, i.e. one trip type at a time, at most nearly 70% of respondents used at least two different travel modes. When all trip types are taken into account, an obvious “all situations” primary travel mode that is used for all trips types could only be determined for fewer than one third of respondents. Although those committed to a single primary travel mode are usually committed specifically to car use, more than one travel mode is used also by majority of car users.

Figure 1 shows the modal combinations of HMA residents on trips to and from work or study place. Respondents using only one travel mode have been separated from those who also use other travel modes besides their primary one. Nearly one fifth of respondents use two or more travel modes equally often. The proportion is surprisingly high, considering that trips to and from work seldom differ from one day to the next. It is also worth noticing that about half of both car users and public transport users also use other modes along with their primary travel mode.

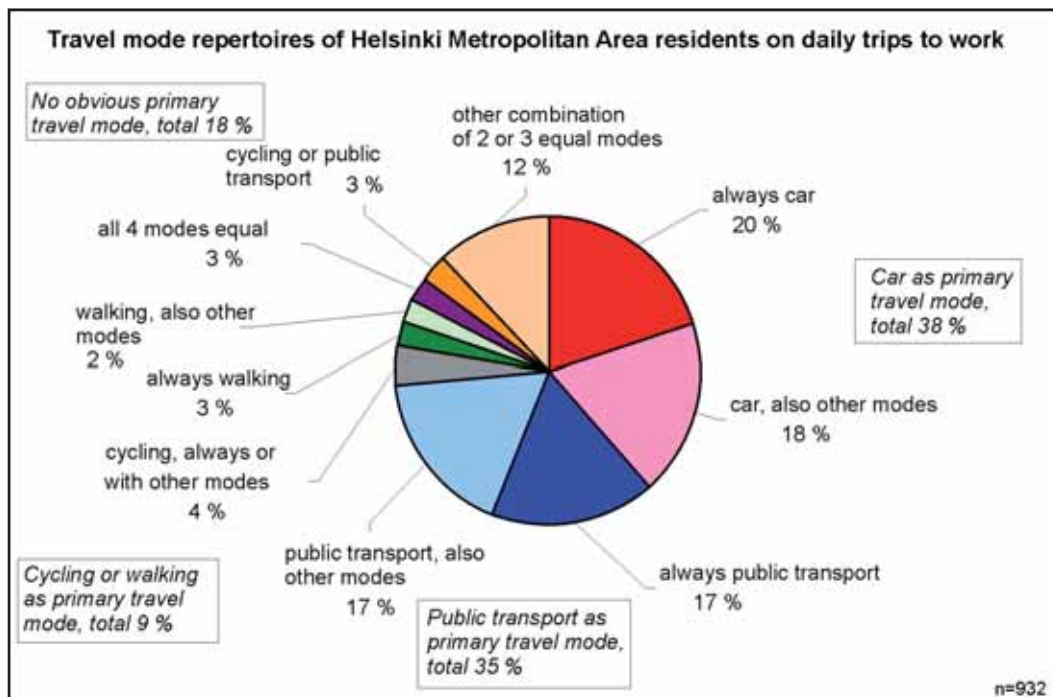


Figure 1: Modal combinations on trips to and from work (or study place) in the Helsinki Metropolitan Area

Public transport and cycling were popular for travel to and from work, in which passenger car use was less prevalent as the primary travel mode than in other travel categories. Many people in all cities took their grocery-shopping trips on foot, with hardly any use of public transport. In simplified terms, the survey can be interpreted to show that there is no need to take public transport to visit the local grocery store while supermarkets are not accessible by public transport. Travel modes on trips for other shopping and errands clearly differed from those on shopping trips for groceries. It is rather questionable for these two trip types to be combined, as they usually are. Figure 2 shows the primary travel modes on different trips.

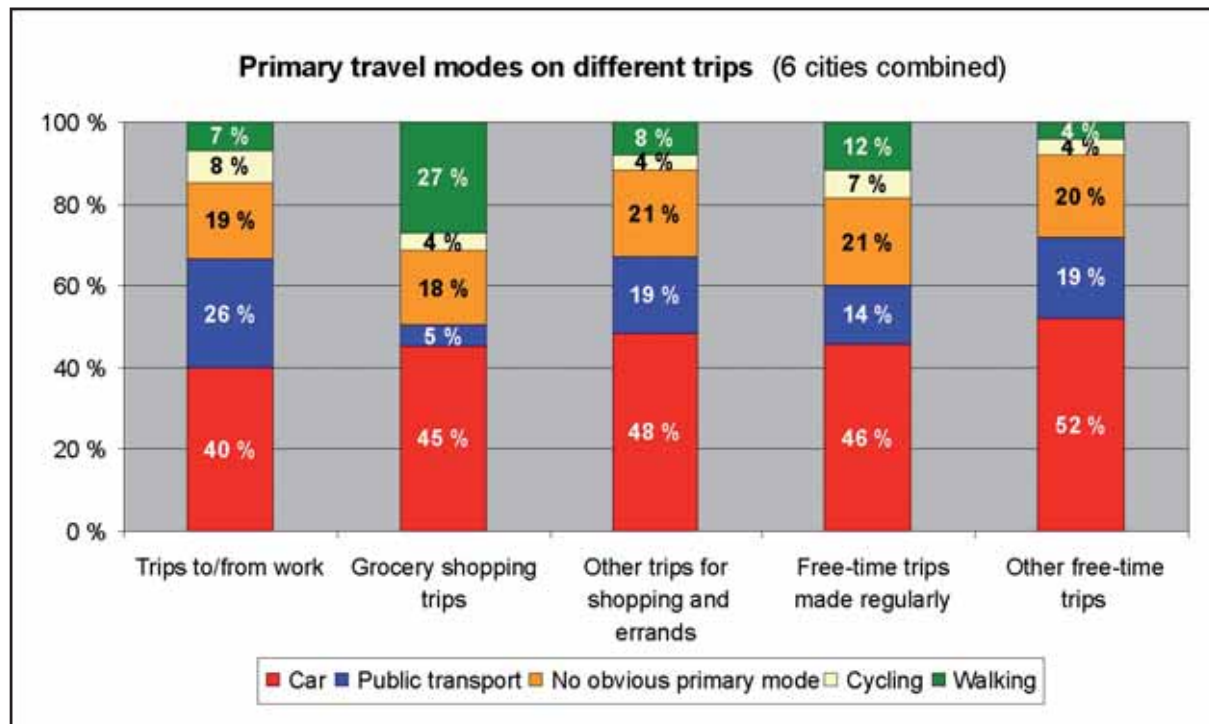


Figure 2: Primary travel modes on different trips.

### 3.2 Mover groups

Five mover groups were compiled in the work on the basis of travel mode choices on various kinds of trips. The groups were:

1. Heavy car users
2. Car users
3. People who mix all modes
4. Regular customers of public transport
5. People who prefer walking or cycling

Determination of mover group was based solely on the travel habits reported by the respondents. Although the names assigned to the groups may hint at bias, no comment was made on reasons for modal choices in determining group. Heavy car users, for example, are only heavy in the sense that they hardly ever use any other travel mode.

For heavy car users, the passenger car was the most common travel mode on all trips, while cycling and public transport were ignored completely. Car users had their car and regular customers of public transport had public transport as their most common travel mode on most trip types. People who prefer walking or cycling were defined correspondingly but walking and cycling were treated as a single travel mode. People who mix all modes used all travel modes. Mixed users might in a given trip type use several travel modes with equal frequency or have a different primary travel mode depending on trip type. The determination of the mover groups is a phased process and the actual definitions are more complex than the generalised descriptions given above. It is important to notice that the travel modes are com-

pared in relation to each other. It bears no meaning how many trips are made. The group of heavy car users turned out to be clearly male-dominated while that of regular customers of public transport mostly consisted of women. Gender differences were clearly smaller in the HMA than in other cities studied. The most families with children appeared in the two groups of car users while clearly the fewest were found in the group of regular customers of public transport.

The typical heavy car user is a man over the age of 45 living in an area of single-family houses on the outskirts of a city. The family may consist of children under 18 and the family usually owns two or more cars. The typical car user may be male or female but is usually over the age of 30. The car user's household usually has children and one or more cars. People who mix all modes can be found among women and men of all ages living along strong public transport corridors and usually owning just one car. The typical regular customer of public transport is a woman, or a man under the age of 30, who often lives alone and usually does not own a car. People who prefer walking or cycling consisted of women and men of all ages living in city centres, often by themselves, and owning no more than one car.

Clearly the socio-economical characteristics of different mover groups turned out as expected. The mover groups and their characteristics have, however, not been quantified to this extent before. Exact figures also reveal that there are young women among heavy car users and some of regular customers of public transport have high income etc. One should not draw too aggravated conclusions.

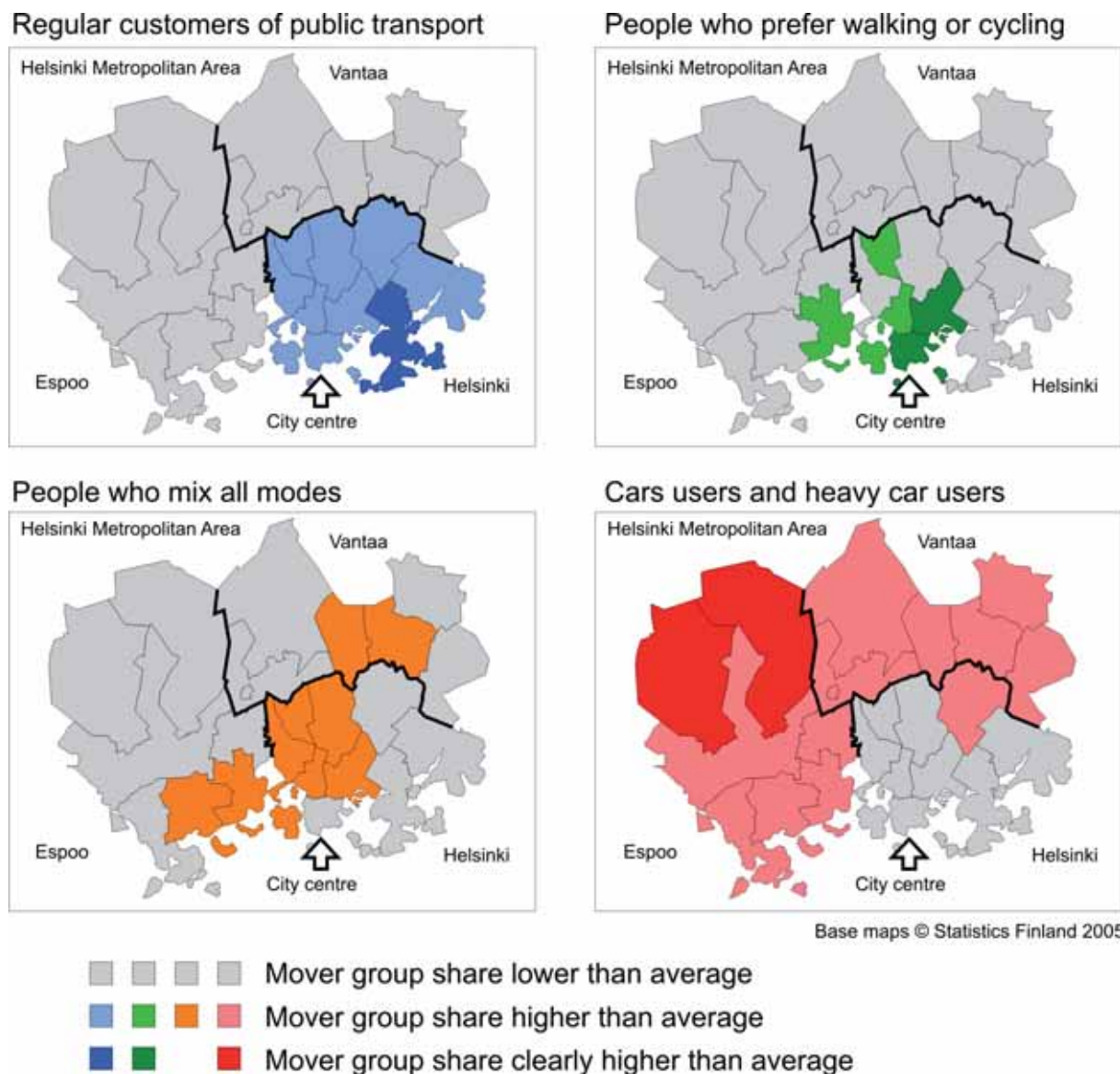


Figure 3: Above-average shares of of mover groups in the HMA by area of residence.

There were clear regional differences in the proportions of mover groups. Figure 3 represents HMA regions with above-average shares of inhabitants in the various groups. Regular customers of public transport and people who prefer walking or cycling in particular but also people who mix all modes reported choosing their place of residence so that they can manage without a car.

Modal habits and the opportunity for car use are of course closely connected. In this context, persons who reported having access to a car at least usually are counted as car owners. About 70 percent of car owners are car users or heavy car users while about 70 percent of non-car owners are regular customers of public transport or people who prefer walking or cycling. The category of people who mix all modes was the only one consisting of a substantial proportion (20%) of both car owners and non-car owners. Persuading persons with car access to become regular customers of public transport seems to be a rather hopeless task. (Here the group of regular customers of public transport must be understood as it is defined in the study. For example, a person taking a bus to work every day is not necessarily a regular customer of public transport, if he mostly uses some other mode for other trips.) On the other hand, almost a third of car owners were people who mix all modes or people who prefer walking or cycling.

### 3.3 Proportions of mover groups in the various cities

Distinct differences were observed between cities in the shares of mover groups (Figure 4). In the HMA, there were clearly more regular customers of public transport and clearly fewer people who prefer walking or cycling. Compared to other cities, walking and cycling was clearly favoured in Oulu.

The share of heavy car users would seem relatively constant in comparisons of cities while significant differences could be found between different areas within cities. In addition, the results from towns surrounding Turku show that the share of heavy car users doubles or even triples outside city limits.

The greatest differences between cities were observed in the sizes of the groups of regular customers of public transport and people who prefer walking or cycling. The combined share of the two groups was fairly constant, however. Therefore, a lower share of car users can be seen as a result of a high share of people who mix all modes. The share of regular customers of public transport and people who mix all modes is clearly linked to the level of service of public transport.

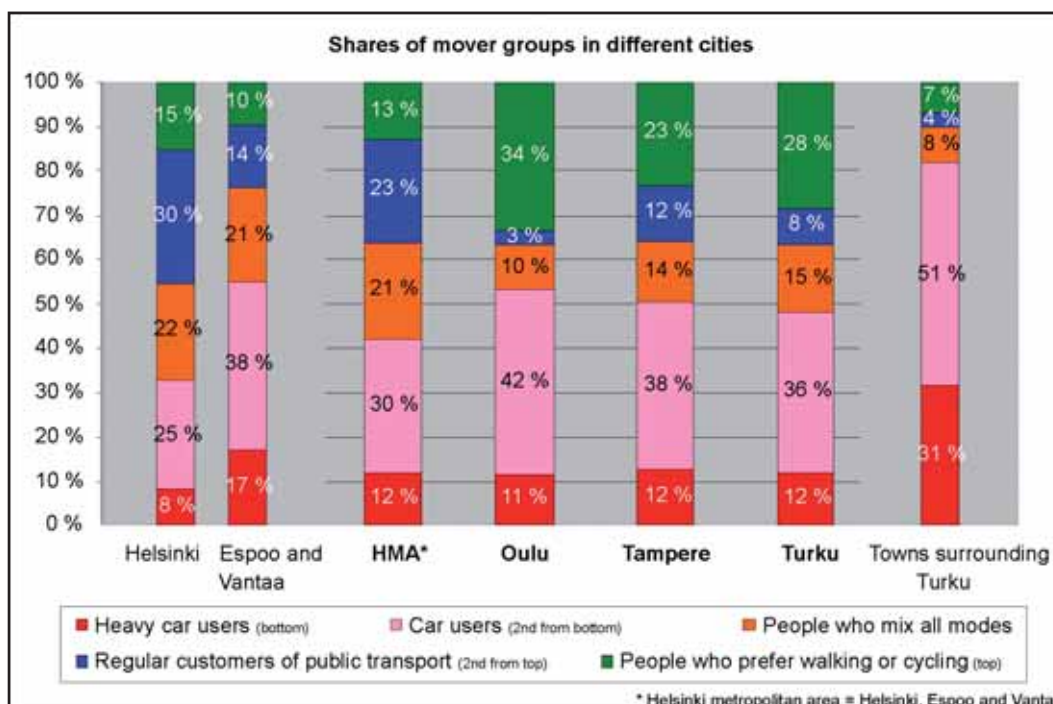


Figure 4: Distribution of mover groups in the HMA (Helsinki, Espoo and Vantaa), Oulu, Tampere and Turku and the towns surrounding Turku.



### 3.4 Opinions of mover groups

Car users and heavy car users held opinions about travel and housing clearly diverging from those of the other three groups. It is worth noticing, however, that this was not the case in all the themes. The opinions of regular customers of public transport, people who prefer walking or cycling and people who mix all modes tended to converge, though not always. Although the opinions of the mover groups differed from each other, the opinions of those in a given group were clearly parallel in all cities.

The exercise obtained from walking and cycling was a strong motive encouraging the use of pedestrian and bicycle transport for all mover groups while environmental factors played a much lesser role in modal choice. Positive marketing highlighting personal benefits may indeed be more effective than appeals to the greater good such as conservation of the environment. The cost of travel was of no significance to car users but did play a role in the choices of other mover groups. Affordable fares are unlikely to attract car users to public transport while existing customers may be driven away by fare hikes.

Heavy car users and, to a certain extent, also car users felt the routes and timetables of public transport did not meet their needs and that public transport was troublesome to use. However, the walking distance to the public transport stop was not too long even for heavy car users. All mover groups felt they could easily find out the routes and timetables of public transport. Regular customers of public transport, people who mix all modes and people who prefer walking or cycling had a very positive view of the level of service of public transport.

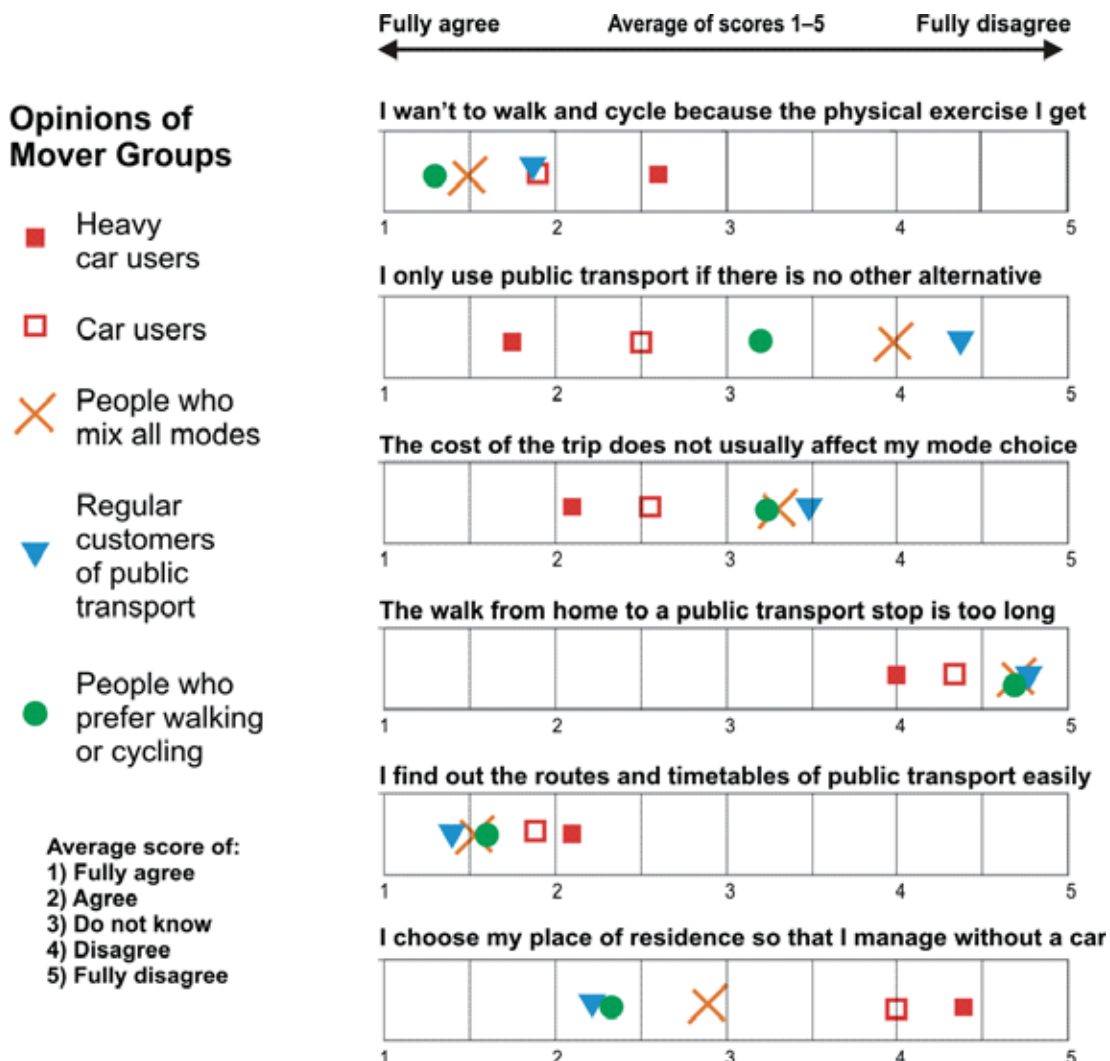


Figure 5: Examples of opinions of mover groups.



### 3.5 The role of cycling and public transport

In Finland the use of bicycle is heavily influenced by winter. Looking at the whole year, bicycle is very seldom a sole primary travel mode. In figure 6 travel modes are analysed based on their usage in summertime only.

One aspect of the role of cycling and public transport is revealed when one compares the use of a travel mode as the only main mode (orange) and the use of a travel mode in conjunction with other modes (dark and light green). Of car users at least two thirds use car as the one and only primary mode. Bicycle and public transport are to a much greater extent used as a secondary mode or together with another primary mode. This is particularly the case for cycling.

Usually a private car is the only travel mode that can alone satisfy all travel needs. Cycling and public transport need much more support from each other and from other modes to provide for all travelling needs.

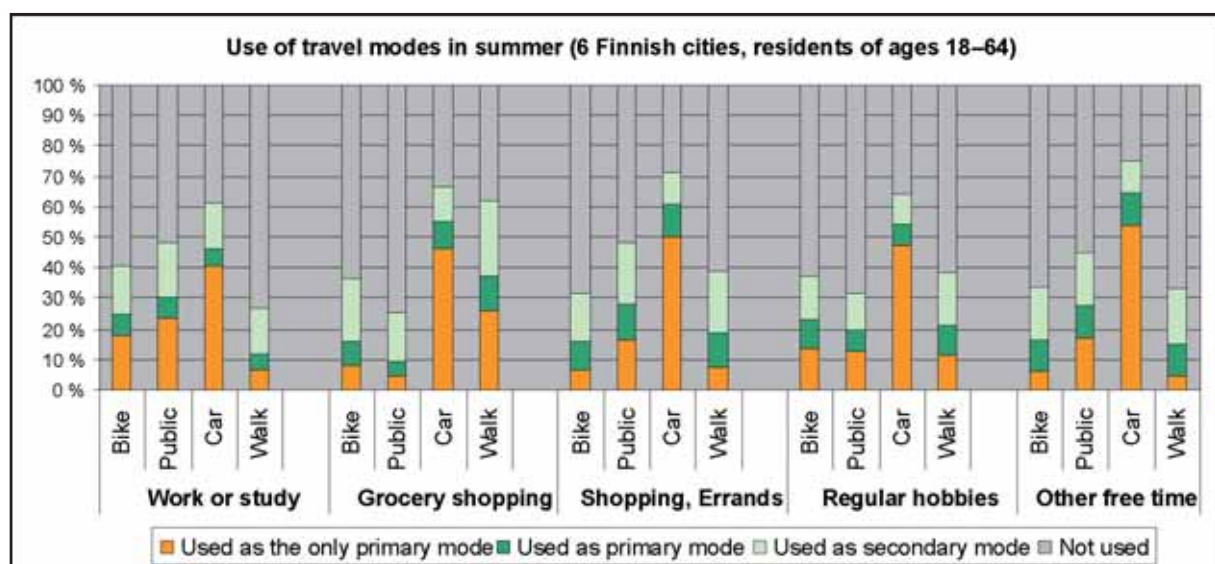


Figure 6: Use of travel modes in different trips in summer as percentage of people using a mode for a certain trip type.

Looking more closely at trips to work we can analyze which travel modes are most often used along with cycling for trips to work. If cycling is a primary mode (but not the only one) the other primary modes are: car 33 %, public transport 20 %, walking 24 % and a combination of many 23 %. If cycling is a secondary mode the primary modes are: car 47 %, public transport 35 %, walking 12 % and a combination of many 6 %.

For trips to work, bicycle is an alternative for car more often than it is an alternative for public transport, but one must bear in mind that the results are difficult to interpret precisely. If there will be more cycling, the resulting reduction in car use will probably be greater than the reduction in public transport use. This depends quite heavily on the overall modal shares of car and public transport, ofcourse.

## 4 Conclusions

The inhabitants of the areas studied used the various travel modes in a diverse manner and were not committed to a single mode. Although commitment to a travel mode almost always involved passenger cars, the majority of car users also used other travel modes as well. The number of car users and people who mix all modes is more than four times higher than that of heavy car users.

Unfortunately there is no reason to expect that current car users could to any substantial degree be persuaded to use public transport only. Instead, the goal of getting as many car users as possible to take a substantial number of their trips by public transport or by walking or cycling is wholly within the realm of possibility. As many as one third of those who usually have access to a car already now belong to a group other than car users or heavy car users.

The level of service of public transport clearly plays a role in the distribution of mover groups. In terms of increasing the share of public transport in the modal split, however, it would be more important to study how each individual mover group perceives the level of service of public transport.

Regular customers of public transport appreciate affordable fares and speed, two attributes commonly used to describe the level of service of public transport. However, these attributes are not attractive to car users, especially when the car is usually the faster alternative and the single fare is higher than the cost of fuel for the trip. It seems likely that car users would appreciate the clarity of the public transport route network, spacious buses or trams with decent seats and other quality-related factors much more than regular customers. In addition to travel time and frequency, increasing attention should be paid to other quality factors and the needs of occasional users of public transport.

Bicycle is an alternative for car more often than it is an alternative for public transport. If there will be more cycling, the resulting reduction in car use will probably be greater than the reduction in public transport use.

Motorisation will continue and increase car usage, yet this development is not unavoidable in all regions, especially in working urban settings. Although the car-free lifestyle is above all dependent on the service level and quality of public transport, walking, cycling and public transport should, to an increasingly degree, be considered as a whole. A combination of sustainable travel modes has the best chances of achieving a mobility service level competitive with the passenger car and thus of supporting both the wholly car-free lifestyle and the sustainable use of cars.

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# **Cycling through the NVP Local Public Transport Plans**

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## **Abstract**

Implementation of cycling strategies by public transport planning? More efficient public transport by bicycle integration?

Current public transport planning considers bicycle issues in different way and emphasis. This is shown by analyses of 45 local NVP (Nahverkehrspläne) and of the Länder legislation. Only few NVP regard cycling to be an important complement of the public transport in a comprehensive way. But caring for bicycle parking at interchanges is common due to state funding for those measures. Dealing with free access for accompanied bicycles in trains and buses is also on the NVP agenda. The recent Berlin NVP shows future perspectives of both modes combined. Its focus is also on the efficiency of the public transport system. Encouraged cycling during peak hour could reduce the workload of feeder buses.

Will an cost-cutting, economising public transport system (combined with busy bicycling) finally affect the short distance services for other target groups like the elderly? Will the Public Transport Executives at least move to inter-modal tasks?

## **1 Introduction Public Transport Planning in Germany**

### **1.1 Recent Challenges**

Since the 1990ies not only the PT in the East German Länder was renewed and reshaped. Also in the western Länder the PT system succeeded to gain more passengers in many regions. Driving force was a reform of the regional railways under Länder rule bringing new operators beside DB German Railways into the market, mainly well funded from the federal level. On local level the operators anticipated pressure from external competitors in future tendering. This is closely linked with the new planning tools for the authorities (PTA) and their executive agencies (PTE) working on behalf of the authorities.

The crisis of municipal budgets since the early year 2000 decade urges not only to improve the efficiency of PT services but also lead to the conclusion that the entire financial system has to be reformed. Most of the complicated “spaghetti-like” PT financial mechanisms with lot of sources, subsidies, temporary programmes etc. run outside the ordinary budgets of the PTA. In rural bus systems the operators get their income mainly from the educational system in order to run a more or less integrated public school transport. In the big cities the PT is financed by the assets of municipal holdings providing water and energy, so it is driven by higher prices for citizens in other public services and by tax cuts in favour of the local holding.

The pressure from the political level to reshape the PT financial mechanisms is linked with a shift from “behind closed doors” decision making towards public council meetings. Integration of the PT expenditures into the ordinary budgets means a new situation to many PT stakeholders. Public expenditures for PT now have to compete with hospital, culture and other spending. Therefore NVP decision making (by the same Councillors who have the budget right) will gain even more importance.

Prosperous regions are facing growing patronage, mainly in the regional trains and stimulated by rising gasoline prize, but also reduced timetables due to cuts of federal funding simultaneously. Some Regions with shrinking number of inhabitants and school children show continuously dropping figures of users, dropping revenues at remaining cost. Concerning future conditions the changing needs from the society have to be considered as well: the potential users “more grey, diverse and shrinking number”.

So what can an increased bicycle use contribute from the PT perspective? Do cycling issues respond to the weaknesses of the urban and regional PT system: heavy load in busy peak hours, lacking usage during weekend and at night time? To what extent therefore the PT sector contributes to encouraging bicycle use (in the way that PT widens the cyclist's range, like the bicycle widens the range on foot)?

## 1.2 NVP Planning

The focus of this meetbike contribution is on the local PT authorities, the political decision makers and their planning experts. Finally they are responsible for all transport modes in their territory. In Germany mostly the service standards of the bus services are defined on Landkreise level (counties, cantons). Mayor cities act as their own authorities for buses, trams and metro. The focus is not on the Regional Railway Authorities in the Länder level (federal states) or their regional PT Executives, mostly a regional collaboration in tariffs and timetables for all public transport simultaneously. The focus is neither on the operator's side, for cycling will not be their companies' mission.

Landkreise and cities concentrate their planning in a Local Public Transport Plan (NVP – Nahverkehrsplan) to be adopted finally by the Councils. NVP content ought to be: analyses of recent PT weaknesses, guidelines and standards, investment programme of the local community. In general the NVP describes the political will how to deal with all relevant PT issues, with quality standards, infrastructure programmes and priorities.

Since 1996 it is formal obligation to set-up an NVP - Nahverkehrsplan for a 5 years period. This bases is needed

- for licensing bus lines (exclusive access for operators to their defined market),
- for contracting operators,
- for decisions on the own infrastructure investment priorities of the PT Authority.

Together with the informal VEP (Verkehrsentwicklungsplan for other modes) the NVP creates the comprehensive strategy compared to LTP planning in the UK and to PDU planning in France.

Figure 1 shows the triangle of the three main parties involved (passenger – PT Authority – operator) and the role of the NVP defining the guidelines for the PT qualities.

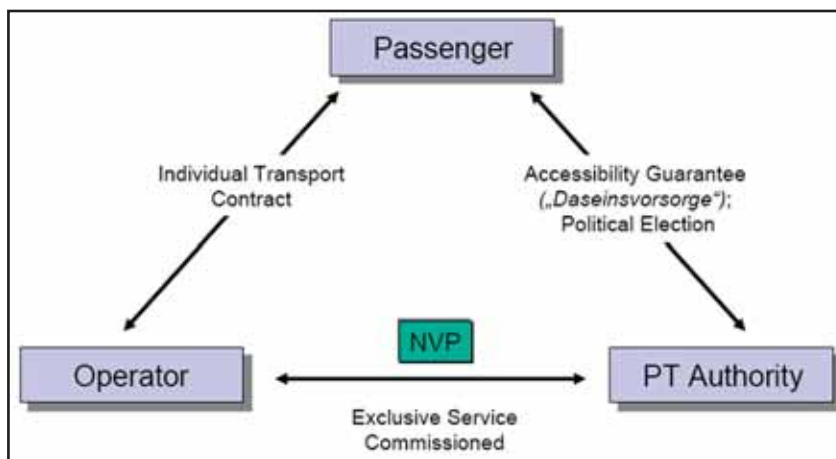


Figure 1: Triangle of the parties involved in PT (after VCD picture)

The perception of cycling in the PT professional community obviously is shifting from „no matter“ via „problem“ towards „solution“:

- Cycling = no matter, some kind of toys or sports
- Cycling = problem to deal with (obstacle in operation, competitor in image, local funding, short distance mobility market)
- Cycling = solution achieving transport policy goals (accessibility for everybody, to substitute car traffic), strengthening the urban transport system.

Does the public transport (PT) sector take bicycle strategies as another public interest into account now? Does bicycle use also play a role in current PT business and decision making, apart from the numerous pilot projects on integrating the two modes? How far has mainstreaming of multimodality achieved in the professional community?

## 2 A View on Regional Legislation and NVP in Germany

### 2.1 Legal Frame Slightly Different by Länder

In the federal share of responsibilities since 1996 the single federal states (Länder) define their PT outside the long distance train services in their PT laws (ÖPNV-G) and programmes. Among the 16 Länder (Hamburg without any PT Law) cycling is no matter in the PT legislation of 6 Länder<sup>12</sup>. The other 9 laws address the bicycle issues in a different way, mostly in the initial paragraphs on the objectives for PT in the state.

Some laws just name bicycle parking for interchange from individual to public transport, partly “if demand exists”, but always combined with the Park and Ride mentioned<sup>13</sup>. Other laws only address cyclists as a PT target group with specific needs (“women, children, elderly, cyclists, handicapped”)<sup>14</sup>.

Only the two “city states” of Bremen and Berlin define an integrated, bicycle inclusive transport system. Bremen names as main objective<sup>15</sup>: “Public transport combined with pedestrians and bicycle transport shall provide a sufficient alternative to motorized individual transport, in interest of environment, public health, road safety, improvement of infrastructure, equal living conditions...”. Additionally Bremen urges for bicycle parking facilities at PT stops. Berlin’s PT law is the only law to name accompanied bicycles in PT<sup>16</sup>: “... This PT service shall consider bicycles, parked and taken with, in an adequate way.”

This selection of Länder only weakly corresponds to the other profiles in transport policy? Those Länder that show more interventions in general PT policy in general are more likely those Länder with bicycle integration into the PT legislation, too. Explicit legislation may perhaps improve the integration on the local level by specific programmes but it will not determine the local NVPs. In one case a NVP quoted the law in the preface (“consider children and accompanying parents, also cyclists in planning...”) but showed no action in the further NVP content on the integration task.

### 2.2 Bicycle Issues in Recent NVPs

Up to now there is no comprehensive scientific evaluation on the recent German NVP generation. The evaluation of an earlier NVP generation<sup>17</sup> had no focus on bicycle integration. Among the 200 to 250 current NVP the quality of the planning will be very different, due to the obligation for setting up one also without a strong political interest on the local level.

Those NVP that were published therefore will be more or less the “better” one. The following sample of current NVP in 21 “urban” and in 24 Landkreise is not representative but was collected by chance: they were selected by easy access of the electronic document via search engine and download. More active Länder in the professional NVP community like Northrhine-Westfalia, Brandenburg and Hesse are more frequently represented than the less active Länder Baden-Wuerttemberg and Bavaria. For NVP analyses the electronic search by a list of keywords (related to integration and bicycle) identified the specific content in the documents. Figure 2 shows how frequent bike issues were found in the NVP from Kreise and city authorities.

Only few NVP in the sample show no matter in cycling (about 10%). Thanks to a federal and Länder programme infrastructure investment support<sup>18</sup> offer high volumes of subsidy, still. In more or less all entities there is a need to define bicycle parking at railway stop locations that are to be renewed or installed for

12 Niedersachsen, Sachsen-Anhalt, Sachsen, Hessen, Saarland, Schleswig-Holstein

13 Rheinland-Pfalz § 3 (6) NVG 1995/2002, Baden-Württemberg § 4 (3) ÖPNVG 1995/2007, Bayern: Art. 3 (2) BayÖPNVG 1996/2007, Thüringen: § 2 (4) ThürÖPNVG (1995), Brandenburg: § 2 (7) ÖPNVG - 1995/2006

14 Nordrhein-Westfalen: § 2 (9) ÖPNVG NRW 1995/2007, Mecklenburg-Vorpommern: § 2 (4,6) ÖPNVG M-V 1995/2006

15 § 2 (4) BremÖPNVG 1995/2003

16 § 2 (2) ÖPNV-G - Landesrecht Berlin 1995/2006

17 HANNAH project, see [www.nahverkehrsplaene.de](http://www.nahverkehrsplaene.de). See also: Derichs, Anka 2002: Nahverkehrspläne im Zeichen der Liberalisierung. Institut für Raumplanung Universität Dortmund (Hg.): Dortmunder Beiträge zur Raumplanung, Verkehr Band 1, Dortmund

18 GVFG – Gemeindeverkehrsfinanzierungsgesetz, legislation for municipal projects’ support, federal funding running out at least 2019



new. Therefore some few locations and according standards for bike + ride seem to be minimum content in NVPs. The accompanied bicycle task is rare in bigger cities but more common in rural areas (e.g. for tourist marketing use). Clear guidelines for that are rare and often restrictions are strict (“Bringing bicycles and other bulky objects into the bus should be made possible after prior announcement and if technically feasible.”). Public bicycles are very rarely mentioned in the NVP (Berlin only)

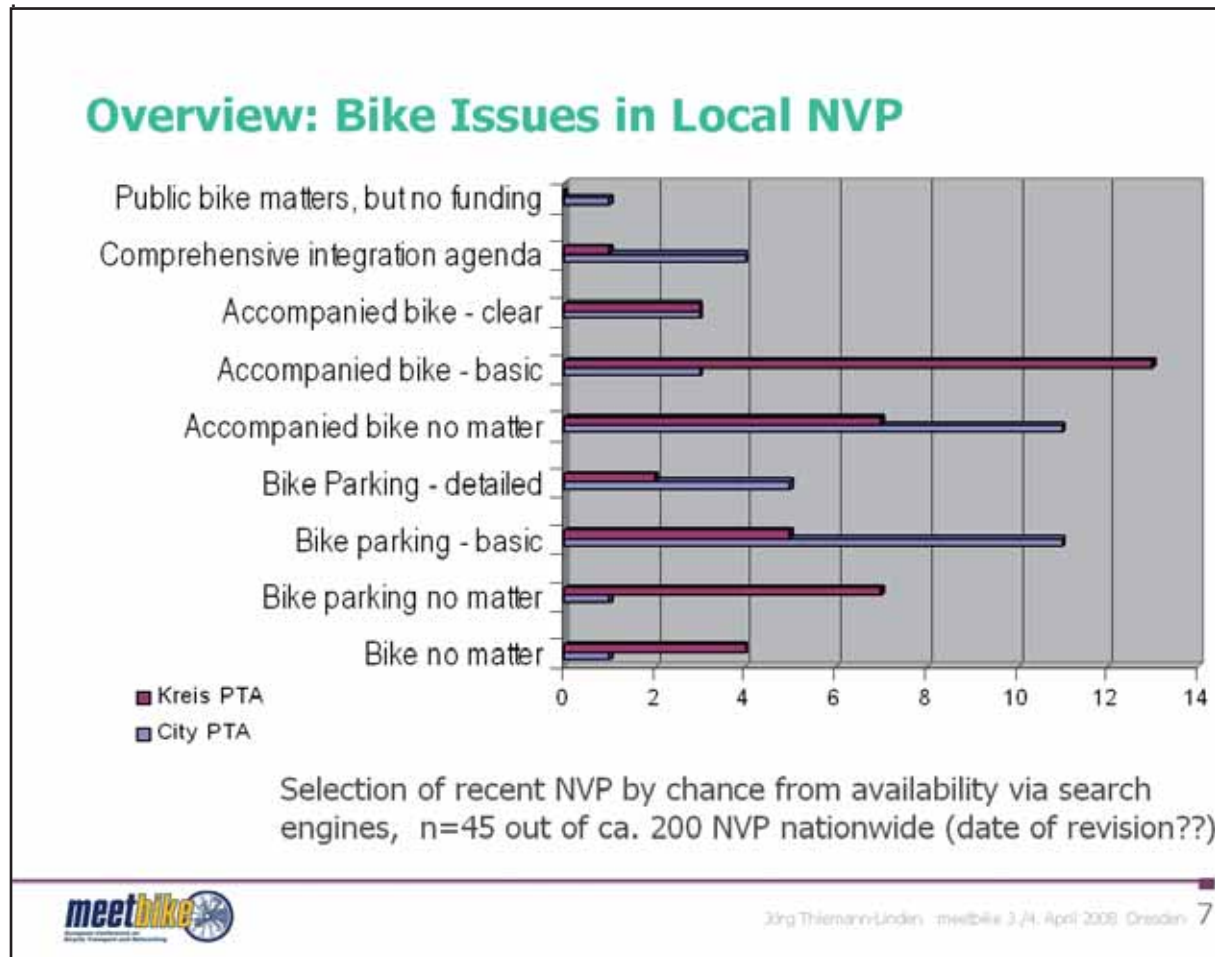


Figure 2: Current NVP overview, with / without bicycle related content

The overview shows only 5 from 45 NVP with a comprehensive agenda on cycling issues. Specific profiles of the “front runner” NVPs are as follows:

- The NVP for the City of **Halle**, Sachsen-Anhalt (235,000 inhabitants, PT based on S-Bahn/ tram/bus) highlights the “ecologically sound combination of modes” (Umweltverbund) by defining the qualities and action for both bike + ride and accompanied bicycle:
  - measures to prevent bicycle theft (by technical and organisation means like guarded parking at the main station)
  - measures to facilitate the rides in the streets to the stations
  - standards of comfort for taking the bicycle into the PT vehicles (ramps, multifunctional space in vehicle)
  - keeping the gratis access at all times in all PT in the region (e.g. debate about vehicles of minor size for demand responsive services).
- The NVP for the City of **Göttingen**, Lower Saxony (120,000 inhabitants, 25.000 students, PT based on buses) takes emphasis in the bus & bicycle issue. Based on a progress report of the previous NVP, all major bus stops in the districts are to be equipped with parking facilities. Modernisation of the big bicycle garage at the main station is another issue. Gratis and unlimited access with the bike into the bus is to be encouraged by passenger information.

- The NVP for Regio **Hannover** (1.1 Mio inhabitants) combines Hannover city (500,000 inhabitants, PT based on S-Bahn/tram/bus) and neighbour towns into a innovative municipal entity. Bicycle is named the optimum complement for PT. A detailed concept for bicycle parking in the Regio within the NVP (locations and standards) shall harmonize the access to PT in the urban region. This also includes locked bicycle garages for collective use at PT stops. Also conditions for taking the bicycle with into PT is to be harmonized as far as feasible to the local conditions. Co-operation with local bicycle retailers is part of a mobility management package “HANNOVERmobil” providing a variety of added value to season ticket holders all over the transport modes.
- The rural **Stormarn** Landkreis, Schleswig-Holstein (225,000 inhabitants) is suburban in its part close to Hamburg. The NVP discusses the modal split effects of strong bicycle use on the PT system within the seasonal circle. Gratis travel for the bikes in all Schleswig-Holstein PT shall be kept. The bike + ride programme includes garages at stations and makes a point of the access quality on the way to the stations (referring to standards of road cycling facilities).

### 2.3 Bicycle & PT Integration in the Berlin NVP 2006-2009

The “capital city state” of Berlin (3.4 Mio inhabitants) updated the NVP<sup>19</sup> with a new philosophy on cycling integration, well adapted to the low motorization and the decentralized but compact city shape. Since the 1950ies some sprawled districts in the periphery use bicycles to the S-Bahn stations, at poor bus service in these areas. Since the late 1980ies free bicycles in S-Bahn for holders of the so called “environment season ticket” stimulated to bring an enormous number of bicycles into the S-Bahn. The wide spread, decentralized shape of Berlin with a dense local railway system (a bit oversized from former decades) allows to find about 20,000 bicycles per day in public transport vehicles. Today 8% of all bicycle trips are combined with parking at PT stops, another 2% are with bicycle in the train. In international comparison the Berlin situation is unique. Also outside Berlin the high number of leisure cyclists strengthens the efficiency of minor local railways during weekend.

The NVP acknowledges the bicycle’s role for efficient PT and the public interests like the moving and safeguarding of Berlin’s competitiveness (e.g. avoiding congestion, less dependent from energy prizes, option to substitute car traffic in large quantity, optimum accessibility to get to jobs in industrial areas). The ambitious cycling strategy was combined with the NVP update under the umbrella transport strategy of StEP-Verkehr within the Berlin Senate Administration for Urban Development, Environment and Transport (SenStadt) in 2006. This was encouraged by the successful mobility management for the FIFA World Cup 2006 event, especially the fan miles (car and congestion free with up to 1 Mio visitors, based on cycling, walking, high capacity PT).

The new bike & PT strategy in the NVP is based on the individual advantages for the user, in order to achieve effects for the environment. Consequently it covers all kind of task and measure:

- quality of roads to station
- parking facilities
- tariff system
- access to platforms without physical barriers
- passenger information
- bicycle transport in the night busses (outside the weekends substitute for the 24 h metro service).

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19 SenStadt - Senatsverwaltung für Stadtentwicklung, Land Berlin (2007): Nahverkehrsplan für das Land Berlin 2006-2009. Available electronic file: [http://www.stadtentwicklung.berlin.de/verkehr/nahverkehrsplan/download/nahverkehrsplan\\_2006-2009.pdf](http://www.stadtentwicklung.berlin.de/verkehr/nahverkehrsplan/download/nahverkehrsplan_2006-2009.pdf)

Within the mobility chain from doorstep to doorstep also the first chain link is discussed: how to deal with the crucial parking facilities in the multistory housing. This is addressed in the NVP but without an adequate approach, yet. The DB directed bike rental system “Call a bike” is appreciated by the PTA but any financial request from this private business towards the city budget is objected. Support shall come from the cities mobility management heading for multimodal “integrated services” (example of HAN-NOVERmobil).

Federal and Länder legislation for equal accessibility rights of the handicapped (2002) requires specific participation in the NVP procedure. Cyclist can profit from this process by getting better access to platforms and low-floor vehicles. Figure 3 shows the state of the barrier free network of urban railways, but with some branches without ramps or escalators still lacking.



Figure 3: Metro / S-Bahn stations and network accessible barrier free (NVP Berlin 2006-2009)

One NVP focus for the future is on bicycle and the morning peak hour, that is crucial for the economy of the PT system. High bike + ride use, parallel to the feeder buses, can reduce their workload, especially with a high number of school children involved. S-Bahn and metro are not regarded a bottleneck of the system. The integrated tariff system profit from this combination: same ticket revenues for the long distance, but less costs to provide the first mile from the doorstep. Marketing on neighbourhood level in favour for cycling to PT is part of the NVP goals, also integration of the stations into the current cycle route signposting programme.

### 3 Contributions from Cycling to face the Challenges in the Public Transport Sector

#### 3.1 Perspectives for an Economising Public Transport

In times of shrinking public budgets the importance of the bicycle has grown in order to contribute to a efficient PT system, mainly by reducing the workload of the PT feeders during the peak hours. The poor performance of public school buses in the rural regions is another reason to develop alternatives for those who could also use the bicycle instead of the bus.

The coarsely meshed network at low service frequency, during evening / night hours and during week-end, is another challenge. During these periods - at lower passenger numbers - will the accompanied bicycle contribute to close the gaps in the chain another time?

In Germany there is only rare experience on coherent strategies including incentives and including the adequate infrastructure. In the Netherlands the high rate of commuters' cycling from arrival station to the final destination (city center, schools, periphery industrial areas) shows the perspective for Germany as well, e.g. for an evolved system comparable to the Dutch PT bike (OVfiets).

Easy access to industrial locations without an own car is condition to defeat unemployment especially in rural regions. Industrial estates mostly are located in the periphery of the towns, a few kilometers remote from the central bus stop. Needed infrastructure would be the overnight parking facility for the 2nd bike (box) close to the central bus stop.

In several German regions the gratis ride of bicycles in regional trains has become common. In the rural Land Saxonia-Anhalt since many years bike transport in trains is free. The daily activity patterns of the young rural population were adapted to that service. Accompanied bike widens the area "within reach" without an own car.

### **3.2 Economising PT at any cost? Conflicting Goals**

First we have to anticipate that busy bike use means less continuity in the PT demand (during summer / winter, also rainy periods). This might lead to more differentiation of summer / winter timetables and will need more flexibility to arrange the capacities.

If all this bicycle & PT combination would be put into practice there will remain passengers not able or willing to bicycle for any reasons. Elderly with physical restraints and others at low travel horizon, also guests coming from outside, need short walking distances to bus stops. To what extent will an economising bicycle oriented PT network restrict the accessibility for those target groups? Will high bicycle use hinder an efficient short distance service at good coverage of the area?

Already today the NVP have to deal with the conflicting goals that the timetable volumes in the NVP cannot be spent twice: for the commuters in peak over long distances and for a dense coverage of the housing areas to provide short walking access. Finally it is up to the NVP to deal with the fine grained accessibility (for elderly passengers) and the coarse grained network (for cycling passengers).

How can a better compatibility then be achieved by innovative services? Since some years there is new experience for mid-sized towns, suburbs and rural communities on new services during off-peak periods. Projects show potential complements to Bike & PT in numerous German regions, coming from

- frequent short-distance Town Buses ("Stadtbusse"),
- Demand Responsive Services (Bedarfsverkehre) like TaxiBus etc.
- voluntary neighbourhood services (Bürgerbusse).

### **3.3 In Future More Intermodal Transport Authorities and Executives?**

Recent discussion on PT budgets will probably lead to less subsidy volumes but more freedom of choice on the local level to spend the public money. By removing some fiscal obstacles the local authorities can identify and decide on their own solutions outside the matured subsidy schemes. First Länder already started pooling the school transport money and other subsidies at the local authorities. Will this finally lead to programmes for combined PT and bicycle mobility, including mobility management activities?

Some PTE introduced bike routing and navigation tools into their web portals (Radroutenplaner), more or less linked with the electronic timetables (see Stuttgart and Berlin examples). Transport plans offer multimodal solutions for industrial estates and schools. City centers and other shopping / leisure locations could put emphasis on multi-modal "accessibility marketing".

Regional agencies founded to encourage cycling are still rare and mostly poorly funded. But first innovation on the institutional level shows PT bodies also taking care for their cycling customers. In order to strengthen the rural rail network Regional PTE in the Bielefeld Region introduced the "RailCycleRoute"

network<sup>20</sup> at own initiative. Signposting and maps show cyclists the recreational cycle routes in narrow corridor with local railway routes. For users this offers multiple options simply to switch the modes according to spontaneous needs - or return home by train. Main objective is to attract more passengers into the local trains during weekends.

In the Frankfurt region the first regional body for integration of PT and road issues was established. The IVM GmbH Agency co-ordinates several management fields of traffic, mobility, infrastructure and data provision. It works complementary to the regional PT Executive RMV and the Hesse Road Authority based on a general contract. IVM itself is owned by the major municipalities, the region and the Hesse State Transport Ministry.

### **3.4 Conclusions for Users and the Economy**

Accompanied bike is still far from being comfortable for the single user. Only few conflicts with other passengers are reported when the single PT driver has to decide. Good results from free use and flexible time regulations were experiences in the long run. There is no proper evaluation yet to what extent some oversized PT capacity is a condition for high numbers of bikes in the trains like in Berlin.

A more efficient PT system is likely (but not evaluated yet) by more cyclists travelling towards – in – parallel to PT services: Bike use (parked at stations or accompanied in rolling stock) is widening the range of PT stops. Busy bike use to stations under German conditions of integrated tariffs does not affect the tariff revenues. But it reduces the work load during morning peak hour and it substitutes the costs for feeder service capacity.

Concerning the conflicting goals between cyclists and the needs of the elderly with physical handicap: It is up to the local NVP planner to balance the available timetable volumes according to the public interests at local level.

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20 VVOWL – Verkehrsverbund Ostwestfalen-Lippe: BahnRadRouten



## **Integrated Promotion of Bike-and-Ride-Facilities in Munich and its Surroundings**

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### **Abstract**

In the City of Munich with its 1.3 million residents and an additional 360,000 commuters per day urban development and traffic planning follow the motto “compact –urban-green”. That means a minimal space consumption, high urban quality and green areas next to the housing areas. Accordingly, transport planning has been promoting walking and cycling for many years. When travelling longer distances cycling can be combined with Munich’s very good public transport system. At the moment there are approximately 21,000 bike&ride parking racks at most of the metropolitan train stops and railway stations throughout the city. In the surroundings there are another 26,000 bike&ride facilities. 8% of the customers of public transport normally use the bicycle on their way to the station. This percentage has been increasing continuously over the last years.

More and more people are living in the surroundings, where it isn’t possible to establish a powerful public transport system within walking distance. Therefore the combination of different means of transportation is becoming more important. During the last twenty years there have been made great efforts constructing park&ride facilities for car drivers in the outer city districts and the surroundings. This is expensive in construction and maintenance. Also it is becoming more and more difficult because of the high land prices around the stations and the opposition of residents against additional car traffic caused by park&ride users. The City of Munich aims for a sufficient number of comfortable bike&ride facilities to offer commuters an alternative to park&ride and promotes the extension of comfortable bike&ride facilities not only in the city, but additionally in the surroundings. Other communities can get 20% of the construction costs for new bicycle racks from the City of Munich. More than 3300 bike&ride facilities at 17 railway stations have been promoted since 2001.

For an efficient promotion of bicycle traffic, especially for commuters, the committee “Bicycle and Public Transport” was founded in May 2007: Experts of the Technical University, the City of Munich, the public transport authorities, representatives of the region, and cycling and environmental associations are discussing topics like construction and maintenance of bike&ride facilities, modalities of carrying bicycles in public transport or establishing a system of rent bikes for commuters and tourists. The first projects will be a handbook bike&ride for communities around Munich and a concept to deal with the problem of “left bikes” occupying bike&ride facilities.

### **1 Some Facts about Munich and Its Surroundings**

Munich has more than 1.3 million residents, in the surrounding communities there are living another 1.2 million people. 360,000 commuters come into the city every day.

The local transport authority MVV is responsible for public transport by regional and suburban trains, underground, tramway, regional and city buses in Munich and 13 surrounding “Landkreisen” (counties). In 2006, 30% of the commuters travelling into the City of Munich used means of public transport.

The region of Munich will continue to grow both in terms of its population and employment. Inhabitants and jobs in the surrounding communities are expected to increase more than in the city.

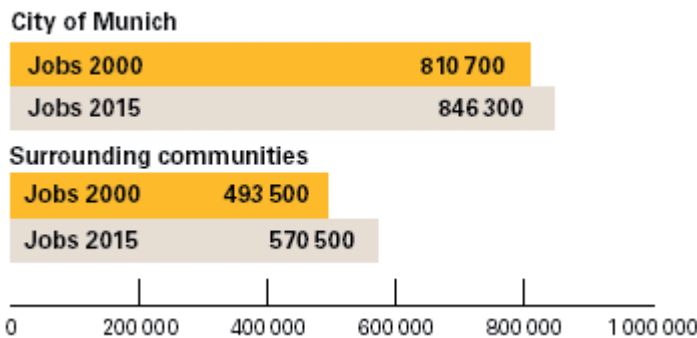
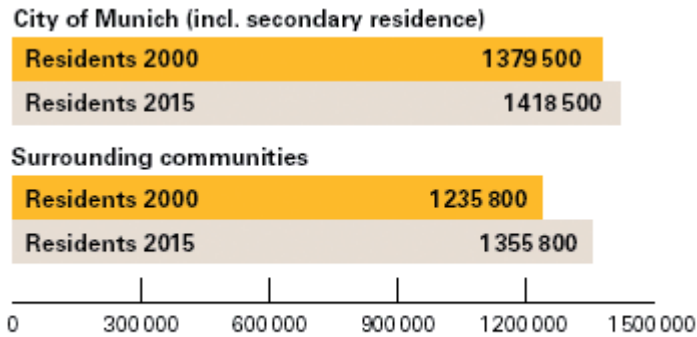


Figure 1: Development of residents and jobs in Munich and surroundings

## 2 Traffic Planning in Munich

In order to secure the quality of city living, Munich's urban development planning follows the motto "compact – urban – green". New housing development areas are established within walking-distance to suburban train and underground stations. These high-density developments do not only provide space for apartments, but also for workplaces and shopping facilities. At the same time, residents should have access to large, interconnected parklands and green spaces in close proximity to their homes. The aim is to create a lively urban mixture of living, working, everyday amenities, as well as leisure time and local recreation facilities.

Munich's Transport Development Plan, approved in 2006, aims to reduce traffic or to shift car traffic towards ecologically sustainable means of transport as travelling by foot, bike and public transport. The public transport system has been extended continuously during the last decades.

People often use means of public transport on the way to the city when they expect, that there is no parking or no parking free of charge. Therefore, parking space management plays a major role in reducing traffic problems in the city. As a success, traffic into the inner city declined from 93,000 motorvehicles a day in 1993 to 83,000 in 2003, while motorised traffic passing the city limits increased from 449,000 a day up to 506,000 a day.

Since 1986, the City of Munich has supported cycling via its own "Transport Development Plan – Bicycle Traffic" (VEP-R). Distances up to five kilometers make up more than 60% of trips in Munich. Traffic planning wants to rise the percentage of trips done by bicycle from about 10% in 2002 up to 15% in 2015.

## 3 Promotion of B+R-Facilities

8% of the customers of public transport in the MVV region normally use the bicycle on their way to the station, 10% go there by car or motorcycle. In the surrounding communities there are 10% bicycle users, but 18% go by car or motorcycle, including transport to the station without parking a car there („kiss&ride“). Both percentages have been rising during the last years.

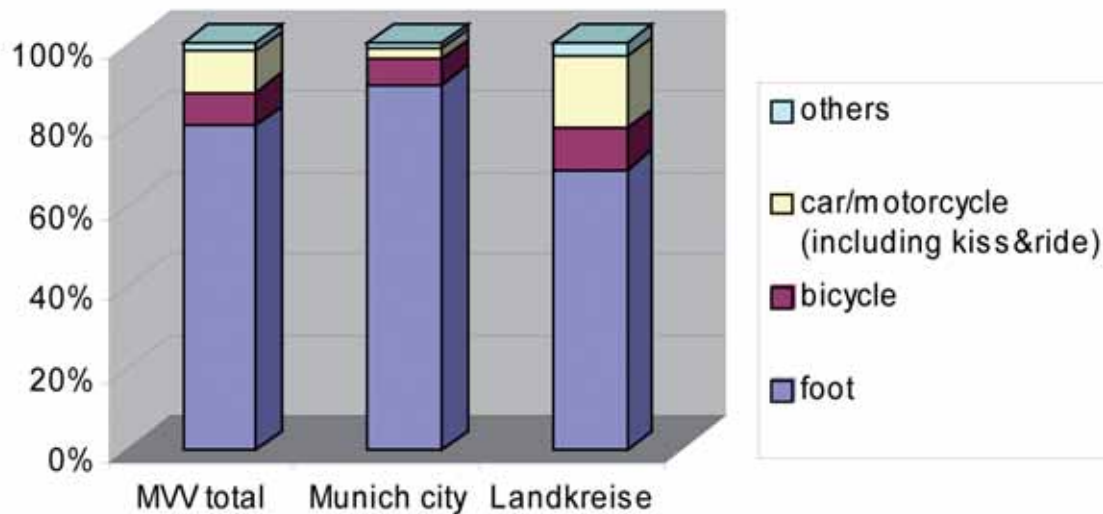


Figure 2: Modal split on the way to the station (MVV, 2006)

At the moment there are approximately 21,000 bike&ride parking racks at most of the metropolitan train stops and railway stations throughout the city. In the surroundings there are another 26,000 bike&ride facilities. The number of racks has been increased during the last years, but at many stations space limitations do not allow for any further expansions. Furthermore, it is important especially in winter time to offer covered racks. For that reasons, as part of the research project MOBINET, a two-storey parking facility for 280 bicycles was established at Munich's underground train station Kieferngarten in 2003. For better protection against theft and vandalism, a section of the parking facility is locked by a door, that can only be opened with an electronic key. Following the positive experience with this building, additional two-storey bicycle parking facilities will be erected at other popular train stops and railway stations in the future.

More and more people are living in the surroundings, where it isn't possible to establish a public transport system within walking distance. Therefore, the combination of different means of transportation is becoming more important. During the last twenty years there have been made great efforts constructing park&ride facilities for car drivers in the outer city and the surroundings. This is expensive in construction and maintenance. Also it is becoming more and more difficult because of the high land prices around the stations and the opposition of residents against additional car traffic by park&ride users. A sufficient number of comfortable bike&ride facilities can be an alternative to park and ride. Experiences of the research project MOBINET show that most of the B+R users especially at the urban outskirts or in the surroundings could use a car alternatively.

At the moment there is an additional demand of ca. 8,000 B+R facilities.

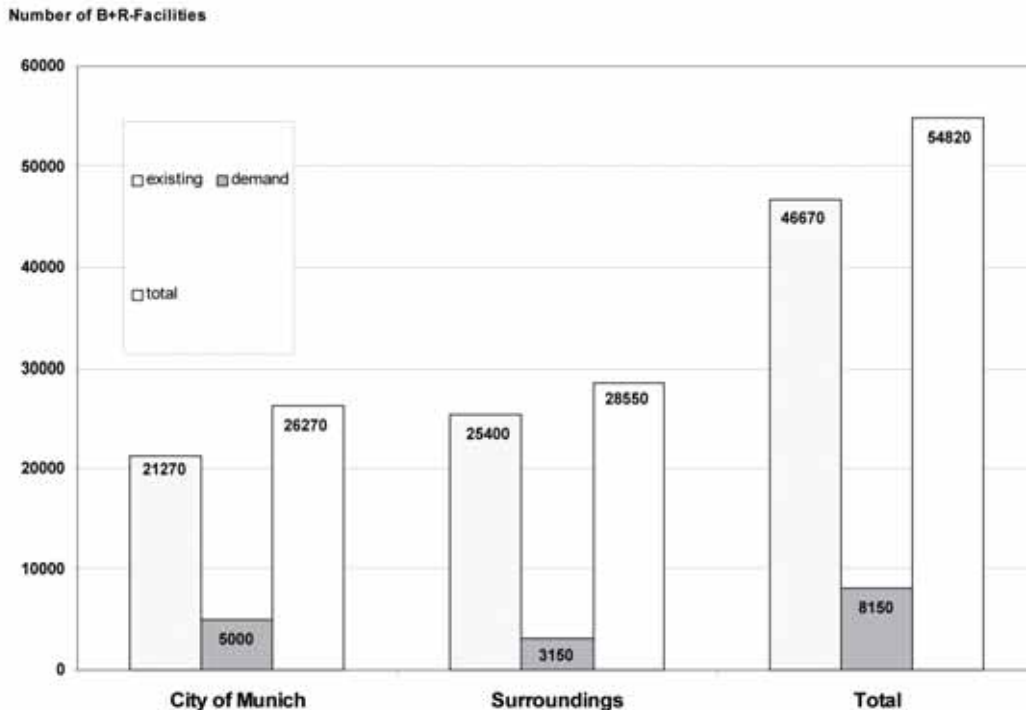


Figure 3: B+R facilities in Munich and surroundings (2005)

## 4 Cooperation between City and Surroundings Promoting Bicycle Traffic

### 4.1 Financial Support

The City of Munich aims for a sufficient number of comfortable bike&ride facilities to offer commuters an alternative to park&ride and promotes the extension of comfortable bike&ride facilities not only in the city, but additionally in the surroundings. Other communities or investors can get 20% of the construction costs for new bicycle racks from the City of Munich – additionally to the means given by the federal state of Bavaria („GVFG“ and „FAG“).

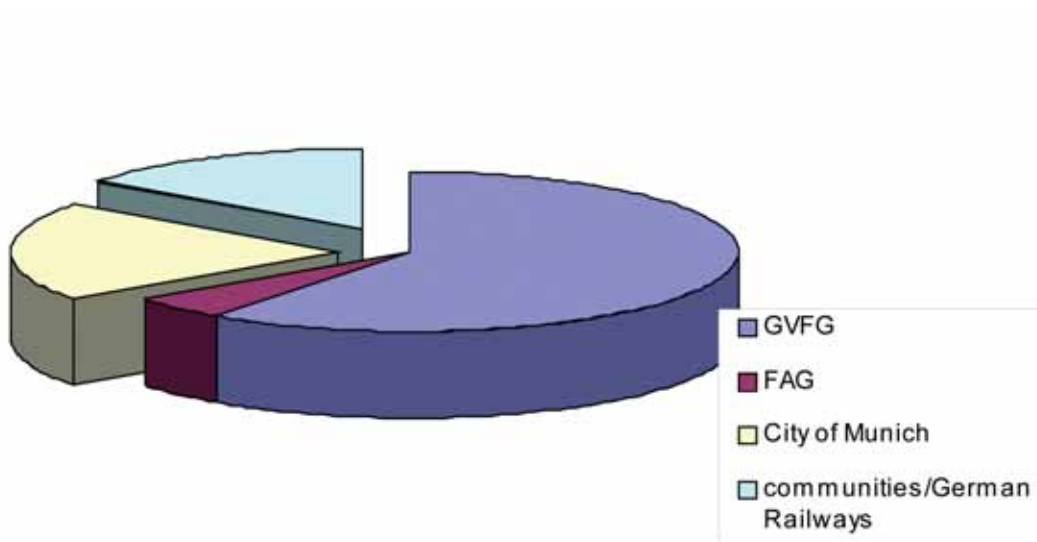


Figure 4: Financial Support

The money is taken from a municipal planning charge payable when a development provides less than the required number of parking spaces („Stellplatzabläse“), especially in the city center.

More than 3,000 bike&ride facilities at 17 railway stations have been promoted since 2001.

## **4.2 The Committee „Bicycle and Public Transport“ within the „INZELL-Initiative“**

The association „INZELL-Initiative“ was founded in 1995 by the enterprise BMW AG and the City of Munich to solve traffic problems of the Munich region corporately. Representatives of the surrounding communities, associations and institutions involved in traffic topics are working together regularly in 5 forums with subsidiary working groups.

As part of the forum „Public Transport“ the Committee „Bicycle and Public Transport“ was founded in May 2007. Members are organisations dealing with the topic bicycle and public transport in Munich and its surroundings:

- Technical University of Munich, Institute for Transportation
- Public transport authorities (MVV, MVG)
- City of Munich
- „P+R GmbH“, an enterprise owned by the City of Munich, responsible for maintenance and supervision of all P+R facilities and some B+R facilities in the municipal area
- Bavarian ministry for Economy and Transport
- Regional planning association (RPV)
- German cycling association (ADFC)
- Environmental associations
- BMW enterprise as member of „INZELL initiative“

The committee meets about bimonthly.

### **4.2.1 Problems**

- Because of the great success of Munich's public transport system, there is no capacity for carrying bicycles in the trains during the rush hours on working days in the morning and in the afternoon.
- Many bicycles are left in the bike&ride racks occupying up to 20 percent of the capacity. It is very difficult to decide, if a bicycle is left by its owner and can be removed by the authorities.
- Lack of space at many railway stations often do not allow any further expansions of the existing bike&ride facilities according to the demand.
- Cooperation with the German Railways (Deutsche Bahn AG), responsible for most of the ground near the stations, is often difficult.
- The City of Munich or any other institution can not build bike&ride facilities in surrounding communities, because communities are exclusively responsible for their building regulations.

### **4.2.2 Aims**

- Development of a handbook for surrounding communities to help them promoting bike&ride

The handbook should be submitted in 2008 to all surrounding community administrations where railway stations are situated. It shall give advice concerning the following topics:

- Situation of B+R facilities at the station, integration into the routing network
  - Required number of racks
  - Construction quality and standards
  - Construction costs, financial support
  - Legal aspects
  - Maintenance, removal of „left bikes“
  - Local marketing
  - Contact, addresses, links, literature
- 
- Improvement and standardisation of the handling of „left bikes“.



In the municipal area, the P+R GmbH and the City of Munich are responsible for the removal of „left bikes“. For legal reasons, it is very difficult to decide, if a bicycle in fact is given up by its owner. Especially when a bicycle is not seriously damaged, it is necessary to cooperate with the police. The owners have to be informed clearly before the bicycles are removed by the authorities. It is useful to take photographs of every bicycle that should be removed. After removal, a bicycle must be stored for several months to enable the owner to get it back.

- Advertising for bike&ride in the surroundings

P&R facilities are visible and often signposted. Additionally, the topic has been discussed on several occasions during the last years. Most people know about P&R facilities. Advertising especially in the surroundings is necessary to promote awareness of the possibilities given by B&R, the situation and the quality of the facilities.

- Promotion of bicycle rental systems as an alternative to B&R or carrying bicycles in public transport

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## **Bicycle parking facilities at railway stations, is it worth investing in?**

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### **Abstract**

The bicycle is the most commonly used mode of transport to get from home to the railway station in the Netherlands, far more used than the car. For this reason, Dutch rail operators invest in monitoring and improving the bicycle parking facilities at railway stations. This paper looks in detail on different aspects of the provision and use of bicycle parking facilities at Dutch railway stations using data provided by the Dutch rail infrastructure company. The analysis is focused on the following: a) demand for versus supply of bicycle parking at railway stations, b) the use of available parking capacity over time, when capacity is unchanged and when it is changed and c) the effect of changes in bicycle parking capacity on rail passengers' overall satisfaction with the rail journey.

The picture emerging from the analysis is complex. The occupancy rate of the official parking at the station is relatively high, and any increase in capacity is absorbed by a proportional increase in the use of the parking facilities, but still many cyclists chose to not use the official parking facilities even if these are far from full. While a statistically significant increase in passengers' satisfaction with the parking facilities is detected following an increase in the bicycle parking capacity, it did not translate to a statistically significant increase in the overall satisfaction of passengers with the rail journey. For policy makers and rail operators this presents a challenge with respect to managing bicycle parking at railway stations and especially with respect to making investments towards increasing this capacity. The research is part of the IBRAM project (Integration Between Rail and Access-to-railway-stations Modes) funded by an EU Marie Curie Fellowship.

### **1 Introduction**

Bicycle is the most commonly used mode of transport to access railway stations from home in the Netherlands. Almost 40% of passengers choose this option and the share increases to over 45% if the distance to the station is less than 3 km. It remains over 20% if the distance is greater than 3 km. When the railway station is accessed at the activity end of the journey the use of the bicycle drops to third place with about 10% share, compared with about 50% for walking and 30% for public transport. This modal share on access to railway stations in the Netherlands appears to be relatively stable over time (see Rietveld (2000) and Givoni and Rietveld (2007) for more details).

With the focus in transport policy increasingly on achieving a more sustainable transport, promotion of bicycle use becomes an important aim. The main reason for this is the environmental benefits associated with bicycle use as opposed to motorized transport alternatives. For policy makers, an important advantage of the bicycle is that bicycle parking does not usually necessitate special arrangements as it can, and often is, done ad hoc. This however does not hold for places and situations where hundreds of cyclists need to find a (safe) parking place in one location and often at similar times of the day. In such situations bicycle parking becomes a real issue. Such situations exist in most of the Dutch railway stations, where it is expected that the availability and quality of the bicycle parking facilities will be an important factor in the choice of to use bicycle to arrive at the railway station and even in the choice of whether to use rail or alternatives for the journey. This observation is the main motivation for this research.

The fact that in the Netherlands bicycle use is so common makes it suitable to examine the affect of parking facilities, since in most other countries there will be other elements which will determine bicycle use as an access mode to the railway station. For example, Gatersleben and Appleton (2007) found that in the UK the majority of people have never even contemplated cycling.

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Most of the research on bicycle facilities focus the attention to the on-road facilities, the bicycle lanes (or their absence) and their characteristics. Parking usually attracts less attention (see for example Hopkinson and Wardman, 1996; Ortuzar et al., 2000; Tilahun et al., 2007; and Wardman et al., 2007) probably due to the nature of bicycle parking described above. But, as noted, this does not hold anymore in the case of parking at Dutch railway stations, which makes it an important subject for research. In addition, the data used for this research is normally not available and this provides an opportunity to examine the subject at the network level.

The rest of the paper is structured as follows. In section 2 the data available for the analysis is described. In section 3 the bicycle parking situation across the Dutch rail network is described, looking at the supply of parking capacity and how it is actually used. The analysis also investigates how the use of available capacity is changing over time and how it is changing following changes to the parking capacity. In section 4 the analysis investigates if changes in the bicycle parking capacity change passengers' satisfaction with the rail journey. In Section 5 conclusions are drawn with respect to the question if investing in bicycle parking at railway stations is worthwhile.

## 2 Data

The analysis described below is based on a survey of bicycle parking situation at Dutch railway station carried out by Dutch rail infrastructure company, Pro-rail. The data available include 728 observations across 224 stations surveyed between 2001 and 2006. There are just over 350 railway stations on the Dutch rail network and therefore the database provides a good representation of the network, also since it includes stations from across the network and of different sizes (with respect to rail services and bicycle parking capacity). In terms of bicycle parking, the largest station in database is Leiden, with an average of 5560 parking places for the years surveyed, and the smallest is Soest, with only 8 places. 19 stations have bicycle parking capacity of over 1000 places, 61 have a capacity of between 500 and 100 places, 101 have a capacity of between 100 and 500 places, and 43 stations in the database have a capacity of fewer than 100 places. The majority of observations are from 2006 (218 observations) and 2004 (201) followed by 2005 (133) and 2003 (101). The survey takes place through visits to the stations during day time and on week days only.

For each visit to the station data were recorded for the number of parking spaces provided at the station by the station operator (nearby parking can be provided by, for example, the local authority and used by rail passengers but this is not accounted for in measuring the capacity). In addition, the use of the parking facilities is recorded by counting the number of bicycles parked at the station parking facilities, those parked around the bicycle parking (in the vicinity but not using the capacity) and bicycle parked elsewhere (e.g. in facilities not provided by the station operator). For each of these types of parking the number of bicycle wrecks at the time of survey was also recorded.

For each station there is no more than visit per year. Since the actual use of the parking facilities may vary from one day to another and for different reasons, e.g. due to weather conditions or time of the year, this is a limitation for the analysis. Across all the stations in the database such variation would probably cancel out when averages are taken. Also the date on which the visit to the station took place is not available.

One of the aims of the analysis is to investigate changes in the use of the station parking facilities after the capacity of these have changed. An obstacle for the analysis, in this respect, is that the process of increasing (substantially) the parking capacity takes long time and is often done in stages, during which the actual available capacity might be reduced drastically as some parking areas are closed<sup>22</sup>. The data do not provide information on when changes to the bicycle parking facilities were completed (with the exception of only several stations).

The above aims to put the analysis in the context of the data available and to highlight some of its inherent limitations. Since such data is seldom available the analysis described below remains valuable.

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22 At the large railway stations, investments in improving and expanding the bicycle parking facilities might include moving them underground, or at least indoors.

### 3 The use of bicycle parking facilities at Dutch railway stations

Table 1 presents an overview of the bicycle parking situation at the Dutch railway stations included in the database. The number of bicycle “wrecks” occupying available parking capacity is very low and does not seem to be a problem in any way. This suggests to an effective control and removal of these bicycles. Similar situation was also recorded by Sherwin (2008) in a survey of Bristol’s main railway station. The remainder of the analysis therefore ignores these bicycles.

Bicycle parking capacity	N	Occupancy rate*		Percentage of total bicycle counted		
		Bicycles in parking	All bicycles counted	Outside station parking	Outside station parking (if LF** > 75%)	Bicycle wrecks
All stations	728	78%	104%	22%	20%	1%
> 1000	41	90%	116%	22%	19%	1%
500-1000	162	83%	108%	21%	19%	1%
100-500	350	77%	101%	20%	19%	1%
< 100	175	71%	106%	25%	25%	2%

\* With respect to the parking capacity provided by the station operator

\*\* LF = Load Factor/Occupancy rate

Table 1: Bicycle parking situation across the stations in the database

Across the observations, the percentage of parking capacity provided by the station operator and occupied by bicycles stands at 78% (standard deviation 19%). The occupancy rate of the available capacity is highest in the largest stations (with more than 1000 parking places) and stands at 90%. It is lower the smaller the stations are, with 71% occupancy rate for stations with parking capacity of less than 100 places. Although the occupancy rate of the available parking capacity is less than 80%, over 20% (and standard deviation of 17%) of the bicycles counted in each station were parked outside the official station parking. Most of these bicycles (17% across the observations) were parked around the official station’s bicycle parking facilities and not in an official parking facility/space and the remaining (5%) were parked in parking supplied by other bodies, e.g. the local authority. The occupancy rates reported in Table 1 suggests that already when the official railway station parking is 70% full cyclists view it as full and use alternatives. This is evident from the high occupancy rate when accounting for all the bicycles parked in the station area. It seems that at occupancy rates higher than 70% the effort to find a free place is considered too great in comparison to just finding somewhere else to park. Across all the categories of parking sizes, there is more than 25% difference between the occupancy rate when accounting for all the bicycles and only those using the station parking facilities. Thus, about the same share of cyclists chose to park not in the official parking when their occupancy rate is 90% and 77%. Surprisingly, for the stations with the smallest parking capacity the difference is even larger (35%) although these stations have the lowest occupancy rate for the official parking. The fact that there is almost no difference in the percentage of bicycles parked outside the official parking when accounting only for the station with an occupancy rate higher than 75% suggests that in even lower occupancy rate than 75% cyclists consider the parking to be full and are not trying to find a place in the official parking space. One plausible explanation for the above is that many cyclists find the location of the official parking unfavorable with respect to the station’s platforms and therefore opt for a more convenient location.

In most of the stations where an observation for more than one year was available the bicycle parking capacity remained unchanged. This allows investigating patterns in bicycle parking use over time. In 171 the bicycle parking capacity provided by the station operator remained the same, for more than one visit (visits were not always in consecutive years). For these stations, 624 observations are available for the years 2001 to 2006. Only for some stations observations for all the years are available and on average there are more than three observations for each station. In these stations there were, on average, 331 parking places provided at the station, 271 bicycles using it, 60 bicycles parked not in parking facilities

and 17 parked in parking not provided by the station operator. The average occupancy rate in the station parking was 82% and 105% when accounting for all the bicycles parked around the station. 20% of the bicycles counted were parked outside the official station parking.

Table 2 summarizes changes in the use of the available parking facilities over time in stations where capacity remained unchanged. Since capacity is unchanged, the data also provide some information on changes over time in using bicycle to get to the railway station. On average, there are 34 additional bicycles parked each year (between 2001 and 2006) at those stations, of which 15 additional bicycles parked in the station parking facilities and this led to a 5% increase the occupancy each year. When accounting for the size of the station parking capacity, the (weighted average) number of additional bicycles counted is 51 and the number of bicycles parked using the parking facilities is 22. The median figures in Table 2 provide an indication of the change over time without the stronger influence of the large stations and these, naturally, point to a lower increase in the number of bicycles over time, only 20, but the median capacity of the stations where capacity has not changed over time is 272.

Overall an increase in demand for bicycle parking facilities is observed over a period of 5 years, which points to an increase in bicycle use as access (egress) mode to (from) the station. The available data do not allow to infer if this represents an increase in rail use over time, an increase in the share of bicycle on access journeys to railway stations or just a natural increase as population grows. It was suggested above that cyclists might view the parking facilities to be full even at occupancy rates lower than 75%, which leads them to park elsewhere, but the increase in occupancy rates over time (reported in Table 2) suggests this is not the case. Although the average occupancy rate of the parking facilities at railway stations is relatively high, 82% across the observations in which capacity was unchanged, it continued to increase between 2001 and 2006<sup>23</sup>.

Table 2 also shows that in some stations a decrease in bicycle use over time was observed, this occurred in relatively many stations (51 out of 172). Given the nature of the data it is hard to provide explanation to this.

	Average change per year			
	Number of bicycle counted at the station	Number of bicycle in parking	Number of bicycle not in parking	Occupancy rate of bicycle parking
Average	34	15	15	5%
Weighted average	51	22	24	4%
Median	20	8	4	4%
STDEV	69	37	51	9%
Max	391	198	417	40%
Minimum	-237	-81	-145	-23%

\* For most station, observations were not available for all these years.

Table 2: Descriptive statistics for changes in use the of bicycle parking over time (171 stations, 624 observations, 2001-2006\*)

The difficulties in explaining the results are evident in a station like Gouda. For this station, observations exist for 2004 and 2006 when capacity was at 1500. In 2004 the number of bicycles parked using this capacity was 1979 and in 2006, 1900. This reduction was absorbed by an increase in the number of bicycles parked outside the official parking facilities, from 204 bicycles in 2004 to 1037 in 2006<sup>24</sup>. While

<sup>23</sup> Across the observation the occupancy rate was 77% in 2001, then going down to 69% and 63% in 2002 and 2003 respectively, after which it increased back to 77% in 2004 and then continued to increase in 2005 and 2006 to 82% and 84% respectively.

<sup>24</sup> The number of bicycles parked in other parking facilities was under 10 for both years



there was an overall sharp increase in the number of bicycles at the station, there was a reduction in the number of bicycles using the station parking facilities which is hard to explain. The large differences between the years suggest this is probably not a random change between the years. The anecdotal evidence from Gouda show that the lack of parking capacity does not prevent an increase in bicycle use as access mode to the station, but it nevertheless still suppress the increase.

For 48 stations and 101 observations, the bicycle parking capacity provided by the station operator has changed over time. For most stations only 2 observations are available (for 2004 to 2006), for only three stations 3 observations exist and only for one (Zwolle) 4 observations exist (2003-2006). In most cases, 34 stations, the bicycle parking capacity increased over time. These stations are, on average, the large stations with an average bicycle parking capacity of 707 in 2004 (39 observations) and 805 in 2006 (46 observations). There is no information in the data on when the change in capacity took place and a station might have been visited during the process of expanding the bicycle parking, which might explain the reduction in capacity at some stations.

The data for the stations where capacity changed over time can be used to compute the elasticity of using bicycles to arrive at the railway station with respect to the parking capacity provided. For the number of bicycles using the station parking facilities the “capacity” elasticity of is very close to unity and stands at 1.008. Thus, any change in the capacity provided is matched with an almost similar change in the number of bicycles using this capacity. This indicates that cyclists adjust quickly to changes in capacity and if it is there they will use it, but as long as a certain occupancy rate threshold has not been reached, as the analysis above argued. The elasticity of the overall number of bicycles parked at the station with respect to capacity is somewhat higher but still close to unity at 1.106. Increasing the bicycle parking capacity by 10% will increase the number of bicycles using it by 10.08% and the total number of bicycles parked at the railway station by 11.06%. Thus, there is no evidence for a large generation effect on demand for parking when parking capacity is increased.

To further investigate the potential effect of increasing the bicycle parking capacity on rail use changes in rail passengers’ satisfaction with the rail journey following an increase in the bicycle parking capacity is investigated in the next section.

#### **4 The link between bicycle parking capacity and passengers’ satisfaction with the rail journey**

The Dutch Railways (NS) undertake on a regular basis a customer satisfaction survey, known as the KTO. Amongst the many questions passengers are asked are questions related to their satisfaction with the overall rail journey and numerous (37 in total) questions related to specific aspects of the rail journey. Using an econometric analysis, the extent to which each aspect (question) of the journey influences the overall satisfaction with the rail journey can be estimated. It is assumed that improving elements in the rail journey which has a significant affect on the overall satisfaction with the rail journey will lead to an increase use of the rail for travel. Such an analysis, to investigate if the quality of the station access facilities has an affect on passengers’ satisfaction with the rail journey, was carried out by Givoni and Rietveld (2007). A similar approach is used here to examine if increasing the bicycle parking capacity alters passengers’ satisfaction with the unguarded<sup>25</sup> bicycle parking facilities.

An overview of Givoni and Rietveld’s (2007) main findings is presented in Table 3. The “general opinion of traveling by train” is assumed to be a linear function of the general cost of traveling (measured as passengers’ satisfaction with the price/quality ratio), the perception of the railway station and the perception of the access mode facilities. The perception of the access mode facilities is a linear function of the perception of the connections with public transport, the car parking capacity, the quality of guarded bicycle parking and the quality of the unguarded bicycle parking. All variables are on the 1 to 10 quality scale, 1 – “cannot be worse”, 5 – “insufficient”, 6 - “sufficient” and 10 - “excellent”. The results show that only the unguarded bicycle parking variable is insignificant (and has the wrong sign). The same result is

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25 In many Dutch railway stations, two types of bicycle parking facilities are provided: the conventional, termed “unguarded”, and “guarded” facilities. Guarded facilities are common in all the large railway stations, in addition to being guarded they are usually indoor and there is a charge for using them. In the customer satisfaction survey there is a separate question for the “guarded” and unguarded” bicycle parking facilities.

obtained when the regression is repeated for only those passengers who reported to arrive at the station by bicycle.

The results suggest that cyclists do not care much about parking facilities at railway station. Overall, passengers gave a 5.17 score for the unguarded bicycle facilities (2277 observations across the Dutch rail network) similar to the score given by those using bicycle to access the station, 5.19 (638 observations). Passengers' judgment of the quality of the unguarded bicycle parking facilities as being "insufficient", it appears, do not affect their overall valuation of the trip, since the regression results demonstrate that higher satisfaction with the bicycle parking will not lead to a higher satisfaction with the rail journey.

<b>Dependent variable: overall satisfaction with the rail journey</b>			
	Coefficient	t	Sig.
Intercept	3.504	12.697	.000
Price/Quality	0.246	9.321	.000
Station in general	0.144	3.942	.000
Connections with public transport	0.082	3.362	.001
Car parking capacity	0.044	1.995	.047
Bicycle parking (guarded)	0.064	2.568	.011
Bicycle parking (unguarded)	-0.051	-1.896	.059
R square: 0.312; N=462			

Table 3: Regression results for customer satisfaction with the railway journey

Despite the above results, a similar analysis before and after a change in the bicycle parking facility can reveal if passengers satisfaction with the parking facility changes. We focus the analysis on one station, Zwolle, where large changes in parking capacity took place in the years for which data from the NS survey are available. Zwolle is a city of 115,00 inhabitants situated about 120 km Northeast of Amsterdam and it is an important node on the Dutch rail network connecting the North (Groningen and Leeuwarden) with the rest of the country. Table 4 shows the bicycle parking situation in Zwolle for the years 2003-2006. In 2002, a process of increasing the station bicycle parking capacity began and this was completed in 2004. Zwolle railway station appears to be representative large station on the network with respect to the bicycle parking situation. The use of bicycle to arrive to the station (or from it) is increasing over time and demand for parking facilities exceeds the capacity provided. It is clear that the increase in parking capacity after 2003 led to a reduction in the occupancy rate, to as low as 60% in 2005, but this did not have the expected affect on the number of bicycles parked outside the station parking facilities. The reduction in capacity in 2006 might be associated with a new process of increasing parking capacity or other changes at the station.

<b>Year</b>	<b>Parking Capacity</b>	<b>Bicycles in parking</b>	<b>Occupancy rate</b>	<b>Bicycles elsewhere</b>	<b>Bicycle wrecks</b>	<b>Bicycles total</b>
2003	912	998	1.09	14	12	1012
2004	1992	1883	0.95	975	132	2858
2005	3516	2122	0.60	1076	13	3198
2006	2622	1971	0.75	1267	11	3238

Table 4: The bicycle parking situation at Zwolle

Data from NS customer satisfaction survey are available for the years 2000 through 2005. We therefore focus the analysis on two years, 2001 (before the process of increasing capacity began) and 2005 (after it was completed) to investigate if increased bicycle parking capacity influenced passengers' satisfaction with the bicycle parking facilities. The methodology described above is followed but accounting only for the general satisfaction with rail journey, as the dependent variable, and the level of satisfaction with price/quality ratio and the unguarded bicycle parking facilities as independent variables<sup>26</sup>. We add to these a dummy variable for the year 2005 and two interaction variables between the year dummy and the two dependent variables. The model specification is as follows:

Satisfaction with rail journey =  $\beta_0 + \beta_1 \text{Year2005} + \beta_2 \text{Price/Quality ratio} + \beta_3 (\text{Price/Quality ratio} * \text{Year2005}) + \beta_4 \text{Unguarded bicycle parking} + \beta_5 (\text{Unguarded bicycle parking} * \text{Year2005})$

A linear model was estimated, first for the whole population of passengers and then only for those passengers who used bicycle to access Zwolle station. The results are presented in Table 6.

Table 5 provides the mean satisfaction scores for the variables tested for the years 2001 and 2005 for all passengers and for the 'cyclists'. Passengers who started their rail journey at Zwolle (on average, only 37% of the passengers at Zwolle are making home-based journey, for the majority Zwolle is a destination place<sup>27</sup>) home based % of passengers are home based) had a relatively high satisfaction with the overall rail journey in comparison to their satisfaction with its value for money (price/quality ratio) and the unguarded bicycle parking. This holds both years and for both samples. It appears that both groups, all passengers and 'cyclists', share similar opinions on the rail journey including the bicycle parking facilities (there is a relatively large overlap between these groups, in 2001 cyclists were 24.1% of the all passengers sample and in 2005 they were 27.5%). For both groups the satisfaction with the unguarded bicycle parking was higher in 2005.

	All passengers			Access mode to station = bicycle		
	Rail journey	Price/Quality ratio	Unguarded bicycle facilities	Rail journey	Price/Quality ratio	Unguarded bicycle facilities
Zwolle 2001	6.34 (1.22)	5.25 (1.59)	5.12 (1.79)	6.30 (1.20)	5.13 (1.52)	5.30 (1.79)
Zwolle 2005	6.93 (0.96)	5.32 (1.60)	5.54 (1.66)	6.91 (0.92)	5.26 (1.62)	5.49 (1.66)

Table 5: Mean satisfaction score for elements of the rail journey (standard deviation in brackets)

The regression results show (Table 6) that there is a positive and significant difference in the satisfaction with the rail journey between 2001 and 2005, this difference, which is relatively high, is not associated with changes in bicycle parking capacity. The rail journey value for money, as expected, has a positive and significant affect on the satisfaction with the rail journey, but this affect decreased between 2001 and 2005. Considering the analysis described in Table 3, it is not surprising that passengers' satisfaction with the rail journey is not influenced by their satisfaction with the unguarded bicycle parking. The results, thus far, are very similar for both groups. However, for the 'all passengers' group a positive and significant (at the 95% level), albeit very small, positive affect of the satisfaction with the unguarded bicycle parking on the general satisfaction with rail journey is detected for 2005. This can be associated with the increase in capacity. For those who accessed the station by bicycle such an affect was not observed<sup>28</sup>.

26 In the 2001 survey a question capturing the overall satisfaction with the station was not included.

27 Data from NS.

28 The difference between the two regressions in the significance level might be associated with the lower number of observations for the 'cyclists' group (550 compared to 1715), as the coefficient is slightly higher for the "cyclists".

<b>Model 1: All passengers</b>			
	Coefficient	t	Sig.
Intercept	4.147	22.554	.000
Year 2005	1.140	5.322	.000
Price/Quality	0.371	12.161	.000
Price/Quality*Year2005	-0.155	-4.462	.000
Unguarded bicycle parking	0.024	.908	.364
Unguarded bicycle parking*Year2005	0.066	2.115	.035
Adj. R-square: 0.269; N=1715			
<b>Model 2: Access mode to station = bicycle</b>			
	Coefficient	t	Sig.
Intercept	3.862	9.964	.000
Year 2005	1.434	3.379	.001
Price/Quality	0.411	6.178	.000
Price/Quality*Year2005	-0.228	-3.167	.002
Unguarded bicycle parking	0.047	0.965	.335
Unguarded bicycle parking*Year2005	0.073	1.309	.191
Adj. R-square: 0.242; N=550			

Table 6: Regression results for passengers' satisfaction with the railway journey

The analysis reinforces the conclusion that higher satisfaction with the unguarded bicycle parking facilities does not translate to a higher satisfaction with the rail journey. Yet, the analysis shows that investing in higher bicycle parking capacity has a small positive effect on passengers' perception of the (unguarded) bicycle parking. This might increase passengers' inclination to use bicycle to access the station, but not necessarily their inclination to use the rail. But once passengers decide to use bicycle to get to the station this effect does seem to exist. This can be explained by the fact that even with the new capacity, 40% of cyclists did not choose to use the unguarded parking facilities. In 2001 only 2% of the cyclists did that.

To further test the possible effect of changes in parking capacity a comparison was made between Zwolle and a station where the bicycle parking capacity has not changed between 2001 and 2005. This station is Geldermalsen, in the centre of the country and southeast of Utrecht with a population of 26,000<sup>29</sup>. Throughout the years 2001 to 2006 the bicycle parking capacity at Geldermalsen railway station remained at 912. In 2001, 642 bicycles used it (occupancy rate of 70%) and in 2005, 807 (89%). The number of bicycles parked not in an official parking place was low and peaked in 2005 with only 57 bicycles.

To determine how passengers' satisfaction with the unguarded bicycle parking has changed between the stations and the two years (2001 and 2005) the following regression analysis is estimated:  
Satisfaction with unguarded bicycle parking =  $\beta_0 + \beta_1 \text{Year2005} + \beta_2 \text{Zwolle} + \beta_3 (\text{Zwolle} * \text{Year2005})$   
The coefficients for the Year2005 dummy variable will indicate if the level of satisfaction with the unguarded bicycle parking changed from 2001 to 2005 (for both stations); the coefficient for the Zwolle dummy variable will indicate if it differs between the stations. The last coefficient, the one of main interest,

29 Data availability was the main selection criteria.

will indicate if the level of satisfaction with the unguarded bicycle parking is different in Zwolle in 2005, after capacity has been increased, from the level in Zwolle in 2001 and in Geldermalsen in both years, where capacity was unchanged. This coefficient is also known as the “difference-in-differences estimator”. The results are presented in Table 7.

In 2001, the average satisfaction score for the unguarded bicycle parking in Geldermalsen rail station was 6.17 (standard deviation: 1.72, only 42 observations) and in 2005, 5.72 (1.78, 146). For all passengers, the satisfaction with the unguarded bicycle parking was not significantly different in 2005 from 2001, but it was significantly lower in Zwolle (for both years) than in Geldermalsen. The “difference-in-differences estimator” is positive and significant suggesting that the increase in the bicycle parking capacity in Zwolle was translated to a satisfaction score which is 0.86 higher. Considering that overall there are no large differences in the mean satisfaction scores for the different elements of rail journey described above this is not a minor increase. A similar result was not obtained when repeating the regression for only those who used bicycle to arrive at the station, but this might be due to the low number of observations for Geldermalsen (24 in 2001 and 55 in 2005). The implications of the results described above are discussed below.

<b>Model 1: All passengers</b>			
	Coefficient	t	Sig.
Intercept	6.167	23.560	.000
Year 2005 (dummy)	-.447	-1.507	.132
Zwolle (dummy)	-1.047	-3.831	.000
Zwolle*Year2005 (dummy)	.864	2.783	.005
Adj. R-square: 0.014; N=2149			
<b>Model 2: Access mode to station = bicycle</b>			
	Coefficient	t	Sig.
Intercept	6.111	15.116	.000
Year 2005 (dummy)	-.152	-.336	.737
Zwolle (dummy)	-1.089	-2.534	.011
Zwolle*Year2005 (dummy)	.561	1.169	.243
Adj. R-square: 0.020; N=719			

Table 7: Regression results for passengers’ satisfaction with the unguarded bicycle parking (difference-in-differences estimation)

## 5 Conclusions - is it worth investing in bicycle parking at Dutch railway stations?

The analysis described above shows that demand for bicycle parking capacity has increased in the period between 2001 and 2006, indicating an increase use of the bicycle to arrive at the railway station. From a transport policy perspective, this is good news, even if the source of this increase could not be identified in the analysis. Furthermore, the fact that bicycle use as an access mode to railway station is increasing despite the fact that most of the demand for parking is not accommodated in the official parking facilities is also encouraging. However, for policy makers and rail operators this presents a challenge with respect to managing bicycle parking at railway stations and especially with respect to making investments towards increasing parking capacity.

The picture emerging from the analysis is complex. While there is a relatively high occupancy rate in the available parking capacity at the station, and any increase in capacity is absorbed by a proportional increase in the number of bicycle parked, still many cyclists choose to not use the official parking fa-



cilities even when these are far from being full. The large number of bicycles that are placed not in an official parking at Dutch railway stations, as can be immediately seen when visiting these stations, does not always indicate to a chronicle shortage of parking places. Also in terms of passengers' satisfaction with the bicycle parking a complex picture emerges. A statistically significant increase in passengers' satisfaction with the bicycle parking facilities following an increase in capacity was found, but this did not translate to a statistically significant positive affect on the overall satisfaction of passengers with the rail journey. Furthermore, the increase in passengers' satisfaction with the bicycle parking was observed for all the passengers but not for those who require such facilities, those who arrive at the station by bicycle.

The challenge for station operators is naturally in the large stations. In the smaller stations, improving the bicycle parking situation is not a major issue and probably does not require large investments. At the same time, and due to the relatively small number of bicycles, parking outside the official bicycle parking does not necessarily presents a problem. Thus, the dilemma if to invest in better bicycle parking facilities/capacity still exists but is not so great in smaller railway stations.

The situation is different at the large railways stations. Given the investments required to substantially increase the parking capacity at stations where it is already high (e.g. over 1000) and the land required for it, the analysis described above cannot provide much support for such investments. It is important to note that substantially increasing the bicycle parking capacity might require moving them further from the station platforms making them less attractive. There might be a case, especially at some large stations, to focus efforts on better use of existing parking capacity, for example by making it easier for cyclists to identify where parking space is available. The relatively low number of bicycles wrecks in the station vicinity is an important step in this direction.

The relatively ease with which an alternative bicycle parking can be found and improvised is what makes the use of, especially large, official parking facilities not so attractive. Enforcement of "legal" bicycle parking can be one way to change the situation but this might have undesirable effect in terms of bicycle use to access the railway station and even a negative effect on rail use.

Unlike in most other countries, bicycle use as a mode of transport for short/urban trips is so common in the Netherlands that users are accustomed to finding alternatives to official bicycle parking. It appears therefore that in the large railway stations in the Netherlands a new design of the station area is required, one that will provide either cheap alternatives for creating additional bicycle parking capacity (and these must be "attractive" enough for cyclists) and/or a design that will allow more flexibility in the decision where to park the bicycle, a design that will better compromise the competition on open space around the station between cyclists who look for a parking place and other users.

The above must be considered in the context of the data available and its limitations and therefore further research on this subject must be carried out.

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**The alliance of public transport and cycling: a field report.**  
**Experiences and examples of the Rhein-Main-Verkehrsverbund (RMV)**  
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**Abstract**

The RMV organizes regional public transport on the basis of political requirements. In this context the RMV is among others responsible for multimodal transports. That includes the connecting of public transport and cycling. The full paper shows examples and best practices of the sphere of activity of the RMV. Main projects are Bike + Ride and solutions for leisure traffic.

**1 Introduction**

**1.1 Rhein-Main-Verkehrsverbund (RMV)**

In 1995 the RMV (integrated public transport system) began its work organizing the regional and local public transport (ÖPNV) in middle and southern Hesse, it extends from Marburg in the north to the Odenwald forest in the south and from the Rheingau area in the west to the Fulda district in the east including the Rhein-Main conurbation. Just over 5 million people are living here in an area of 14,000 square kilometres.

The aim of the RMV is to efficiently develop the entire transportation system to serve as a location advantage for the region.

The RMV organizes regional transport on the basis of political requirements.

The network effect is to use the local and regional busses and trains with one schedule, consistent fares and only one ticket.

Our philosophy is an integrated traffic system: network, interfaces, vehicles and management strategies. I will talk about parts of it today.

**1.2 Department of central planning/STEP**

I work in the department of central planning.

Our most important project is the station development plan (STEP). There are 400 local railway stations in the area of the RMV. The aim is to improve the connections between public transport and other means of transport (bus, car, bike, kiss + ride), by optimising the conjunction between them. This is, among other things, done by enhancing the functions and the design of the station buildings and by making the stations barrier-free and more attractive for the customers of RMV. In this difficult process the RMV has the role of a moderator and coordinates the different companies of the Deutsche Bahn AG, the communities and the state of Hesse. The state Hesse funds the STEP projects, the communities pay the complement costs and most of the planning costs, the RMV shares in the planning expenses.

Other important topics of the department are security, measures against vandalism and graffiti and to enhance passenger information and dynamic schedule synchronization.

### 1.3 Bike projects

Beside these main tasks we deal with all aspects touching the interfaces of public transport and bike.

RMV is participating in:

- “RADforum RheinMain”, initialised by the planning association of the conurbation Rhine-Main (Planungsverband Ballungsraum Frankfurt Rhein-Main - Planungsverband), enhancing bike projects and the acceptance of biking,
- “Routenplaner Hessen”, initialised by the Hessian ministry of economic, transport and state development (Hessisches Ministerium für Wirtschaft, Verkehr und Landesentwicklung – HMWVL)
- “bike and business”  
The aim of bike and business is to enhance the use of bikes in commuter traffic. Partners are the ADFC, the Planungsverband Ballungsraum RheinMain, traffiQ (local organisation of public transport in Frankfurt), the state of Hesse, the Klimabündnis (climate alliance), Verband selbstverwalteter Fahrradbetriebe (corporation of self-governing bike shops) and the RMV. Participants are the local communities and resident companies.

RMV-initialised projects:

- Bike + Ride (2.1)
- Leisure traffic (2.2)
- “Sonderverkehre” (non-regular trains)
- Bus-trailers / multi-functional cabins
- Rhein-Main-Vergnügen (3)

I’ll go into details about these three projects soon.

## 2 The interdependencies of cycling and public transport

The bike becomes more important as a health-promoting, socially and environmentally acceptable means of transport. This is emphasised by the German policy as seen in the national bicycle traffic plan (Nationaler Radverkehrsplan 2002-2012). Its content are measures to promote the bike traffic in Germany. One main focus lies on the cross-linking of the means of transport (bike / public transport).

There are intermodal and multimodal aspects of cycling and public transport. In general intermodal transport stands for the usage of multiple means of transport, for example Bike + Ride, multimodal means usage, in this context, to entrain with the bike.

### 2.1 Bike and Ride

Almost every station in the rail network of the RMV has Bike + Ride lots.

Before the RMV was founded a lot of stations didn’t have any Bike + Ride places and the existing ones were in a more or less bad condition.

The lack of quality is reflected in lots without roofs, lots that bend the wheels, lots that are unsuitable to lock the whole bike (wheels and frame), unlit and not enough places.

The RMV has more than 400 rail stations. The aim is to change and to improve the situation by building new and by enhancing existing Bike+Ride places. The goal is to equip every of the 400 stations with its own and well-resourced Bike+Ride lots.

One of the most important projects to realise these purposes is STEP.

STEP is implementing the recommendations of the national bicycle traffic plan. This is the requirement to receive public funds by the HMWVL.

Another project to enhance Bike+Ride is the B+R-concept, initialised in 2005 by the Planungsverband. Every one of its 176 stations, located in the territory of the Planungsverband, was analysed. The target was and still is to develop a concept to improve the Bike+Ride situation, e. g. in a county or along a railway line. As the RMV is involved in this project it is ensured that the different projects and measures are tuned.

Customers mostly make use of Bike+Ride in commuter traffic. It is the more accepted the more convenient it is.

Therefore the RMV pays attention to good standards.

According to the standard of the ADFC the RMV only realises roofed bike lots. Single lots have to have good possibilities to lock the bikes safely.

In addition to the “normal” bike lots lockable garages for bikes should be installed, if needed.

Beside the good standard attention should be paid to other important aspects:

- demand-oriented number of lots,
- short ways from the lot to the platform,
- if possible crossing-free from other accesses,
- connecting to the communal cycle path network.

An essential improvement of the actual situation of bike facilities won't be given by realising single measures but to put the whole measure into practice.

Important is the holistic approach both realising the whole measures as viewing the multimodal transport system.

## **2.2 Leisure traffic**

Another big aspect of promoting bike and public transport is given to leisure traffic.

Compared with commuter traffic leisure traffic has more possibilities for enlargement. The problems they are connected with, e. g. weather incalculability, will be explained in the last chapter.

Now I want to show you suitable offers how the RMV promotes the combination of leisure traffic and public transport, especially making itself more attractive for the use of bikes.

### **2.2.1 “Sonderverkehre” (non-regular trains)**

“Sonderverkehre” mean in this context the enlargement of the normal transport by using more wagons at specific times during the summer season. These trains are used on Sundays and holidays from May 1st to the last Sunday of October. The RMV appoints them on the three RMV-lines: Lahntalbahn, Rhönbahn and Vogelsbergbahn to support tourism in these rural and very attractive regions (train-type VT 628). This offer has to be paid extra to the Deutsche Bahn, but is justified by the increasing number of customers using this service.

### **2.2.2 Bus-trailers / multi-functional cabins**

Furthermore, there are busses with special trailers with a capacity of about 40 bikes. A normal RMV-ticket is sufficient for using them.

They are appointed on the following lines:

Vulkanradweg/Vulkanexpress (Vogelsberg, Wetterau): 6 lines

Weiltalweg/Weiltalbus (Hochtaunus, Lahn): 1 line

Aartalradweg/Blaue Linie (Lahn): 3 lines

Milseburgradweg/RhönTalBus: 1 line

Odenwald/NaTourBus: different lines (without trailers, but multi-functional cabins in bus)

These offers are (normally) advertised from May 1st on Saturdays, Sundays and holidays to the last Sunday of October.

Corresponding to the bus-lines there are bikeways on former train-routes or other touristy bike routes. Because of the little activities especially the routes on the former train-routes (Vulkanexpress, Weiltalbus) are very attractive for the bike tourism.

## **2.3 Free carrying of bikes in public transport and special tickets**

Since the founding of RMV in 1995 the transport of bikes in the RMV is for free. This is not a matter of course. In other regions of Germany you often have to pay for special bike tickets (e.g. VBB Berlin; MVV Munich, VRR Rhine-Ruhr, VRS Rhine-Sieg). Furthermore, there are often off-times, you are not allowed to take your bike along with you. Admittedly the entrainment in the commuter traffic is not recommended in RMV, but in general not forbidden.

The RMV proceeds this way: entrainment for free and no off-times, to promote a multimodal public transport.



### 3 Special item: Rhein-Main-Vergnügen

Now I want to present an important part of the promoted leisure traffic by RMV. It is an unique project, called Rhein-Main-Vergnügen what means Rhine-Main-pleasure.

In a series the RMV has developed various route recommendations. The first was published in 2002, the ninth (just) by now.

Every route combines public transport with points of interest in an appointed area.

#### 3.1 Motivation and targets:

We want to support making excursions without using a car. The strain on recreation areas by vehicle traffic should be counteracted.

The connection of public transport and bicycle and/or on foot strengthens the RMV in the role as an integral component and player of an environmental organisation (Umweltverbund), on the other hand the (enlarged) Rhine Main region moves more narrowly up by co-ordinated offers of public transport and leisure traffic. The identification with the region Rhine Main and the awareness of the region will be created positively.

So the target of Rhein-Main-Vergnügen is the combination of attractive bike routes connected with trains with enough capacities to enhance the multimodality and creating an interesting offer.

#### 3.2 Concept and basic conditions

Target persons are today's customers who use the public transport, in general on weekdays and without bikes as well as potential new customers.

The persons are "average" bikers, the routes don't include too many differences in altitude (except 2 routes in the uplands of Taunus and Odenwald). The routes have an average length of 35 to 50 km. Normally it's a round course. That's relating to the tariff-system of the RMV with a lot of tariff-zones.

The RMV-Gruppentageskarte (RMV-group day ticket) and the "Hessenticket" were created as two rate offers which are aimed especially at leisure traffic. Both offers appeal primarily to families and to groups up of 5 persons to use the public transport the whole day. In some relations it already pays off for two persons. Furthermore, with the RMV season tickets (week, month, year) with its entrainment regulation there is the possibility to perceive leisure offers with the RMV on the week-end with the family.

If you make your route alone or as a pair and you want to be flexible in the station to go home after the trip you better should take a single-ticket.

There are a row of parameters to consider in the conception:

- Vehicles with enough space in multi-functional cabins for bicycles (examples: Dosto, ET 423, GTW 2/6)
- Lines with enough capacities
- Possibility to gain the capacities and/or the train-frequency
- Interesting routes: nature, culture, touristy highlights
- Routes with high percentage of bikeways

If you use RMV-single-tickets (and Hessenticket) you will have an essential advantage compared with cars, because you can combine public transport as you want. You are totally flexible. The start doesn't have to be the end point of the route.

#### 3.3 Main components

Rhein-Main-Vergnügen consists of two main components: the edition of a touristy map and special RMV-signs along the route.

### 3.3.1 Tourist map

The tourist map consists of topographic map with the scale 1:50,000 and a textual description. This includes the recommended bike route, the railway lines, points of interest (tourist highlights, museums, swimming-pools, beer-gardens, etc.), city maps and information about public transport and RMV. These maps are for free and they can be ordered at the RMV (freizeit@rmv.de). 15,000 copies of each map are published.

This spring route number nine will be put out.

Up to now we have published the following routes:

1. Rund um Dietzenbach (38 km) including route no. 1a: Regionalparkvariante
2. Die Wetterau zwischen Friedberg und Münzenberg (39 km)
3. Unterwegs zwischen Mainspitze und Mönchbruch (44 km)
4. Durch den Taunus bei Idstein und Bad Camberg (40 km)
5. Unterwegs im Dieburger Land (33, 47,58 km)
- 6: Durch das Ronneburger Hügelland (47 km)
- 7: Unterwegs im nördlichen Odenwald (29, 33 km)
- 8: Unterwegs zwischen Herborn und Aartalsee (38 km)
9. Unterwegs im unteren Maintal (59 km)

In addition to the map there is a general flyer with special and actual RMV-information like the railway system plan and the actual ticket-prices among other things. It is published every year.

### 3.3.2 Signs

Special signs with their own pictograms have been conceived. They are designed in the CD of the RMV and enclose the logos of Rhein-Main-Vergnügen and Rhein-Main-Verkehrsverbund. The signs are fixed in both directions and follow the principles and specifics of the "Merkblatt zur wegweisenden Beschilderung für den Radverkehr" (instructions for signs of the bike traffic) by the "Forschungsgesellschaft für Straßen- und Verkehrswesen" (German Road and Transportation Research Association) from 1998 and the recommendations of the HMWVL.

Along the origin routes and lines of the RMV the Rhein-Main-Vergnügen makes the brand RMV publicly known. That's an important promotion and image gain for the RMV.

## 3.4 Involved persons, institutions and partners

The RMV develops the routes in cooperation with many partners out of different ranges:

- Agency of bike planning (VAR VerkehrsAlternativeRad Petry): Conception of the route, planning and acception test of the signs, coordination with communities and forestry offices.
- Basic map material is given by the Hessisches Landesamt für Bodenmanagement und Geoinformation (office for land survey). RMV have to pay a licence fee for it.
- Hessian forestry
- A graphic agency realises the map according to the RMV corporate design.
- Print office.
- Signage company.
- Assembly company.
- The HMWVL supports and funds the signage with a rate of circa 65%.
- Coordinations with departments of RMV e. g. promotion or tariffs.
- According to counties and communities, and concluding agreements.

The main tasks of our work is:

- Finding the concepts,
- defining the parameters,
- deciding the routes,
- political coordinations and
- the organisation and logistic of all these companies and offices above.

### **3.5 Another aspects:**

#### **3.5.1 Combination routes**

Since 2007 we interlink the routes. It is now possible to go for more than 100 km on signposted RMV-tracks, e. g. from the mouth of the Main River to the Odenwald forest. For these interlinked routes the signs show 3, 1/3, 1, 1/5, 5 and 5/7. In the future we are going to extend this network of routes, connecting with the railway system of the RMV.

From time to time new editions of established routes are published. From route 1 in 2007 a totally revised edition was put out, because of the addition of Route 1a including some new highlights. Until this summer we want to revise route 5.

#### **3.5.2 Cooperation with the Hessian ministry of economic, traffic and state development**

The HMWVL appraises the Rhein-Main-Vergnügen as an exceeding example for connecting the routes of Rhein-Main-Vergnügen with the "Hessischen Radfernwege" (Hessian long-distance bikeways) on the one hand and on the other hand supporting the cross-linking of public transport and bike.

Connecting attractive touristy routes with railway stations has been announced by the Hessian ministry to add to the list of "good examples" of the national bicycle plan.

Therefore Hesse supports the sign-posting with a 65%-funding.

#### **3.5.3 Opening of one-way streets**

As a kind of byproduct some one-way streets were opened for the bike traffic.

Through this the Rhein-Main-Vergnügen initiates other infrastructure measures.

### **3.6 Market research**

After route 2 the RMV carried out a market research to find out the acceptance and the contentment of the project.

94% of the interviewed persons marked the routes with 1 (very good) and 2 (good).

25% used the RMV to reach the route. That is not as bad as it sounds, because the touristy maps are ordered by people normally using public and by persons normally not using public transport (potential customers). Through this the RMV becomes apparent.

Most users of the maps find this kind of promotion very positive and are looking forward to the next map.

### **3.7 Rhein-Main-Vergnügen: Hiking**

Furthermore, in this series in 2004 the RMV published the "Bonifatius-Route". It's a 180 km long pilgrimage route between Mainz and Fulda for hiking.

And in 2007 we made the first "normal" hiking-map out of the series. The next is planned for 2008.

For further information see: <http://www.rmv.de/coremedia/generator/RMV/Freizeit/Extratouren/Rhein-MainVergnuegen>

## 4 Chances and limits of the share of public transport and cycling

The presentation has shown best practice examples for enhancing the connection between public transport and cycling.

But, I will point out three kinds of difficulties and factors the connection depends on:

### **Time:**

In rush-hours it is not advisable to take most of the trains, because they are overcrowded and this would cause trouble between "normal" passengers and bikers. Problems are that bike passengers press into full trains. They soil the clothes of the passengers without bikes or the tip-up seats of the multi-functional cabins for the bikes are used by them.

Possible solutions could be to improve the Bike+Ride places so that the customers can leave their bikes becalmed at the station.

Another possibility could be by deploying more multi-functional cabins in trains.

### **Capacity:**

Even in off-peak times there is often less capacity in the cabins, because not enough trains with multi-functional cabins exist.

In the long term the responsible authorities have to aim at rising the number of multi-functional cabins.

### **Weather:**

Bike traffic depends heavily on the weather. As well in leisure as in commuter traffic there are big differences in usage. E. g. in the spring on a nice weekend after a long and cold period everyone is going biking and using, in combination with it, public transport, too.

In contrast trains have to be ordered long dated. In general non-regular trains and coaches must be ordered at the minimum of six weeks before needed.

On the other hand it is not possible to deploy long trains usually, because that would be too expensive. In the future, it would be desirable to find solutions for this problem.

At last I've showed the difficulties and limits, but I'm very hopeful and confident, that in future, the part of bike traffic, in combination with public transport will increase continuously.

### **Résumé:**

The RMV has been doing a lot of measures to force the connection of cycling and public transport. In the future we have to do both, search for more and new possibilities to enhance this combination and find new possibilities to finance it.

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## Stuttgart Bicycle Route Planner

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### Abstract

In order to help promote cycling in and around the city, Stuttgart is now offering free and easy-to-access bicycle routing over the Internet. Using the Bicycle Route Planner, cyclists can access the most up-to-date mapping information, tailor a route according to their individual preferences and alert themselves to the important details of their route.

Many bicycle routes in Stuttgart are hidden away and hard to locate. And cycling there can be a real challenge due to the considerable differences in elevation between the city centre, located in a valley basin, and the surrounding suburbs, which are much higher. Precisely because of Stuttgart's hilly topography, being able to take bicycles on all local rail transport at nearly all times and mostly free of charge becomes rather crucial. Indeed, this fact spawned the use of an ideal combination – bicycle and public transport – the most environmentally friendly modes of transport.

At the beginning of 2007, the City of Stuttgart and its public transport network VVS formed a partnership aimed at developing an internet-based bicycle route planner for the regional capital. The system was completed in time for the World Cycling Championship at the end of September 2007 and can be accessed at <http://radroutenplaner.vvs.de>.

The technical basis of the route planner is VVS's information system, which was expanded to fit cyclists' needs. The route search uses a digital map with routes intensively and comprehensively revised for bicycle routing. In order to achieve this, missing bicycle paths had to be added. Then every section of the route was given various attributes, e.g. 'recommended for cyclists', or details of traffic loads (represented by car pictograms) and road/path surface (asphalt, cobbles, forest track). In addition, given Stuttgart's topography, information on gradients in form of a digital terrain model was integrated. It shows the various elevations of the route and can be used to avoid steep climbs, if desired.

There are four types of routes to choose from: leisure, quickest, advanced and 'my route', where users can stipulate their own route criteria, e.g. gradient, traffic load, road/path surface. After selecting a route, the origin and destination are entered. The following screen offers a choice between a bike-only route, a 'bike and ride' route in which you bike to a bus/tram stop and then continue your journey on public transport, or a route in which you can take your bicycle with you on trains (city and suburban rail Stadtbahn and S-Bahn). As a final step, the route is displayed on the results page that includes – an overview map, a smaller map section with a detailed description of each stage of the route, an elevation profile as well as the ability to download the route as a GPS track for use on a mobile navigation device. Similarly, the route can be traced along its twists and turns by activating an animated bicycle icon.

A unique feature of the Stuttgart's Bicycle Route Planner is that it takes into consideration both the topography of the city, which is crucial when cycling, and the combination of public transport and bicycle. Another bonus is that all the origins and destinations important to cyclists, e.g. bicycle racks, bicycle stations and all possible bicycle routes can be used when routing and combined with public transport in many ways. Furthermore, one of the most important criteria for a bicycle route planner is clear and quick visualisation of the selected routes on a map. This requirement was met by using both interactive map technology and VVS's information server. Finally, not all bicycle route planners are free, as is the case in Stuttgart, with routing where preferences can be individually selected.

## 1 Background

In similar fashion to the rise of well-established journey planners for cars and public transport amongst travelers, internet planners for bicycles routes have gained standing as an important information medium for cyclists. Particularly in Germany, cycle planning systems have been in operation for some time now. Examples of bicycle route planners can be found in the cities of Berlin, Munich and Frankfurt as well as in the federal states of North Rhine-Westphalia, Hesse and Bremen. This latter type of supra-regional bicycle route planner tends to place more emphasis on tour planning for leisure and sport. In



contrast, planners limited to a smaller area target the daily routes of commuters, pupils and students - routes which are normally shorter and extend between two random points on all surfaces suitable for bikes. These 'everyday' types of bicycle routes can also be combined with the use of public transport (intermodal journey planning), either sequentially (Bike&Ride) or simultaneously (taking your bike with you on public transport). Yet doing so creates a multitude of possible connections and routes thus making a bicycle route planner exceedingly more complex than a journey planner for cars. Indeed, more extensive planning and evaluation are required for a bicycle route planner to be considered both a successful alternative to other journey planners and a quality incentive to foster bicycle use as a preferable means of transport.

Stuttgart has always been regarded as a motor city because of its proximity to well-known auto manufacturers. In particular, the road infrastructure in the city center was designed primarily for car traffic, a fact that defies the limited space available in the valley basin where the city is located. In the last few years, however, intensified measures have been put into place to help encourage bicycle use. More specifically the city has built new bike lanes, created a bicycle rental system (Call-A-Bike) and improved route guidance. Stuttgart also boasts a compact and highly-modern public transport network. The city has 6 suburban rail lines, 16 city rail lines, 1 cog railway and 50 bus lines, which all have to contend with considerable differences in elevation. For example, between the lowest point at Neckar (207m) and the highest point (550m), a relatively short straight-line distance, belies an altitude difference of 250 meters. Figure 1 shows the various elevations represented in different colors; the darker the bar, the higher the elevation.

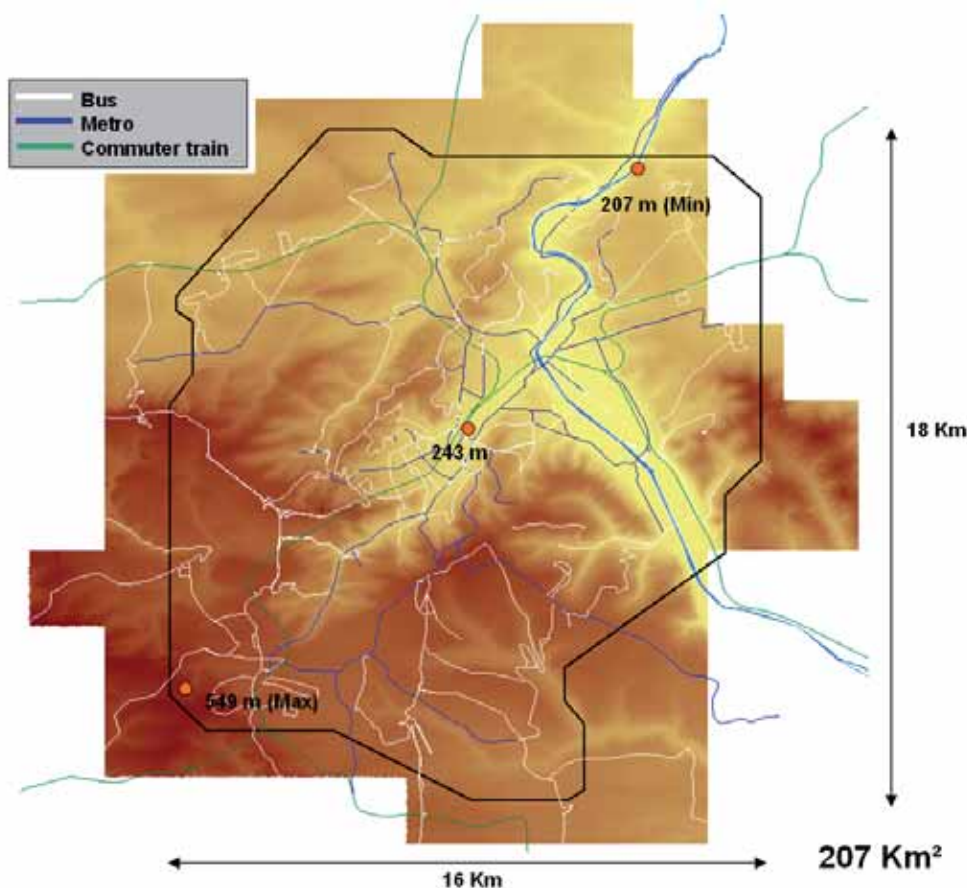


Figure 1: Topography of Stuttgart's City Center

It is possible to take your bike with you on the city and suburban trains with few exceptions regarding time and fares (see Figure 2). In this way the particularly steep route sections can be more conveniently travelled. The cog railway between Marienplatz and Degerloch has a distinctive feature – it has an extra transport car for bicycles.

## TAKING BICYCLES ON PUBLIC TRANSPORT

Bicycles can be taken **at no charge** on all suburban rail, DB & WEG trains and city rail.

Please note the following exceptions:

- A child ticket must be validated during morning peak hours (Monday – Friday 6:00 – 8:30) on all **suburban and city rail**.
- Bicycles cannot be taken on all **city rail** during peak hours (Monday – Friday 6:00 – 8:30 and 16:00 – 18:30).

Bicycles can be taken in the **cog rail's transport car** from Marienplatz to Degerloch the entire day at no charge.

Regrettably, bicycles still cannot be taken on all **buses and trams**. Exception: Bicycles can be taken on buses of the END Transport Authority at specified times. Additional information can be found on the END website ([free bike transport on END](#)).

Figure 2: VVS rules for taking a bike on public transport

The Public Transport Association of Stuttgart (VVS) is responsible for all passenger information issues in Stuttgart and its bordering 4 districts and has developed an excellent reputation over the years as a competent provider of local public transport information. The core of this information is still the Intermodal Journey Planner (IJP) ([www.vvs.de](http://www.vvs.de)), by Mentz Datenverarbeitung GmbH (mdv) a company whose sophisticated software precisely calculates intermodal journeys for passengers and pedestrians (including cyclists) from one point to another and displays the results using up-to-date interactive map technology. The Journey Planner recently added the ability to include terrain data, allowing journeys to be planned that provide the most convenient path to and from a stop.

It is against this backdrop that the City of Stuttgart sought cooperation with the VVS to implement the development of a bicycle route planner. They were able to fall back on an established intermodal journey planner and existing program structures could be used cost-effectively with the appropriate enhancements. A substantial part of this was the use of existing databases. For quite some time, the VVS has maintained an up-to-date Navteq-route network that was enhanced a few years ago to include the areas within a walking distance around a stop. In addition, addresses and approx. 5000 points of interest are available to input more exact origins and destinations. For their part, the City of Stuttgart served as a provider of important maps like the city map, aerial pictures and a detailed digital terrain model (screen ruling 10m). The VVS saw added value in the project partnership for a number of reasons. First and foremost, the project meant improving their green image in that information could be given about every environmentally friendly mode of transport under one umbrella. Additionally, the radius around a stop can be expanded through the use of Bike&Ride, an option that can also lead to increased ridership without taking up too much of the limited space in public transport vehicles.

## 2 Implementation

In February 2007, the city council and the VVS agreed to develop a bicycle route planner for Stuttgart in collaboration with one another. The deal avoided unnecessary bureaucratic red tape and possibly because of that, a short period of time for implementation was set. At the end of September 2007, Stuttgart hosted the UCI Road World Championships and the Bicycle Route Planner was to be in operation before that date.

In a first step, the VVS digital route network was tested for completeness and enhanced for bicycle-relevant routes like forest paths, hills, street crossings, underpasses etc. using the official bicycle maps of the City of Stuttgart and the German Bicycle Club (ADFC). The experts from the ADFC and the City of Stuttgart were also involved in this process.

Central to the additional work on the network model was the meaningful attribution of all the route segments. The most extensive data editing was assigning routes of all types, be it as a structurally separated or street-parallel path. Many of the steps – the “Stäffele” typical of Stuttgart – were already in the data, but had to be excluded for use as a bicycle route. One-way streets that are open to bike traffic in both directions were included. All unpaved paths were assigned a corresponding surface property, e.g. gravel, forest path etc. With the assistance of official load levels, streets were grouped according to their high or low volumes of traffic. Finally, particularly beautiful or scenic route sections were assigned a high “green factor”.

An important part of the supplementing the data was the integration of all bicycle-oriented POIs like bike stands (categorized according to whether they are covered / not covered), bicycle service stations and Call-A-Bike stations. These newly added POIs would now be considered when routing and thematically enhance the maps.

At the same time, a user-friendly layout was drafted and implemented by mdv. And individual transport components of the Journey Planning System were enhanced to account for the new data (i.e. elevation profiles or the amount of traffic on a particular street) when routing for bicycles.

After seven months of development and just before the start of the bicycle world championships, the Bicycle Route Planner was presented to the international press by Stuttgart’s Mayor for City Planning and Environment and VVS’s managing director.

### 3 Functionality

#### Input Dialog

An easy-to-follow layout assists users through the various steps of the bicycle route planner. The previously selected options are listed in a green box in the top right corner of subsequent screens. A blue help box is offered at every step along the way. In contrast to the journey planner, the route type is determined by the user.

The screenshot displays the 'Bicycle Route Planner' interface for Stuttgart, featuring the VVS logo. The interface is divided into several sections:

- Welcome!**: A text block providing introductory information about the planner, including links to the City of Stuttgart website and the Call A Bike website.
- Route Selection**: A central area with four route options, each accompanied by an icon:
  - Comfortable Route**: 'enjoy a more leisurely bike ride' (icon: a person on a bicycle).
  - Quickest Route**: 'get quickly from point A to point B' (icon: a speedometer).
  - Advanced Route**: 'challenge yourself with climbs of all levels of difficulty' (icon: a bicycle on a hill).
  - My Route**: 'choose your own personal settings' (icon: a gear).
- Help**: A blue box on the right with instructions on how to set a route and a link to the German version.
- Route options**: A section on the bottom left with checkboxes for preferences:
  - ☐ I prefer routes with the least amount of traffic
  - ☐ I prefer paved routes
  - ☐ I would like to avoid steep climbs
  - ☐ I prefer scenic routes
- Speed**: A section on the bottom right with radio buttons for 'usually', 'average', and 'fast'.
- Progress Indicator**: A bar at the bottom showing 'Step 1 of 3'.

Figure 3: Selecting Route Type and Routing Options (Step 1)

On the first page new users can choose one of the three preset route types: leisure route, quickest route or advanced route. Behind these route types are preset routing options, which users can also determine on their own (Figure 3):

- Prefer routes with the least amount of traffic
- Prefer paved routes
- Avoid steep climbs
- Prefer scenic route
- Average speed

The next step asks users to set an origin and destination. Addresses can be entered using a one field search and POIs using the search field or the search tree hierarchy (Figure 4). Origin and destination can also set at any point on an interactive map using the right and then left mouse buttons.


Figure 4: Selecting Origin and Destination (Step 2)

After origin and destination have been positively verified, users have the option to set a bike-only route or to add use of public transport to a section of their route i.e. Bike&Ride or taking their bike along with them on public transport (Figure 5). The 'Bike&Ride' and 'Take my bike on PT' options allow users to combine bicycling with use of public transport, which makes it then necessary to coordinate a bike route with the departure times of the VVS (Figure 6). Users with knowledge of local area can even use the 'Stop Selection' button to narrow route calculation in order to get on at a particular stop. When a bike is taken on public transport, routing automatically takes the local rules and regulations into account to prevent complications.




### Select Mode of Transport


You can choose to set your route or to use public transport for a section of your route.



**Set Route**  
I only want to use my bike on this route



**Bike & Ride ?**  
Leave my bike at a stop or station and continue my route on public transport



**Take my bike on PT ?**  
Take your bike on public transport for a section of your route

### Options

**Comfortable routes:** bike routes with least amount of traffic, avoid climbs, scenic route  
**Speed:** 15 km/h  
**From:** Stuttgart Mitte, Selection from map  
**To:** Stuttgart, Call a Bike Bad Cannstatt Bahnhof

### On this page

You can combine your route and ride the public transport system and bring your bike with you. You can find the cost as well as the times when and vehicles in which you are permitted to take your bike on public transport on the VVS Website by clicking on [take my bike with me](#).

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Figure 5: Route with Public Transport (Step 3.1)

### When would you like to depart?

☒ Today  
☐ Tomorrow  
☐ Next Saturday  
☐ Next Sunday

Day . Month . Year  
12 . 03 . 2008

Time: ☒ Departure time  
15 : 12 ☐ Arrival time

### Which type of transport would you like to use?

☒ Regional Train  
☒ S-Bahn  
☒ Subway/Underground  
☒ Bus

### Options

**Comfortable routes:** bike routes with least amount of traffic, avoid climbs, scenic route  
**Speed:** 15 km/h  
**From:** Stuttgart Mitte, Selection from map  
**To:** Stuttgart, Call a Bike Bad Cannstatt Bahnhof  
**Take my bike on PT**

### Your route to a stop or station

I would like to limit my biking time to 10 min

[Stop Selection](#)

### On this page

Click on the „Stop Selection“ button to select a stop or station from which you would like to begin the section of your route on public transport. The list contains stops or stations that can be reached in the set time. The first stop or station in the list is always the closest one to you.

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Step 4 von 4

[Set Route](#)

Figure 6: Selecting Departure Time (Step 3.2)

## Output Dialog

The Bicycle Route Planner begins to search for the most appropriate route based on the options selected by the user. In doing so, it has access to a complete route network. The calculated route is then displayed in several specialized views that can be accessed by clicking on the corresponding tab. The default view shows the route on an interactive map. In addition to the standard map, users can choose to have the route displayed on an official city map of Stuttgart or on a detailed aerial map. On high zoom levels, the current route departure times appear when the arrow hovers over public transport stops on the map. Similarly, all points of interest are linked to corresponding external websites. For a truly eye-catching experience, users can click on the ‘trace’ button to start a bike icon along the length of the route (Trace Route).



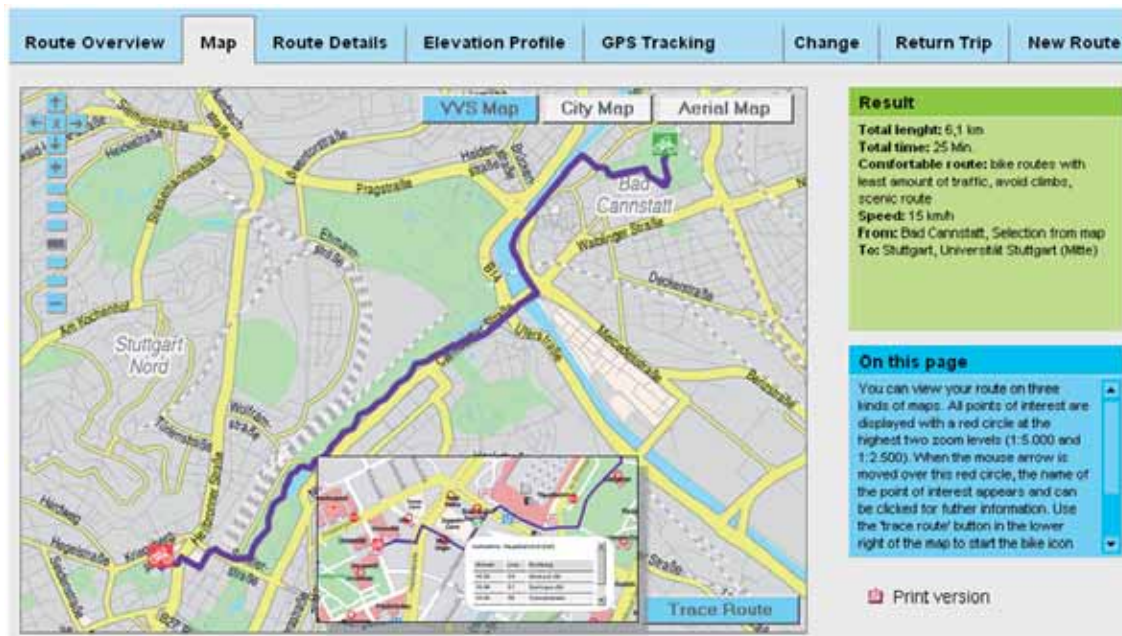


Figure 7: VVS Map



Figure 8: Stuttgart City Map



Figure 9: Aerial Map

Route details are presented in text form with turn-by-turn directions, which are supplemented with the corresponding timetable when the public transport variation was selected. In addition to the normal details like street name, distance and directions, this view also displays information like climbs, amount of traffic, sections where bikes have to be pushed and routes with heavy pedestrian traffic.



Figure 10: Route Details



The elevation profile view shows a graph of the route's course and includes statistics like the route's total climb. For routes with public transport, two profiles are displayed, one for the ride to the stop and one for the ride from the stop respectively. The elevation profile indicates which kind of topography can be expected on the route planned.

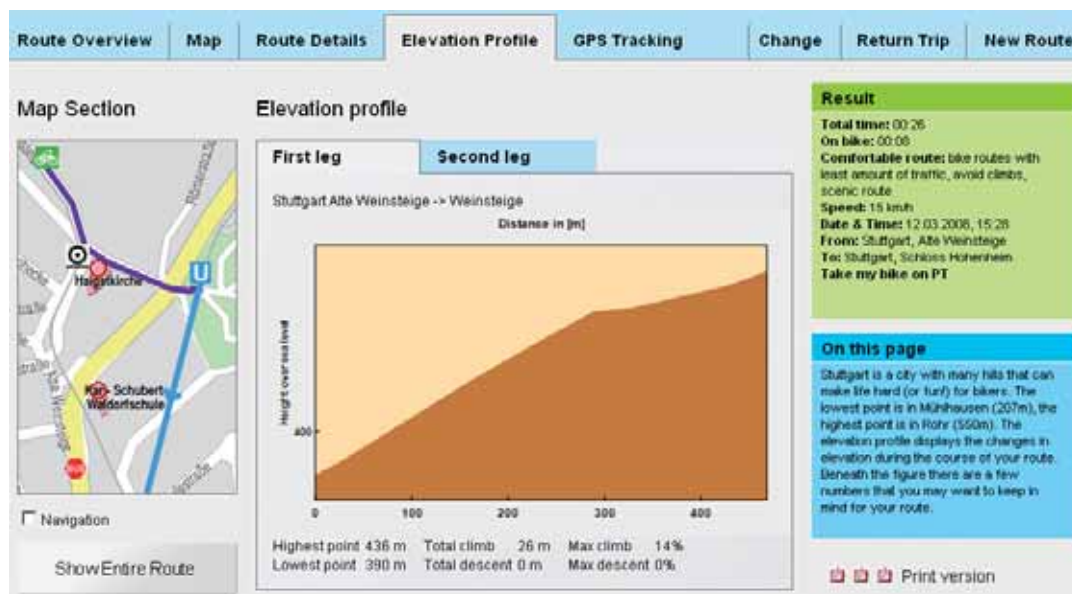


Figure 11: Elevation Profile

For users that have a portable navigation system, the route can be downloaded as a GPS track in GPX format.



Figure 12: GPS Tracking

The classic PDF map will continue to be used as a print version. It contains a map overview, a detailed map, a detailed route description with additional information like amount of traffic, and an elevation profile with its corresponding statistics.

## 4 Evaluation

The Bicycle Route Planner is powered by the VVS journey planning servers, which normally process up to 4 million enquires per month without any difficulty. This makes performance especially pleasing and route calculation and map build very fast.

When the number of hits on the new service is analyzed, a typical characteristic of bicycle route planners becomes evident. Firstly, a route planner for bicycles is a route planner for individual transport. It is more similar to a route planner for cars than a route planner for public transport. Public transport works according to a timetable, which means that a search not only looks for a route, but also for a connection. The result is that a route planner for public transport is queried much more often than a route planner for individual transport. In individual transport, a route only needs to be queried once and can generally be used repeatedly without regard to time. In contrast, time plays a larger role for public transport queries: different connections can result depending on the departure time and a query is often only sent in order to find out the departure time for a specific means of transport. In these examples a journey can frequently turn out differently using the same origin and destination. Solely for this reason a route planner for individual transport is queried less often than a route planner for public transport for a similar number of users.

That having been said, the number of hits received has been encouraging. In the weeks after the system launch in September 2007 the number of queried bicycle routes in Stuttgart was about 500 per day. These numbers dropped in winter and climbed back up during the relatively warm month of February 2008. During the local public transport strike on February 22 and March 6, 2008, the number of queries jumped up to 2000 per day, partly due to the VVS recommendation for commuters to switch to the bicycle to avoid traffic.

The most queried routes are between points of interest (university, train station, TV tower) and evidently routes from home to work, which resulted from an analysis of the destination input often found to be the address of a large employer in the city.

In order to qualitatively assess the Bicycle Route Planner, an online questionnaire was created in which a typical bicycle route could be evaluated. At the same time users were encouraged to send in suggestions and improvements of routes by mail. The answers received were almost all very positive. According to the feedback, the Bicycle Route Planner is used primarily to gain a general overview of the length of the route and the time needed to arrive at the destination by bicycle. This could then be compared to the same or similar route by car, bus or rail. A few replies gave small tips that would further optimize the routes. These suggestions applied mainly to connections in smaller spaces like e.g. not closed-off routes (e.g. through cemeteries etc.) or small and narrow passages. Clearly, this should emphasize the level of detail that the Stuttgart Bicycle Route Planner is dealing with. Yet it is only by delving into similar matters that the system can be guaranteed to be highly accepted by everyday cyclists.

A bicycle route planner with similar quality to the one in Stuttgart is an integral part of promoting bicycle use. A bicycle route planner can help make this information accessible to a larger number of people, particularly when proper infrastructure for cycling already exists or is currently being expanded.

## 5 Outlook

Further successful operation of the Bicycle Route Planner is dependent on the bicycle route network being kept up-to-date. This is why the continuous updating of the database is an integral component of the partnership between the City of Stuttgart and the VVS.

The Bicycle Route Planner, with its high route planning quality, has been confined to the municipal area of the city, even when enquires with more limited quality are also possible within the entire route planning region serviced by the VVS.

Especially with regard to leisure time activities, bicycle routes frequently take place outside the main city and are often spatially and temporally considerably longer than daily (city) bicycle rides to work. On the other hand, the successful launch of the Bicycle Route Planner and the consistently positive user-feedback sparked interest among neighboring districts to implement the Planner in their region. And finally, the combination of the Bicycle Route Planner and the VVS operated public transport network serves as an important feature that would allow for expansion to the entire VVS-service region.

Indeed, an expansion of the system is planned for the districts around Stuttgart, which do not yet have a digital terrain model or a complete and attributed route network. Due to the bit depth of the route network data requested, work will last approx. 6 months for each district.

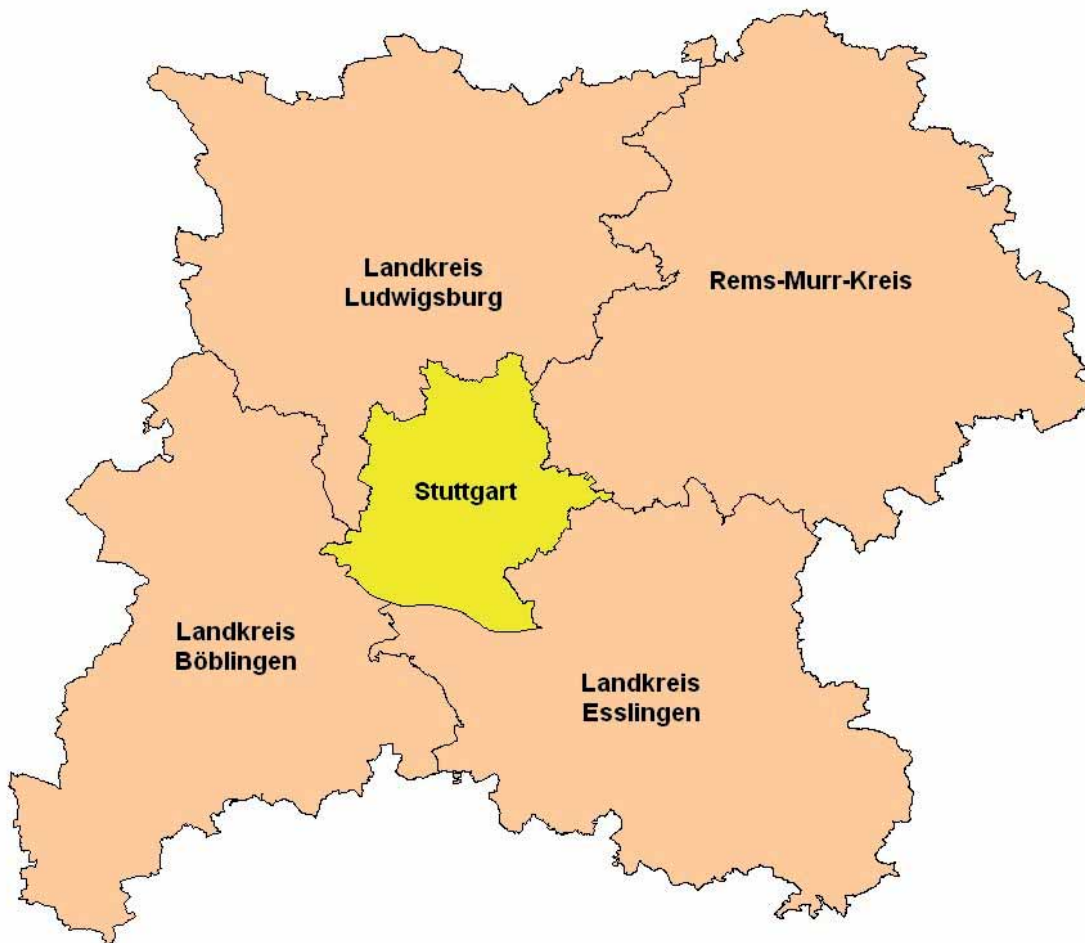


Figure 13: VVS-Districts

In addition, plans are to enhance the Bicycle Route Planner to make arrangements for an entire day through the use of pre-defined bicycle routes and their combination with dynamically calculated intermodal journeys. A further development that has been considered for the Bicycle Route Planner is mapping construction sites and detours, particularly concerning Construction Project 'Stuttgart 21'.



## **Combination cycle and public transport: a strong and sustainable competitor for car use.**

*Hans Voerknecht, KpVV/Fietsberaad (Knowledge Platform Traffic and Transport/Fietsberaad), the Netherlands*

### **Abstract**

The combination bicycle and public transport is growing strongly in the Netherlands and should be seen as a perfect competitor for car use. The system is explained and illuminated with examples. When the cycle-public transport systems combines:

- Good bicycling infrastructure to and from the public transport hub
- Good cycling storage facilities
- Unbended bus routes with as few stops as possible
- Clustering of activities near public transport hubs
- Possibility of convenient and cheap bike hire for the last part of the trip
- Including the bike in the travel advice system

there is a world to gain for this combination, everywhere in Europe.

At the end a comparison of the quality of this system to car use is presented.

### **1 Cycle and public transport: How to test this combination against car use**

There is a growing need for strong alternatives for car use, especially in urban areas. Whereas the autonomous growth of car use largely exceeds the possible growth in infrastructure capacity, betting mainly on new infrastructure comes down to banging one's head against a brick wall or –the Dutch proverb translated literally – mobbing with the tap open. This is the case even more strongly in urban areas, where a car system that provides for the transportation needs of all the travellers is not feasible or at best at prohibitive prices. This apart from the effects on noise, air quality, safety and sustainability in these urban areas.

Almost everybody is aware that betting on car solutions is leading nowhere. For a large part policies used are making car use less attractive. Road pricing, high parking prices etc. are no doubt needed, but what works better is to look for system that is an attractive competitor for car use in all its dimensions. The combination of bicycle use and public transport is the main candidate to outscore car use for middle and long distance transport in urban and suburban areas in most positive factors on car use whilst avoiding the negative factors of car use.

How this would work out will be shown at the end of this paper, but first let's decide on what criteria should be used when comparing car use with alternative travel modes or systems:

1. Speed
2. Costs
3. Reliability
4. Flexibility
5. Luggage and children
6. Comfort
7. Health
8. Sustainability/environment

At the end of this paper we will carry out the comparison.

But first, let's see how the system should look like and function. Then I want to focus on how big parts of it already function in Holland.

## **2 The systemic design of the bicycle-public transport combination**

The kind of trips that the system is fit for, are trips with both origin and destination of the trip are in non-rural areas. In rural areas public transport is in many cases not very attractive, quite infrequent and not very dense. So it is hard to find an attractive public transport hub within cycling distance from origin or destination.

Furthermore for the short trips in urban areas there is hardly any symbiosis between cycle and public transport, but competition. Since an interchange is quite unattractive for such a small distance, people normally choose for the bicycle or the bus, tram or underground. Although it can be argued that the cycle is more attractive for these trips, this is not the subject of this paper.

So we are left with the trip of more than say 10 kilometres in (semi-)urbanised areas. In the Netherlands we are talking about 25 % of all the trips made and 65% of distance covered. (Source MON, Mobility Survey Netherlands).

For the system to work we have a transport from the origin to the public transport hub by bicycle, the main transport is done by fast public transport and the transport from public transport hub to the destination by bicycle again.

So we need a good cycling system in the densely populated areas, an excellent interchange at the public transport hub with good cycling storage facilities. And a way to help people to use a bicycle for the last part of the trip.

For the public transport system the train is the best. It goes fast, does not stop too often and also attracts on the stations enough people to make a good cycling storage advantageous as well as cycle hire systems rewarding. An underground system can be useful too. Where there is no rail transport a bus good do very well, but then you need a redesign for the bus system, so that it has more train-like properties. So few stops (at least at a distance of 2 km), take the quickest links and try to develop small hubs for cycling storage and hire systems. For most towns up to 50.000 inhabitants 1 or 2 hubs will suffice as it will be at most 2 km cycling to the bus hub. And the bus should have free lanes and traffic light priority wherever possible.

In this way you use the fastest travel mode in (semi-)urbanized areas, the bicycle, for the main part of the trip fast public transport is faster than the car, especially in peak hours.

As we will see, this results in faster total trip time than by car in quite a lot of cases, especially in peak hours.

## **3 The Bicycle-public transport system in the Netherlands**

### **3.1 The first part of the trip: the bike**

As you will realise the density of the cycling network in the Netherlands is excellent, although at some places the bicycle routes towards public transport hubs could be given a higher priority. Furthermore a bicycle hire system like Vélib is not needed in the Netherlands, because every possible cyclist in the Netherlands owns a bicycle: 88% of all Dutch households possesses at least one bicycle and the majority has two or more:

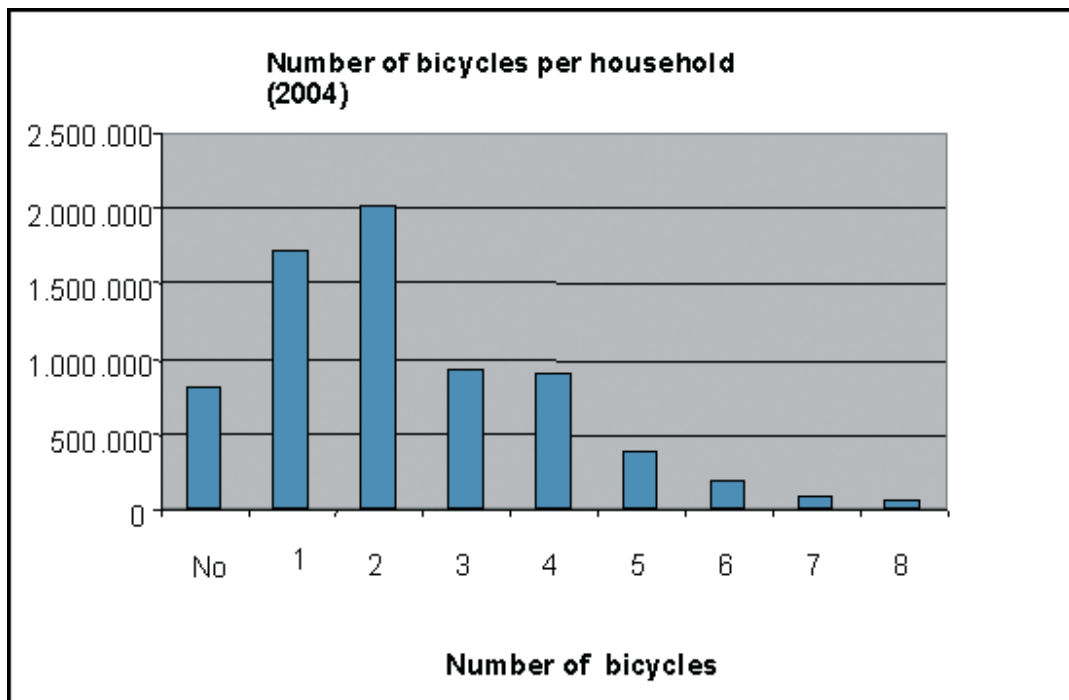


Figure 1: Number of bicycles per households in the Netherlands Source: Mobiliteitsonderzoek Nederland 2004

The next step is enough cycle storage facilities.

## 3.2 The second part of the trip: the change to the public transport system. How to store your bike

### 3.2.1 Cycle storage at train stations

At train stations there are ample facilities for cycle storage. At all stations there is enough space for bicycle parking and at more than 100 stations there is guarded parking. For the NS (Dutch Railways) the reason for investing in good cycle parking facilities is clear: it brings on clients. In fact the bicycle is the single most important transport mode for transporting people to the station in the Netherlands.

Although the rise of the OV-studentenkaart (Student Public Transport card) caused the percentage of bicycles use in transport to the station to decrease strongly in favour of bus, tram and metro (from 45% in 1989 to 37% in 1992) and even less later.

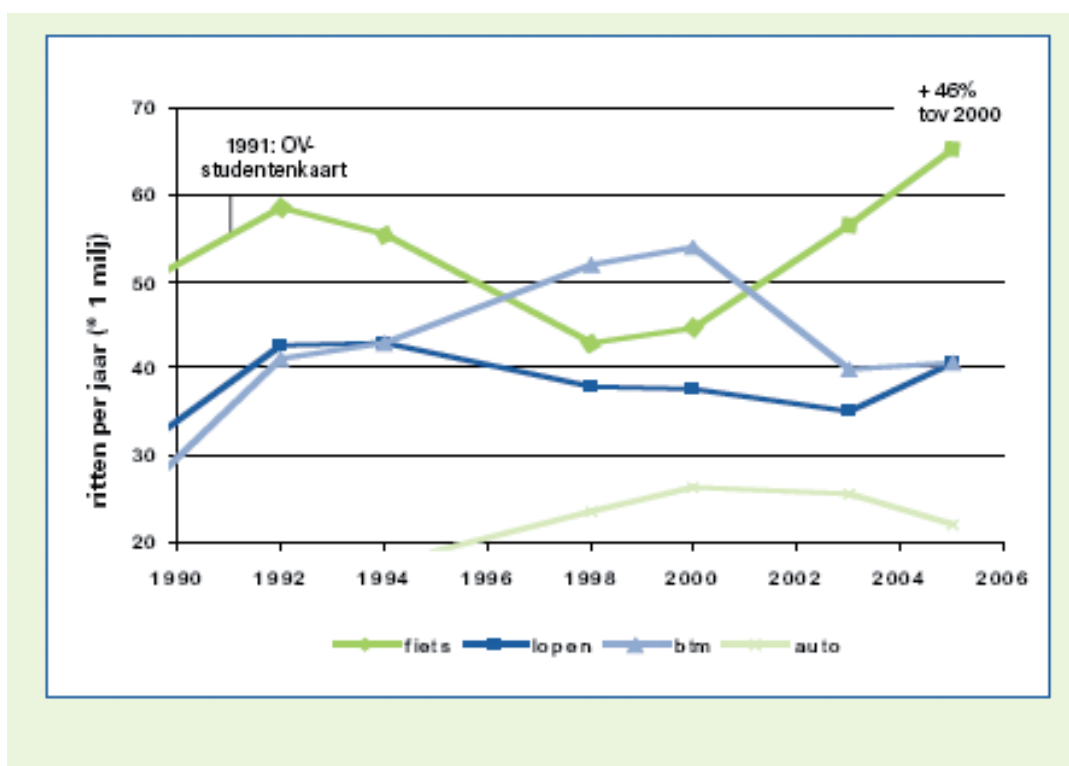


Figure 2: Transport to train stations (Source Customer satisfaction Survey – ProRail) (ritten=trips; fiets=bike; lopen=walk;metro=underground; t.o.v.=in relation to;OV-studentenkaart=PT-student Card)

After the turn of the century the bicycle stages a strong comeback. In the course of five years the number of bicycle trips to the station grows by approximately 46%. In absolute numbers of bicycle trips the dip in the nineties has by now been amply made up for. However, bicycle market share still has not yet reached former levels. In 2005 39% of train passengers reaches the station by bicycle, compared to 45% in 1988.

Transport mode	from home to station	From to station to activity (work/school/ shopping/sport etc)	total
on foot	24.2 %	47.7 %	36.0 %
bicycle, moped	38.6 %	12.0 %	25.3 %
bus, tram, metro	23.2 %	26.0 %	24.6 %
car passenger	5.9 %	7.7 %	6.8 %
car driver	7.2 %	2.3 %	4.7 %
other	0.4 %	3.4 %	1.9 %
(train)taxi	0.5%	1.0 %	0.7 %
Total	100.0 %	100.0 %	100.0 %

**Table 1 Transport modalities in transport to and from train stations in 2005**  
Source: Client satisfaction survey by ProRail

Especially since 2002 the use of the bicycle for transport to the station has grown very fast. And in a lot of place there is a huge number of cycling spaces. Around Utrecht Central Station there are more than 17.000 cycle parking places.

And quite some investments have been made. There are excellent examples in several cities in the Netherlands on bicycle parking near stations to be found on the soon to launch international bicycle knowledge site [www.fietsberaad.org](http://www.fietsberaad.org) (Groningen, Amsterdam Central, Amsterdam WTC, Apeldoorn), but I want to pick the example of Zutphen. Here you find some photographs and on <http://www.fietsberaad.nl/index.cfm?section=Voorbeeldenbank&mode=list&ontwerpvoorbeeldPage=Gebouwen> you can find several examples of cycling storage facilities as well as a complete description and a video on the example of Zutphen.



Figure 3: Zutphen station before the new underground bicycle storage



Figure 4: Zutphen station: the entrance to the new underground bicycle storage





Figure 5: Zutphen inside the underground bicycle parking

When Zutphen planned the investment (€5,5 million) in this underground parking, a survey and counting lead to the conclusion that around 1.500 passengers per day travelled to the station by bike. As the value of the investment had to last for a long time Zutphen decided to make space for a double capacity (3.000 bicycles). In fact it was completely filled nearly from day 1.

This leads to another problem. Luxurious as the bicycle parking position in the Netherlands may seem for other countries there are still large deficits in bicycle parking storage. The number of train passengers grows at about 10% per year in the Netherlands and the relative number of people coming by bike to the station also grows.

Situation	Shortage	Large shortage (>15%)
Large storage in town centre	<b>95%</b>	<b>85%</b>
Suburb	<b>62%</b>	<b>55%</b>
Small storage in town centre	<b>63%</b>	<b>37%</b>
Small storage elsewhere	<b>52%</b>	<b>31%</b>

Table 2: Shortage in cycle storage at train stations (Source: Pro Rail Countings)

As can be seen from Table 2 there is a large number of stations with a large deficit on cycle storage capacity. This can be for a big part be relieved by taking measures on abandoned bicycles (in Dutch: orphan bicycles). Data collected by Fietsberaad in Haarlem, Nijmegen, Eindhoven and Leiden reveal that on average 23% of bicycle stands is occupied by bicycles that are no longer retrieved, abandoned bicycles. When efforts are made to lower this percentage to approximately 3%, this will provide much-needed relief. Use of existing facilities can additionally be improved by introducing a one-week maximum stay. This will release another 8% of stands daily.

The last possibility is making better use of capacity in guarded parking facilities. In a number of cases there is a shortage of unguarded parking facilities in the public space, whereas there is still room in the guarded facility. For many people using unguarded facilities the height of parking rates is the major

reason not to use guarded parking facilities, a survey in the towns mentioned above revealed. Lowering rates at stations with capacity shortages in the public space might contribute to the solution of this problem.

This claim is also supported by the success of the free cycle parking in Zutphen.

A last luxury problem is seen at Amsterdam Central and Groningen and that is that there are so many bicycle places that they sometimes have to be parked several hundreds of meters outside the station, thereby almost nullifying the time won by cycling to the station.

### **3.2.2 Cycle storage at bus, tram or metro stations**

Though surveys are not available, cycle storage facilities at bus stations and bus stops, especially where they can have a trainlike function are growing fast. In nearly all provinces in the Netherlands a lot of investments are made in bicycle parking at bus stations and stops and in most of the times when granting permits for running a bus line, in a lot of cases it is obliged to realize cycle storage near bus stations.

In the province of Drenthe at every bus stop cycle storage is realized (photo below)



Figure 6: Cycle storage at a bus stop in Drenthe

Other good examples are in Rotterdam:



Figure 7: Cycle storage at a bus stop in Rotterdam

But Utrecht good use some more facilities at bus stops:



Figure 8: Bike chaos at a bus stop in Utrecht

An excellent example of how this all could work out is realized in Zuidhorn in the North of the Netherlands.



### Example Zuidhorn

Zuidhorn is a commuter residence west of Groningen. The village Zuidhorn lies at the railway line Groningen-Leeuwarden with a regional function for its surrounding villages. The municipality has a strong rural character.

The accessibility of Groningen by car deteriorated because of congestion near the town.

Zuidhorn has chosen for a centralized bus and train hub, combined with the spatial development of the area. This so-called minitransferium offers an answer for the dilemma in rural-urban transition areas where the car is dominant in the rural area, but not very useful in the urbanized area.



Figure 9: Cycle parking in Zuidhorn

The following developments are realized in 1999:

- A new connection to the secondary road giving the minitransferium a park and ride function for the travelers to Groningen;
- Travelers from Zuidhorn itself take the bicycle to the minitransferium. Bus routes do not stop in Zuidhorn itself and are unbended. They all use the minitransferium as the main change in the trip to Groningen. The smaller bus routes offer a connection to trains and buses to Groningen. This make the bus transport more efficient



Figure 10: Bus routes between Zuidhorn and Groningen

- There is a new busroute (nr.11) to the campus area in the North of Groningen where several faculties of the University of Groningen as well as other educational institutes. This relieves the very busy hub of Groningen Central and gains 20 minutes travel time. The bus connects to every train from the west stopping in Zuidhorn.

The transferium works perfectly. Cycle storage occupation is excellent and extension is desired.

Residents are happy with the multifunctionality of the station area and prefer a hub on cycling distance to a bus stop nearby but stopping everywhere and going slowly.

Still the ideal concept is not realized. In the nearby villages (Aduard etc.) the bus still stops at too many places instead of one stop with a hub function and a lot of cycle parking spaces.

### Example Schijndel

Another example is Schijndel, 15 km South East of 's-Hertogenbosch with 23.000 inhabitants.



Figure 11: Bus routes between Schijndel en 's-Hertogenbosch



They have chosen for realizing extra facilities at some bus stops the so called fiets+bushaltes (cycle+ bus stops). Furthermore the bus route going straight through the village has been removed so only 4 stops remain. The kind of cycle parking facilities you will find there look like:



Table 12: Desired lay-out of cycle storage at cycle+ bus stops in Schijndel

### Example Zuidtangent

A very good example is the Zuidtangent in Noord-Holland between Haarlem-Schiphol Airport and Amsterdam. This is the ideal trainlike bus connection: Stops at least 2 km distance, free bus lanes, and a lot of cycle storage.



Figure 13: Map of the Zuidtangent route

It connects Haarlem (150.000 inhabitants) with Hoofddorp (100.000 inhabitants), Airport Schiphol and Amsterdam South R+East). At all stops there are a lot of cycle parking places and at 5 stops there are bicycle lockers.

### 3.2.3 The last part of the trip

This is the hardest part, because either the bus or train has to stop near your destination, or you would have to be able to hire a bike.

Let us first start with the second possibility.

#### ***The OV-fiets (Public Transport Bike)***

On a growing number of locations people who own a OV-fiets-pass can hire very easy and quick a OV-fiets. You can take a bicycle within a few seconds. Your pass is scanned and the bicycle key and you can take your bike. The costs (€2,75 per 23 hours) is debited automatically to your account. There are 150 locations now and this number grows steadily.

Now the OV-fiets is hired 350.000 times per year.

Targets are 1,5 million hired bicycles in 2015.



Figure 14: The OV-fiets box in Velsen

The OV-fiets is for hire not only at train stations, but also on bus, tram and metro hubs. On the photo above you can see a very special location, near to the landing place of the Fast Ferry from Amsterdam to Velsen, where people can take the bike for the last part of the trip into Velsen. Several provinces and municipalities are thinking about electronically guarded OV-fiets delivery points on more and more bus stops in order to provide a bike for the last part of the trip.

Another possibility is stationing company bikes at train or bus stations. In Lund (Sweden) a lot of companies have bicycles for their staff at the guarded cycling storage at the railway stations. Some companies in the Netherlands have done this too, but it grows very reluctantly, because of the fact that a lot of staff station an old bike at the station for the last part of the trip. A special case should be mentioned in Ede, where the CROW has special CROW-bikes for clients.

### Clustering activities at public transport hubs

But the best device for the winning combination of bicycle and public transport is of course to have no transport from the public transport hub to where you have to be at all. This asks for a clustering of functions near to the hub. There are a lot of brilliant examples of this and it is the Leitprinzip for Dutch spatial planning. The best example is possibly Amsterdam Sloterdijk.

### 3.3 Travel planning and travel advice

A last bit that has to be covered is the information and communication on the bike-public transport travel combination. Unfortunately this is not yet there in the Netherlands.

On [www.9292ov.nl](http://www.9292ov.nl) you can get a travel advice for the public transport, but not with the bike for the journey from home to station. This is due to the fact that this site is financed by the public transport companies, who fear loss of passenger when they are shown the alternative of taking the bike to the station.

This seems to me very short sighted, because when the public transport to the station is very unattractive either people will take the car for the whole trip or they take the bike anyway. The thing is, that including the bike make the comparison of the bike-public transport combination with car use (which is also included in this side, taking congestion time into account) much more favourable in a lot of cases.

Below you see a typical travel advice for public transport:

Van	rotterdam boompjes									
Naar	overtoom, amsterdam									
Datum	dinsdag, 18 maart 2008 17:40									
<b>Vertrek</b>	<b>17:38</b>		<b>17:48</b>		<b>17:48</b>	<b>17:57</b>	<b>17:57</b>	« <b>Eerder</b>		
<b>Aankomst</b>	<b>19:28</b>		<b>19:30</b>		<b>19:38</b>	<b>19:40</b>	<b>19:48</b>	» <b>Later</b>		
<b>Reistijd</b>	<b>1:50</b>		<b>1:42</b>		<b>1:50</b>	<b>1:43</b>	<b>1:51</b>	« <b>Eerste reismogelijkheid</b>		
<b>Overstappen</b>	<b>2</b>		<b>3</b>		<b>2</b>	<b>3</b>	<b>1</b>	» <b>Laatste reismogelijkheid</b>		

















Vertrek	Van	Naar	Aankomst	Hoe
17:48	rotterdam Boompjes	churchillplein rotterdam	17:56	lopen 8 min
17:56	churchillplein rotterdam	centraal station rotterdam	18:01	 tram 8  ret richting rotterdam kleiweg
18:01	centraal station rotterdam	treinstation Centraal rotterdam	18:08	 lopen 7 min
18:08	treinstation Centraal rotterdam spoor 11	treinstation Schiphol schiphol spoor 1-2	18:49	<b>IC</b> intercity  ns richting amsterdam
19:01	treinstation Schiphol schiphol spoor 3	treinstation Lelylaan amsterdam spoor 2	19:09	 sneltrein  ns richting Amsterdam Centraal
19:22	station lelylaan amsterdam	jan pieter heijestraat (overtoom) amsterdam	19:30	 tram 1  gvb richting Centraal Station

Figure 15: A ov9292 travel advice



Including the bike would make this trip some 20 minutes faster. 10 minutes in the journey to Rotterdam Central and 10 minutes in Amsterdam (using the OV-fiets).

Including the Cycle Route planner would give you those excellent maps (fragment)

	ROTTERDAM				
20m	<b>boompjes</b>		(0.0km)		1
60m	<b>rederijstraat</b>	[brug]	(0.1km)		2
50m	<b>rederijbrug</b>	[brug]	(0.1km)		3
170m	<b>glashaven</b>		(0.3km)		4
65m	<b>regentessebrug</b>	[brug]	(0.4km)		5
140m	<b>posthoornstraat</b>		(0.5km)		6
180m	<b>keizerstraat</b>	[brug]	(0.7km)		7
45m	<b>keizerstraat</b>	[voetgangersgebied]	(0.7km)		8

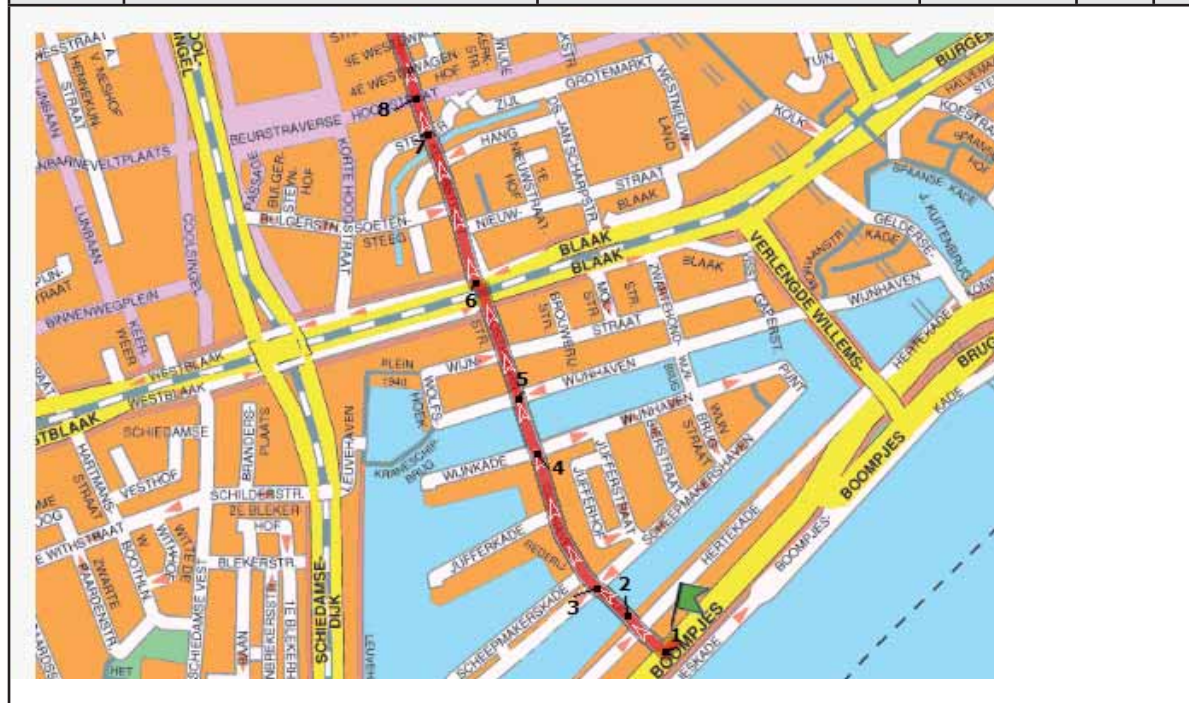


Figure 16: Cycle route planner output (fragment)

Routes that also can be downloaded on every GPS-device.

### 3.4 Summarizing the whole system

When the cycle-public transport systems combines:

1. Good bicycling infrastructure to and from the public transport hub
2. Good cycling storage facilities
3. Unbended bus routes with as few stops as possible
4. Clustering of activities near public transport hubs
5. Possibility of convenient and cheap bike hire for the last part of the trip
6. Including the bike in the travel advice system

You will get a very good and sustainable combination

## 4 The consumer test comparing the bike-PT combination to car use

1. Speed
2. Costs
3. Reliability
4. Flexibility
5. Comfort
6. Health
7. Sustainability/

These were the criteria used

And these are the scores:

	<b>Bike-PT-combination</b>	<b>Car</b>
Speed	+	±
Costs	++	±
Reliability	+	±
Flexibility	+	±
Comfort	+	+
Luggage and children	--	++
Health	++	--
Sustainability/	++	--

Table 3: Comparison of the quality of the bike-PT-combination to car use

Explanation:

Speed in peak time of the bike-PT-combination is higher, because of the congestion on motorways as well as in urban areas;

Of course costs are much lower for the bike-PT-combination, although a strong case could be made for free guarded bicycle parking, surely when car parking is free;

Reliability of the Bike-PT combination is of course completely dependent on reliability of the Public Transport. On the whole you could say that congestion in car traffic induces much more unreliability than the occasional train delay.

Flexibility: The bike-PT-combination offers the same door-to-door trip as the car, but the bike-PT-combination has the advantage that you can travel at any time, whilst that is of course theoretically possible



with car use in practice on some trips you can hardly travel at peak hours

For comfort at first sight the car scores higher, because of the possibility of bad weather, where you would sit high and dry in your car. But this is offset by the better feeling you get when cycling in good weather, the possibility to read, work, sleep or even go to the toilet in the public transport bike of the trip, making this trip more suited to the traveller.

Health: the consequences of people cycling everyday a part of their travelling time can hardly be exaggerated. The illness absence in companies for instance would diminish by about 1,5 % (representing billions of euros) and the total health costs would be reduced enormously.

And for the last part sustainability: Car use contributes 240 times more to global warming than bike use and two times more than train use. Furthermore all local environmental problems like the PM10-particles, noise and so on would completely disappear if urban car use would be replaced by urban bicycle use.

So this combination is worth a truly daring marketing scheme, isn't it.

## Literature

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## **Can MeetBike Replace the Car?**

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### **Abstract**

MeetBike in its second, extended, meaning as MeetBike Alliance of green transport modes is going to establish a competitive alternative to the private car. Under future mobility conditions it is very likely that the MeetBike Alliance as a mobility alliance will be able to replace the private car much more than today, and that this is urgently needed for a more sustainable mobility. The replacement takes place on very different levels from occasional short trips by bike to completely getting rid of the car. This article tries to find out the replacement potentials of MeetBike.

### **1 What is meant by this?**

<Can MeetBike replace the car?> is a difficult question. First, I should clarify what I mean by this, and even then, there is no simple answer but many.

MeetBike, so far, is a network of cities and professionals that promote bicycle transport; it is a European community of people devoting their work to sustainable transport. I hope that, through this conference, MeetBike gains even more momentum on its route towards sustainable mobility.

For me, the term MeetBike also suggests another connotation: Bike meets public transport, bike meets car sharing, public transport and car sharing meet bike – the bike as an integral part of a mobility alliance of green transport modes: walking, biking, public transport, car sharing and taxi as an intermodal and multi-modal mobility system. Within the alliance, all green modes are physically networked and integrated on the informational and organisational levels. This was the focus during the second half of the MeetBike Conference; and I hope MeetBike can achieve a mobility network, which offers a complete, attractive and fully adequate alternative to the private car. For me, MeetBike in its second sense, and once it is developed further, is a synonym for this alternative – for the mobility alliance of green modes or, as I call it: the MeetBike Alliance (figure 1).

### **2 Levels of replacement**

My question <Can MeetBike Replace the Car?> generates many answers, because replacing the car occurs in many different ways, on different levels, and to varying degrees: A short car trip on a sunny summer day is easily replaced by a bike trip. This represents the lowest level of car replacement; let's call it the first level. A totally different, much higher level of car replacement would be when a household decides to sell the family car and to replace it by one bike for each of the household members combined with public transport and car sharing (figure 2). To argue even further: if the private car as a mobility system could be replaced as a whole by the MeetBike Alliance combined with virtual mobility, that would represent the highest level of total car replacement. Such a brave new world of mobility will remain a dream of the few and a night-mare for the majority.

### **3 Future mobility conditions**

As mobility conditions change in the future, will they be in favour of or against the MeetBike Alliance? This is my second question. Let's beam ourselves some twenty years ahead and look back from 2028:

Crude oil, now, is in short supply. Motorized mobility is no longer an unlimited commodity, since hydrogen and electricity are expensive. All motor vehicles are subject to toll on all roads. Since 2015, the transport sector as a whole is included in CO<sub>2</sub>-emission trading. In short, auto-mobility in 2028 is expensive. MeetBike Alliance with its integrated, networked mobility or seamless travelling offers an affordable and reasonable alternative for more and more people.

Car sharing, which began at the end of the last century as an ecological niche product, soon, became strongly professionalized. It completed the MeetBike Alliance

(figure 1) which now competes with the private car. In Switzerland, as early as 2005, car sharing had already 60.000 customers while, in Germany, comparable numbers, considering the different populations, were only reached by 2015. When auto-mobility, around 2012, became significantly more expensive, car sharing reached the steep slope of the common s-shaped logistic curve of market penetration (figure 3) and, finally, today's position in the mobility market with about 2 million customers (Topp, 2006).

At the beginning of this century, public transport authorities, in their role as mobility providers within the MeetBike Alliance, introduced the one-for-all e-ticket based on automatic registration of customers' presence (figure 4). This mobility ticket is a uni-versal smart card, which can be used to reserve services, to pay parking fees, road tolls, taxis, bus and train fares, car sharing and bike sharing as well as telephone and internet. Via the internet users receive their monthly mobility invoice on a best price basis.

The fusion of physical and virtual mobility and the omnipresence of information technology in traffic systems enables the MeetBike Alliance to closely network its elements in order to achieve seamless travelling. The limits of the former separated transport modes are abandoned: cars and bikes have become more public through car sharing and bike sharing; collective public transport is part of individual mobility chains established through individual information. Cell phones function as personal travel agents to build up very flexible multi-modal use of the different green modes and intermodal mobility chains. Bicycle parking was, for a long time, the weak point of intermodal chains because of theft and vandalism; but since 2015, bikes are electronically registered and secured by pin numbers and video observation of parking facilities. Bikes on trains and buses became very common.

Individuality, flexibility and spontaneity shape the widely diversified lifestyles of 2028. Time and space patterns are dissolving. Mass-transit based on large vehicles had to be scaled down to a smaller, more flexible and individual scale. That could only be achieved in alliance with biking and car sharing. By 2028, for many people personal growth and happiness are ranking higher than consumption and satisfaction. The prestige of material possessions has declined, which also holds true for the car as a former status symbol. The bicycle, in contrast, is now a symbol for independence, individuality and a healthy active way of life.

In the early century, obesity especially of young people spread from the US to Europe. Health programs to counterfight overweight and obesity contained the pro-motion of biking as a central part. Biking was rediscovered as a prime mode to and from school. Biking and walking became much safer when, in 2015, the speed limit of 30 km/h was extended to the entire city, including the main arterial streets. Cycling for a healthier nation was a British campaign as early as in 1998: 30 minutes biking five times a week halves the risk of heart and circulation troubles compared with people without any exercise; the risk of a stroke can even be reduced to one third (Pearce, 1998). Integrating exercise in daily life is the easiest, cheapest and least time consuming form to keep you fit.

For a long time, green land development outside the cities (figure 5) was very common and even promoted by tax benefits for commuters. Concentrated, radial traffic flows were becoming increasingly superimposed by peripheral and criss-cross flows over longer distances (figure 6). The density of the city decreased; urban sprawl in suburbia made people car-dependent; but this changed at the beginning of the century, when new, dense and mixed-use city quarters were established on empty land abandoned by military, industry, railways or ports (figure 7). A new trend back to the city (Brühl et al, 2005) and the renaissance of the city were initiated. Inner city development (instead of green land development) with more mobility and less traffic (Topp, 2003) became the most important strategy of spatial development. In inner city areas a household can easily live with one car or without any owned car. Here, MeetBike Alliance offers an easy alternative. Car-dependency in suburbia on the other side absorbs more from a household's budget than is usually noticed. That compensates for higher building costs in the inner city over a longer period. Cities (or city districts) of short distances with densely built-up, mixed-use urban quarters that are convenient for human powered mobility and served by good public transport do not only save time and reduce traffic volumes and energy consumption, but they also provide urbanity and an attractive cultural and communicative environment.

## 4 Replacing potentials

What are the potentials of the MeetBike Alliance replacing the car? In trying to answer my third question, we need to consider the different levels of car replacement (figure 2), from short trips by bike instead of by car to living without an owned car.

### 4.1 Level 1: Short car trips replaced by bike

Many short trips within the bicycle range of 5 to 10 kilometers or even shorter are covered by car. In Germany, more than 40 % of up to 7.5 km-trips are car trips, or, to put it otherwise, more than 50 % of all car trips are falling in this distance category. Of course, many of these trips are parts of a mobility chain, thus more difficult to be replaced by bike. In the Netherlands even the car drivers themselves admitted that they could easily and without any problem use the bike instead of the car for about 25 % of their short trips; the same applies for further 25 % without much effort. In some Dutch cities more than 50 % of up to 5 km-trips are bike rides (Lehner-Lierz, 2005).

Since 2003, the County Council in Uppsala, Sweden, is running a project Healthy Cyclists to convince regular car commuters to switch to the bicycle (Hyllenius, 2006). 350 employees were participating; their number of sick days was reduced from an average of 10 to 3 days. In the summer of 2007 the City of Paris launched her city-wide Vélib-system, the biggest bicycle rental service with more than 1.000 stations dotting the city at intervals of 300 meters. Vélib stands for vélo libre or free bike: the first half hour is free, that means no payment for the first ride. During the summer on average 50.000 to 70.000 bicycles were rented out every day, cycling for about 100.000 kilometers in total (Bührmann, 2008).

So, the potential of replacing short car trips by bike lies, ecologically, in less car kilometers driven with cold engines, less cars parked all over and, as an individual, in better health and fitness and in a new experience of the urban environment, what can induce further behavioural changes.

### 4.2 Level 2: Long car trips by bike plus public transport

Car trips beyond the bicycle range are to be replaced by combining the bike and public transport in the different forms of Bike-and-Ride, Bike-and-Rail, Ride-and-Bike, Rail-and-Rent-a-Bike or Admission of Bikes on trains and buses. Bike-and-Rail is very popular in the Netherlands: about 40 % of all access trips to the railway stations are done by bike and 14 % of the last mile from the station (Givoni, 2008). In Germany, the percentage of the access trips by bike is only about 10 % due to still missing roofed and safe bicycle stalls in many cities; bicycle theft and vandalism is one of the main obstacles to use the bike. The programme 100 Bicycle Stations in Northrhine-Westphalia shows what can be achieved by appropriate bicycle parking facilities at railway stations: 87 % of the customers continue their trip with public transport (ADFC, 2000); 25 % changed to Bike-and-Rail, 15 % leave their car at home and 10 % are new customers of public transport (London, 2007). Rent-a-Bike, Call-a-Bike or Chip'n Bike, a fast, easy and user-friendly electronic self service rental station in Austria (Breid, 2007), as well as, the regular admission of bikes onboard public transport (Bracher, 2000) support intermodal mobility by bike plus public transport.

Bike-plus-PublicTransport's potential represents the first step towards a sustainable alternative to the private car for urban, regional and far distance transport as well. It reduces car-dependency, replaces much more car kilometers than with the short trips, saves money for the budget of private households, and reduces traffic volumes. A study for the two German cities (Kaiserslautern and Karlsruhe) some ten years ago (Haag, 1996) showed that 27 to 33 % of all car trips were easily replacable by walking, biking and public transport under the then prevailing conditions, with improved public transport the replacable share went up to 33 to 53 % and additionally considering changing choices of destinations it was even 46 to 63 %.

### **4.3 Level 3: Pupil's bike replaces parent's taxi**

If you want to change mobility habits address young people to establish a positive attitude towards sustainable transport modes at an early age. When I went to school the bike was our prime mode to and from school; we met peers on our way and enjoyed free time without parents. Today, the bicycle stalls at schools in Germany, if they are still there, are mostly empty. The main reason is that parents feel biking is not safe. That is true to a certain extent, but parents driving their kids to school are part of the problem.

Some schools and municipalities in several European countries are going to support walking and biking to school and the schools include mobility in their social and environmental education. They provide, together with the parents, walking and biking buses to tackle the safety problem in groups escorted by parents. In Linköping, Sweden, for instance, in an eight-week-campaign in 18 competing schools commuting to school by parent's taxi was reduced by 40 % (Ståhlspets, 2006). In a similar case in Stockholm the number of walking and biking buses rose by 500 % (Daryaniat, 2007). Participating children seemed to be healthier and more alert and they have fun going to school together with their peers; the parents' mobility habits also changed. In a different case, in Germany, the parent's taxi 'was changed from car to tandem bike (Magnes, 2007). That might be a better parent's taxi (figure 8), but it still remains a parent's taxi. It could be a first step to change mobility habits, but the second step has to be independent mobility of young kids as a better chance to discover their world.

Approaching young people with mobility issues is part of education; its immediate effects are improved traffic safety, developing social skills, fighting obesity and, in the long term, it lays the foundation of a healthy and responsible, - in short - sustainable life style.

### **4.4 Level 4: Mobility chains by MeetBike Alliance**

Human powered mobility is limited in distance, and public transport cannot fit supply with all demands: it is not operating everywhere at every time like the car, and it is not suitable to carry baggage. These gaps are to be closed by the public car in the form of car sharing as the forth column of the MeetBike Alliance (figure 1). So, finally, the MeetBike Alliance is able to provide a fully adequate alternative to the private car; it even can replace car oriented mobility chains covering peripheral areas at odd times and with baggage. That opens a new dimension and new potentials in re-placing the private car. Today, in Germany, car sharing has about 100.000 customers (figure 3). Compared to Switzerland with about ten times as many customers per population, there is a huge potential which was repeatedly assumed to be around two million (Baum / Pesch, 1994; Loose / Mohr / Nobis, 2004).

An important step forward for the MeetBike Alliance in Germany was the permission of parking spaces for car sharing cars similar to taxi stands within the public realm. A pioneer of this was the City of Bremen with its mobil.punkte (figure 9) which are mobility locations at public transport stops integrating car sharing, bicycle racks, taxis and mobility-related information. The car sharing customers at the mobil.punkte are predominantly private users (83 %); but surprisingly enough 17 % are corporate customers. 30 % of the private customers have replaced a private car, and 55 % have not purchased a car due to the new service; the corresponding figures for the corporate customers are 21 % and 67 % (City of Bremen / Glotz-Richter, 2004).

The MeetBike Alliance will gain much more potential in the future when motorized mobility is getting more expensive. It finally could develop as a mobility guarantee for all.



#### **4.5 Level 5: No second car in a household or living without any owned car**

Car ownership is expensive and not very efficient: on average, a private car is only driven a bare hour a day while it is parked for 23 hours. Mobility chains are getting more flexible and more individual if I can return my car sharing car without searching for a parking space and not having to pick it up on my way back. The MeetBike Alliance opens an easy and convenient alternative to live without an owned car in the city or without a second car in the periphery; that represents a big leap forward towards sustainable mobility. MeetBike Alliance also supports and reinforces the new trend back to the city; it saves money and thus compensates for higher real estate prices in the inner city. Surveys among new car sharing customers show that to avoid buying a car or to get rid of a car is one of the main motivations. That preferably happens in a situation of change, like moving, changing jobs, moving in together or separating of couples, child birth etc.. Under such circumstances, even to-day, 10 to 20 % of new car sharing customers get rid of their car and for about 30 % of new customers car sharing as part of the MeetBike Alliance is the alternative to buying a car (Topp, 2005).

In the future, with more expensive motorized mobility, a further developed MeetBike Alliance and the renaissance of the city, the replacement of car ownership could get momentum. It is likely that, in 2028, the convenient use of the right car at the right location at the right time is more important than to own the same car all the time.

### **5 Biking world-wide**

So far, my talk is focusing on European developments. If you look at the bicycle's role worldwide you see it shrinking in countries where private urban transport used to be based mainly on bikes - like in China or Vietnam. There the transition from bikes to mopeds, to used or small cars is accelerating. A recent symbol of this development is the Indian TATA car for less than 2.000 EURO. That is not new at all. In Western Europe we transitioned in a similar way in the 1950s. Does that mean, that other parts of the world will necessarily follow the same route, going through the same errors? I don't think so, but it doesn't make sense to raise the finger and warn them of errors. People in China, Vietnam or India, they want motorized mobility to facilitate their lives or as a status symbol as much as we wanted it fifty years ago. The best chance for countries at their early stage of motorization could be to leave out certain stages of our development, what is referred to as leap frogging (figure 10) in developing policies. Applied to transport that means to avoid the deep bottom of an extremely low share of bicycle traffic like we went through in the 1970s. Instead of going through the deep valley, it could be bridged aiming to maintain at least bicycle shares which prove to be possible in highly motorized countries like The Netherlands or Denmark (figure 10).

### **6 Résumé**

The examples of the Netherlands and Denmark, as well as several cities in other countries like Münster, Germany, or Parma, Italy, show that bicycle shares of more than 30 % in the modal split balance are possible, even under today's mobility conditions. Years ahead, when motorized mobility will become more and more expensive MeetBike Alliance will become the suitable alternative for more and more people. Ecologically the extension of our Western mobility model based mainly on the private car to the whole world is not feasible at all. It is our responsibility to develop an alternative and to live it as an example for other parts of the world.

The alternative is to be found in strengthening walking and biking as the most sustainable and healthiest modes of transport in the livable city of short distances supplemented by public transport and car sharing. Only an alliance of walking, biking, public transport and car sharing as a carefully coordinated mobility package and a networked solution as a seamless whole can replace the car to a sufficient extent. So, MeetBike in its two meanings, as a network to promote biking, as well as a mobility alliance, plays a very important role in shaping mobility towards sustainability.

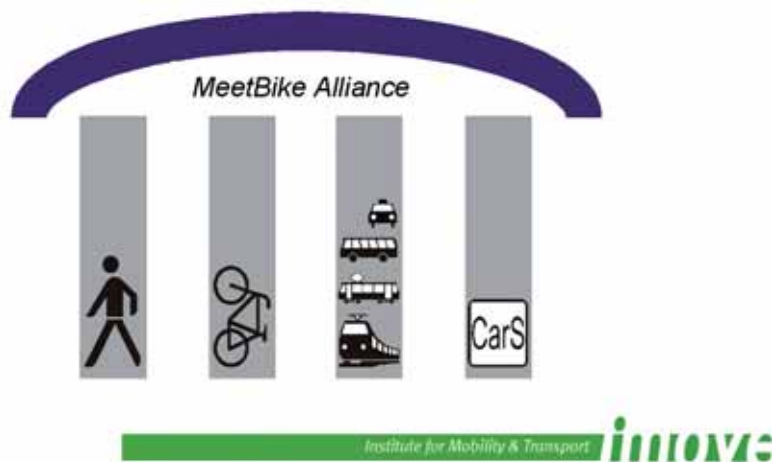


Figure 1: Car Sharing as the 4<sup>th</sup> Column of the MeetBike Alliance (Huyer, 2003)

- Level 1: Short car trips replaced by bike
- Level 2: Long trips by bike & public transport
- Level 3: Pupil's bike replaces *parent's taxi*
- Level 4: Mobility chains by *MeetBike Alliance*
- Level 5: No second car in a household or living without any owned car



Figure 2: Levels of Car Replacement

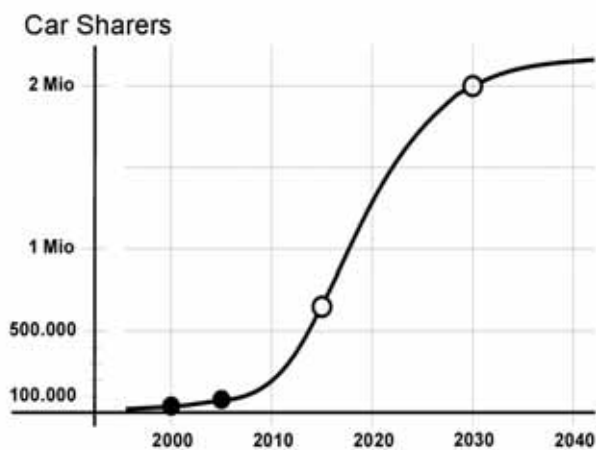


Figure 3: Market Penetration of Car Shering in Germany (own figure)



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Figure 4: Electronic Ticket in Dresden 2005



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Figure 5: Green Land Development (Zwischenstadt)  
Austrian/Swiss Rhine Valley (Photo: Vision Rheintal)

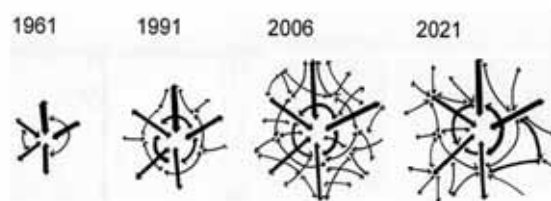


Figure 6: Spatial Structure of Traffic Patterns

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Figure 6: Spatial Structure of Traffic Patterns (own figure)



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Figure 7: Inner City Development: HafenCity Hamburg  
(model: Korol; illustration: Schiebel)



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Figure 8: A better parent's Taxi ( Photos: Kolberg, zwei plus zwei)



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Figure 9: mobil.punkt in Bremen (Photo: Gloz-Richter)



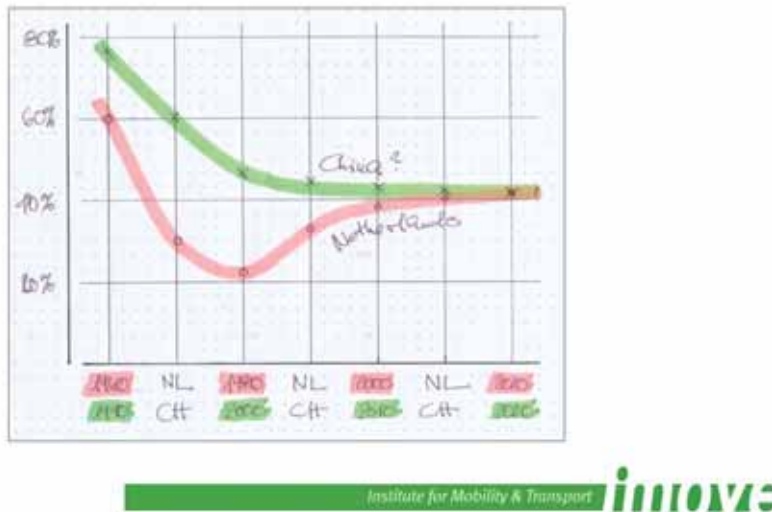


Figure 10: Bike Shares in Dutch and Chinese Cities – leap frogging (own figure)

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## **Goodbye and see you again on March 12th and 13th 2009 in Dresden**

*Gerd-Axel Ahrens, Technische Universität Dresden, „Friedrich List“ Faculty of Traffic and Transport Sciences*

There is not much to add to the vision of Hartmut Topp who provided us with the perfect final remark to widen our horizon and to see the necessary interrelations and coalitions in order to reach more than with just bicycle or public transport sector thinking.

We need a clear analysis of causal relations in order to not just articulate wishful thinking of planners. The MeetBike-alliance, a broad mobility coalition for less accidents, less pollution, less noise and more quality in our cities found major parts of its theoretical basis today. We invite you all to continue our discussion and exchange of ideas already in one year on the 12th and 13th of March 2009 here in Dresden.





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