



Cycling in the Netherlands

With special thanks to:



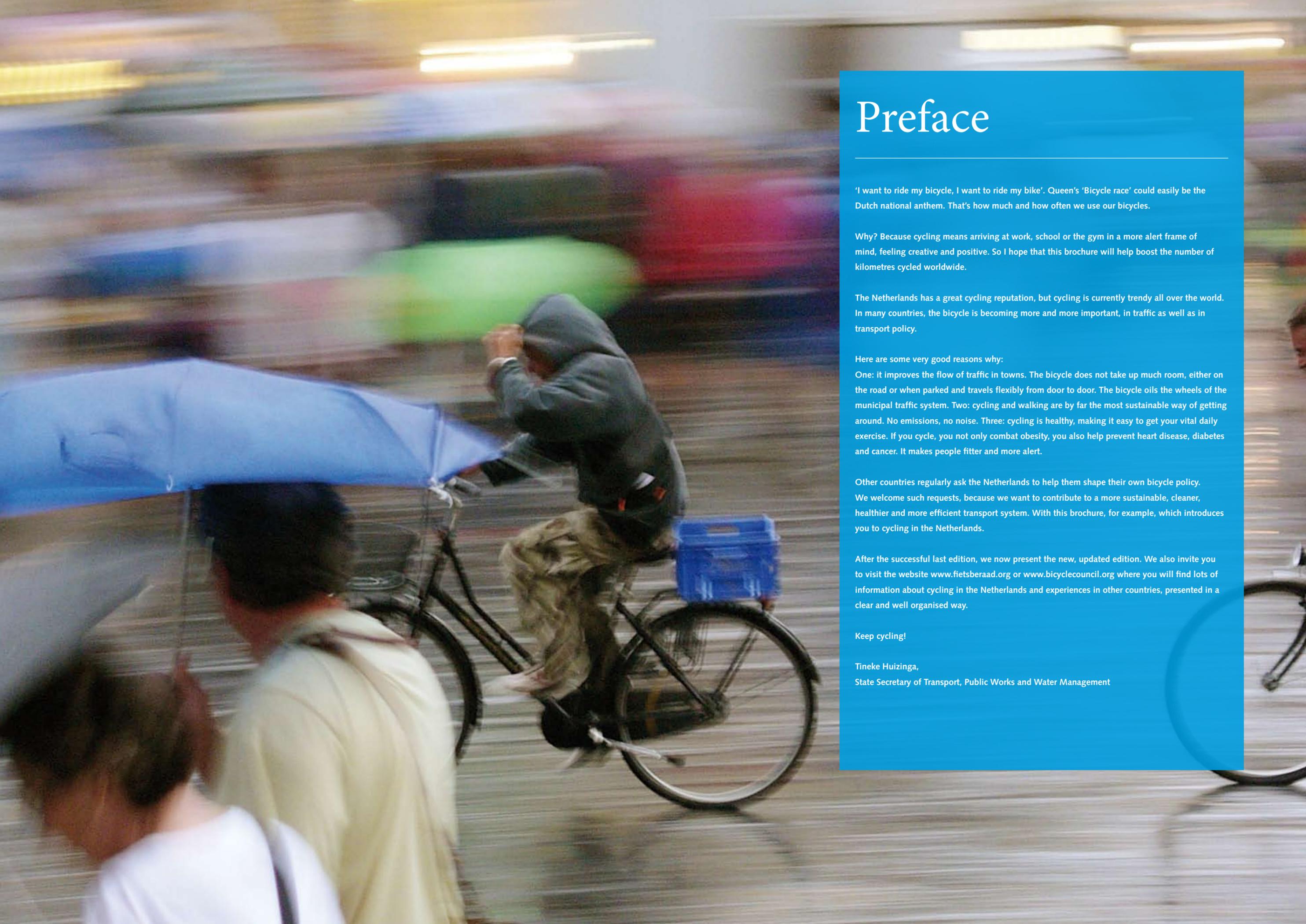
Cycling in the Netherlands



Ministerie van Verkeer en Waterstaat

Index

Preface	7	Chapter 4: Practical measures	53
Chapter 1: Cycling in the Netherland	9	4.1 Spatial policy: nearby destinations	55
1.1 Bicycle use in the Netherlands	11	Example N Houten: spatial structure aimed at slow traffic	54
1.2 Dutch bicycle use in a European perspective	12	4.2 Road infrastructure for cyclists	55
1.3 Bicycle ownership and theft	15	Example O Zwolle: Independent bicycle network	56
1.4 Bicycles and traffic safety	15	Example P Veenendaal: Systematic 300 metre mesh width	58
1.5 Bicycle policy works	17	Example Q Innovative bicycle bridges	60
1.6 Bicycle and traffic safety	19	Example R Zwolle: the city of bicycle lanes	62
1.7 Bicycle policy works	19	Example S Bicycle highway between Breda and Etten-Leur	64
1.8 Cycling and health	23	Example T Bicycle street Oss municipality	65
1.9 International dissemination of cycling expertise and experience	23	4.3 Good bicycle parking facilities	67
Chapter 2: The Dutch approach in brief	25	Example U Bicycle parking in Utrecht	66
2.1 Objectives of bicycle policy	26	Example V Free guarded parking in Apeldoorn	66
2.2 Municipal bicycle policy: traditionally at the core	26	4.4 Tackling bicycle theft	69
Example A Groningen: consistent policy	29	Example W Winterswijk: winner of the best approach to bicycle theft	68
Example B Amsterdam: complex organisation and comprehensive bicycle policy	31	Example X Innovative approach in Amsterdam	68
2.3 Provinces and urban areas: decentralised directors	33	4.5. Education, information and enforcement	71
Example C Zeeland: bicycle Action Plan	32	Example Y Province of Brabant Traffic Safety Label	70
Example D Gelderland: broad and progressive bicycle policy	32	Appendix: Other English-language information about cycling in the Netherlands	73
2.4 The state: support for decentralised policy	33		
Chapter 3: Facilities for all target groups	37		
3.1 Shopping by bicycle	39		
Example E Houten and Veenendaal: bicycle traffic and flourishing retail trade	38		
3.2 Cycling to work	41		
Example F Company bicycle: effective employer measure	40		
Example G Trappers: Innovation in mobility management	40		
3.3 Cycling to school	45		
Example H Safer passage for children through Delft	43		
Example I The Hague: Guarded parking in secondary schools	44		
3.4 Cycling and recreation	47		
Example J Recreational cycling Zeeland	46		
3.5 Cycling in the chain – the combination with public transport	48		
Example K The Public Transport Bicycle	51		
Example L The storeroom in Leiden and the bicycle flat in Amsterdam	51		
Example M Park and Bike Amsterdam	51		



Preface

'I want to ride my bicycle, I want to ride my bike'. Queen's 'Bicycle race' could easily be the Dutch national anthem. That's how much and how often we use our bicycles.

Why? Because cycling means arriving at work, school or the gym in a more alert frame of mind, feeling creative and positive. So I hope that this brochure will help boost the number of kilometres cycled worldwide.

The Netherlands has a great cycling reputation, but cycling is currently trendy all over the world. In many countries, the bicycle is becoming more and more important, in traffic as well as in transport policy.

Here are some very good reasons why:

One: it improves the flow of traffic in towns. The bicycle does not take up much room, either on the road or when parked and travels flexibly from door to door. The bicycle oils the wheels of the municipal traffic system. Two: cycling and walking are by far the most sustainable way of getting around. No emissions, no noise. Three: cycling is healthy, making it easy to get your vital daily exercise. If you cycle, you not only combat obesity, you also help prevent heart disease, diabetes and cancer. It makes people fitter and more alert.

Other countries regularly ask the Netherlands to help them shape their own bicycle policy. We welcome such requests, because we want to contribute to a more sustainable, cleaner, healthier and more efficient transport system. With this brochure, for example, which introduces you to cycling in the Netherlands.

After the successful last edition, we now present the new, updated edition. We also invite you to visit the website www.fietsberaad.org or www.bicyclecouncil.org where you will find lots of information about cycling in the Netherlands and experiences in other countries, presented in a clear and well organised way.

Keep cycling!

Tineke Huizinga,
State Secretary of Transport, Public Works and Water Management

Cycling in the Netherlands

The Netherlands and cycling have been synonymous for years. In this chapter we list a number of statistics and facts about the past and present of cycling in the Netherlands.





Figure 1: Journeys according to main transportation means and distance category in 2007 (Source: Mobiliteitsonderzoek [Mobility Study] Nederland 2007, AVV)

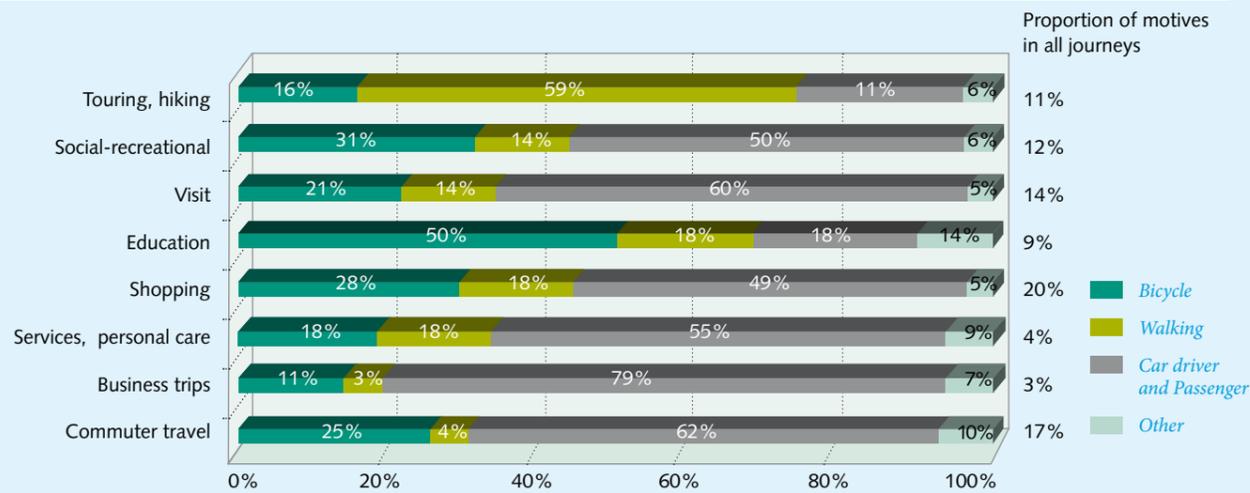


Figure 2: Journeys by main means of transport and motive in 2007 (Source: Mobiliteitsonderzoek [Mobility Study] Nederland 2007, AVV)

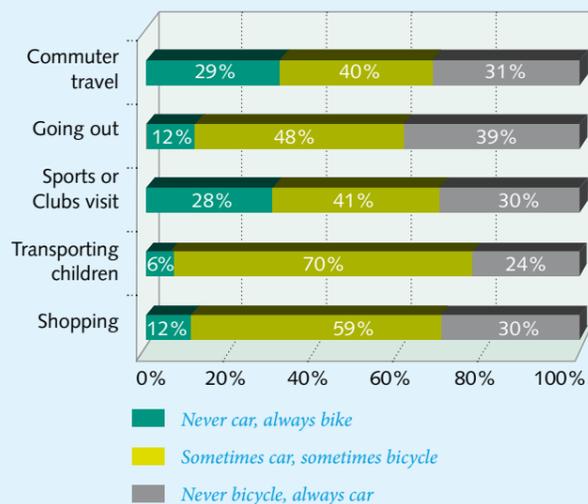


Figure 3: Choice of car or bicycle for journeys up to 7.5 km per travel reason. (Source: Study on Short Trip Relocation Repertoire, citizens with a car)

Municipality	Cycle share
Groningen	38%
Zwolle	37%
Leiden	33%
Ede	32%
Veenendaal	32%
Lelystad	19%
Capelle aan den IJssel	18%
Sittard-Geleen	17%
Rotterdam	16%
Heerlen	10%

Table 1. Percentage of bicycle use in 2003 in a number of Dutch cities with more than 50,000 inhabitants (Source: CBS)

1.1 Bicycle use in the Netherlands

Transportation methods and distances

Despite the increasing distances covered by the Dutch, the bicycle has retained its popularity. The bicycle is used for more than a quarter of all journeys. In fact for distances up to 7.5 km, the bicycle is the most popular means of transport. In 2007, 34% of all trips up to 7.5 km were made by bicycle. (Figure 1)

Bicycle use very much depends on the distance covered. As 70% of all journeys in the Netherlands are still shorter than 7.5 km, the strong position of the bicycle over short distances (35%) also extends into the total modality split (27% bicycle). At the same time, it is interesting to note that the bicycle is regularly chosen above 7.5 km: 15% of journeys in the category 7.5-15 km.

Motives

In the Netherlands, the use of bicycles is not restricted solely to school-going children. Certainly, bicycle use among those involved in 'education/study' is the highest (50%), but this only relates to a limited percentage of all journeys (9%). (Figure 2)

The high overall cycling proportion (26%) is far more due to the fact that the bicycle achieves a more or less comparable share in all travel motives – and particularly in the most important motives in terms of scope, such as commuter travel and shopping.

In the Netherlands, many people do not make absolute choices between using the car or the bicycle over shorter distances. The image of 'sometimes the bike and sometimes the car' is dominant. (Figure 3)

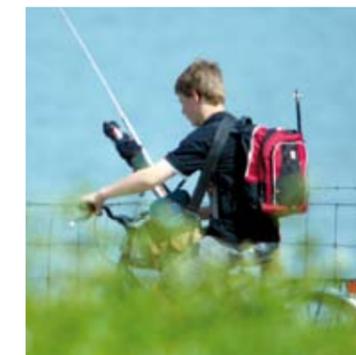
People who do have a choice between using the car or bicycle for their short trips tend to alternate in their respective use.

Urban bicycle share

Cycling is a very popular activity in the Netherlands, but this does not mean that cycling is prevalent all over the country. Table 1 shows the top five cities with the biggest cycling percentages and the five cities with the lowest cycling percentages in 2003.

On average, the Dutch chose the bicycle for 26% of their journeys in 2007.

In the cities with the highest bicycle use such as Groningen and Zwolle, the cycling percentage is about 50% above the Dutch average. In the cities with the lowest bicycle use, it is about 50% under the national average.



1.2 Dutch bicycle use in a European perspective

There are no reliable international/European statistics showing comparable figures per country for bicycle use. In 2006, largely through searching on the Internet, a number of figures relating to the use of bicycles in European cities and countries were compiled. The statistics below (Table 2, Figure 4) always start from figures that are known to relate to the bicycle share in all journeys (by inhabitants of the city or country concerned). These figures originate from many sources; at least two per city (minor differences have been erased).

	National figures Approx (recent years)	Picture at the municipal level
The Netherlands	26%	The top municipalities score between 35% and 40%; cities with the lowest bicycle use rate between 15% and 20%
Denmark	19%	The differences among the larger cities are relatively small: in general at the level of 20% of all trips
Germany	10%	The western federal states have a higher average bicycle use, especially Nordrhein-Westfalen. Several cities with bicycle shares between 20% and 30%
Austria	9%	Top: Graz (14%) and Salzburg (19%)
Switzerland	9%	Several cities at a higher level, like Bern (15%), Basel (17%) and especially Winterthur (approx. 20%)
Belgium	8%	Many cities in Flanders approach 15%. Top: Bruges - almost 20%
Sweden	7%	Cities: 10%. Extremes: Lund and Malmö 20%. The small city of Västerås: 33%
Italy	5%	A few striking exceptions, especially in the Po Plains, with places like Parma (over 15%) and Ferrara (around 30%). Another top city: Florence (over 20%)
France	5%	Top: Strasbourg 12% and Avignon 10%
Ireland	3%	Virtually no upward extremes (Dublin 5% at most)
Czech Republic	3%	A few cities with some degree of bicycle use (Ostrava, Olomouc and České Budejovice, between 5% and 10%) and some with an even higher bicycle use (Prostejov 20%)
Great Britain	2%	Some isolated cities with a much higher degree of bicycle use (York and Hull 11%, Oxford and especially Cambridge nearing 20%)

Table 2: Bicycle share in all journeys in some other European countries and cities

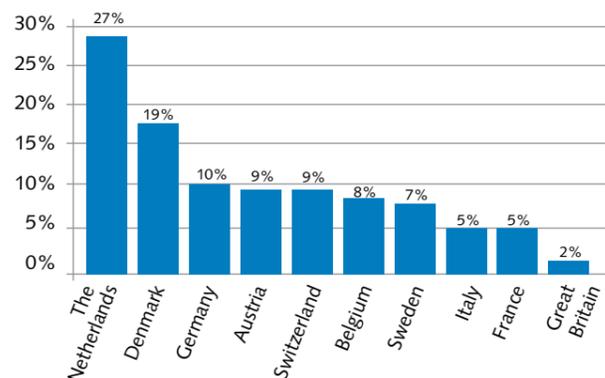


Figure 4: Bicycle share in all journeys in some other European countries

Thus outside the Netherlands there are other European cities with a high level of bicycle use (above 20% in the modal split).

Historical developments

If we consider the historical developments in bicycle use, there are clear differences between Dutch cities and other European cities. There are also striking similarities. Figure 5 shows the development of bicycle use in nine European cities. The overall trend at the start of last century shows an enormous increase in bicycle use in most European cities. Between 1950 and 1970, bicycle use declined dramatically with the rise of the car. Ultimately bicycle use rose slightly again in most cities.

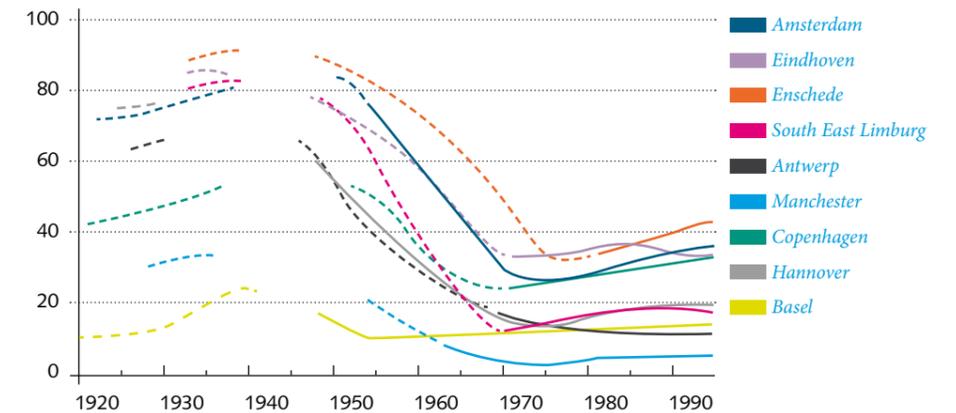


Figure 5: Historical development in bicycle share in 9 European cities Source: A.A. Albert de la Bruheze and F.C.A. Vervaart. Bicycle traffic in practice and policy in the twentieth century, 1999

Apart from the general parallels in the trend lines, we immediately find very striking differences. Differences in the level on which this general continuous movement takes place, and differences in strength of the rise and fall of the bicycle use share:

- A high bicycle share (more than 30%) for Amsterdam, Eindhoven, Enschede and Copenhagen - cities that never saw the arrival of a 'bicycle use-devouring' public transport system and where bicycle traffic had always been a regular component of traffic policy. Accepting the cyclist as a 'normal' traffic participant with equal rights in the '50s and '60s has been a crucial factor in these cities.
- An average bicycle share (approx. 20%) for South-East Limburg and Hannover. Here, the rise of the car coincided with a more manifest pro-car policy and a spatial structure which was more in line with the car.
- A low bicycle share (approx. 10% or below) for Antwerp, Manchester and Basel. Here it is especially the car-oriented traffic policy that explains matters, and the manifest influence of an early, properly functioning public transport system (Manchester). The decline which was the result of the arrival of the motor car continues uninterrupted and without 'brakes', because all relevant influencing factors are pointing in the same direction: a negative collective picture on cycling, a strong car-oriented policy, realisation of a large-scale car infrastructure, strong suburbanisation.

The differences occurring in the '90s can mainly be explained from the view of local policy on the role and value of the bicycle occurring between cities in the '90s can in the first place be explained from the view of local spatial and traffic policy and the resulting 'local picture' of the role and value of bicycle use. However, as this explanation is a long-term one it must be considered over decades. With regard to spatial policy and picture-forming this conclusion is not surprising, as by their very nature they will only very gradually result in changes. All this left aside, traffic policy also appears to have a relevant, continuous influence. Political choices made in the '50s and '60s still resound in our present time. In various foreign cities a negative image and the ensuing concrete 'anti-bicycle' measures were intense to a degree that is hard to imagine for the present-day people of the Netherlands.

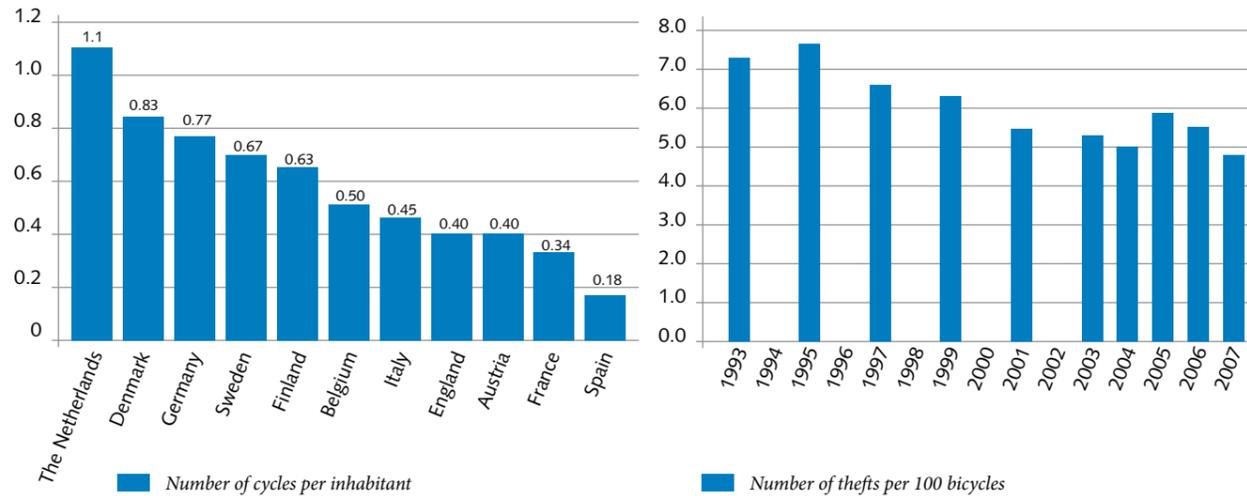


Figure 6: Bicycle ownership in a number of European countries in 2004 (Source: European Commission)

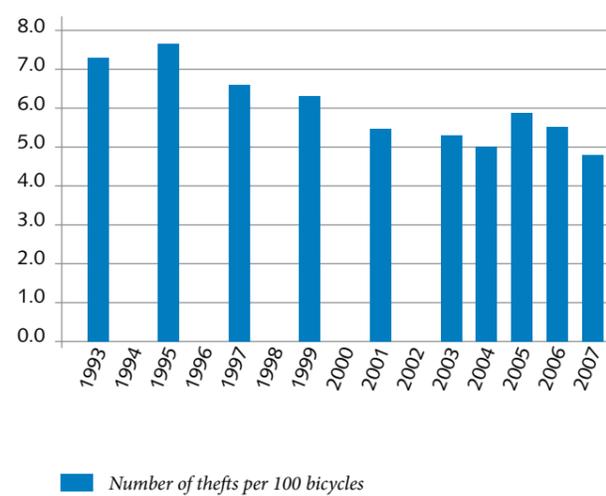


Figure 7: No. of stolen bicycles per year (source: Police Monitor until 2008, since 2005: Safety Monitor)

	1980	2001	2005
Passenger km by bicycles	9,9 billion	13,1 billion	14,4 billion
Passenger km by car	107,1 billion	141,6 billion	148,8 billion
No. of deceased cyclists	426	195	181
No. of deceased car occupants	910	477	371

Table 3: Number of passenger kilometres and number of deceased cyclists and car occupants in 1980 and 2001 (Source: CBS-OVG and AVV-BG)

Killed cyclists per 100 million km

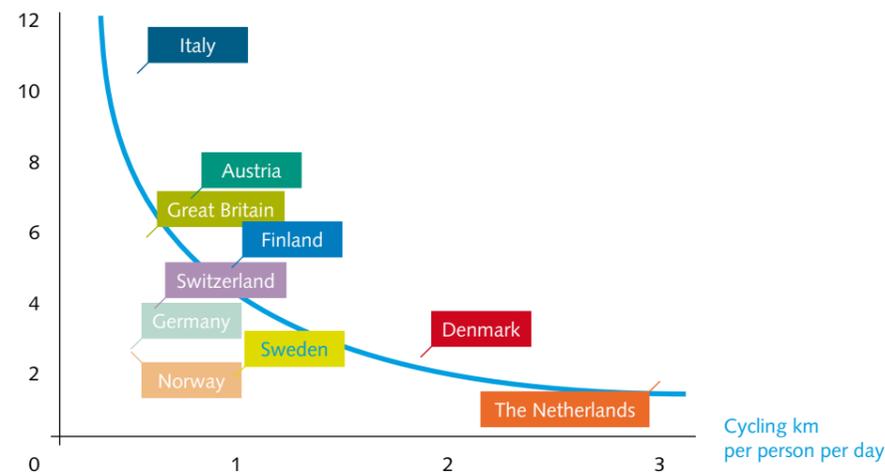


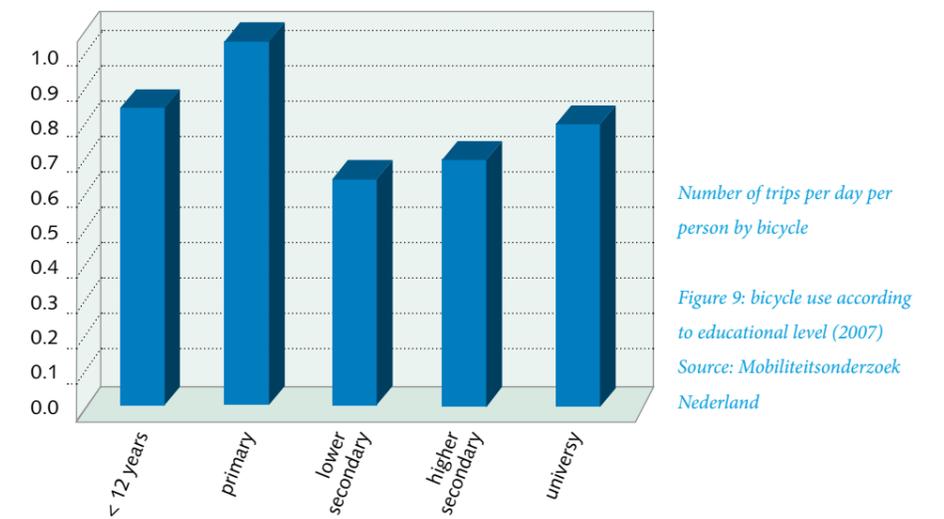
Figure 8: Relation between accidents and bicycle usage

1.3 Bicycle ownership

The Netherlands is the only European nation with more bicycles than people. (Figure 6). On average, the Dutch own 1.11 bicycles per person and the number of bicycles sold in the Netherlands is also high: 1.2 million bicycles in 2005, for 16 million residents. In absolute terms, more bicycles are only sold in various European countries with considerably higher populations: 4.9 million bicycles in Germany (for 82 million inhabitants), 3.2 million bicycles sold in France and 2.5 million in Great Britain (both 60 million inhabitants). In the Netherlands, by far the most bicycles are sold by specialist dealers: 77% in 2005. These shops specialise in the sale of bicycles and bicycle accessories and generally have a workshop for maintenance and repair. The share in bicycle sales of other trading outlets (department stores, discount stores, mail order etc.) is rising however: from 10% in 2000 to 23% in 2005. The average price of a new bicycle is 579 Euros.

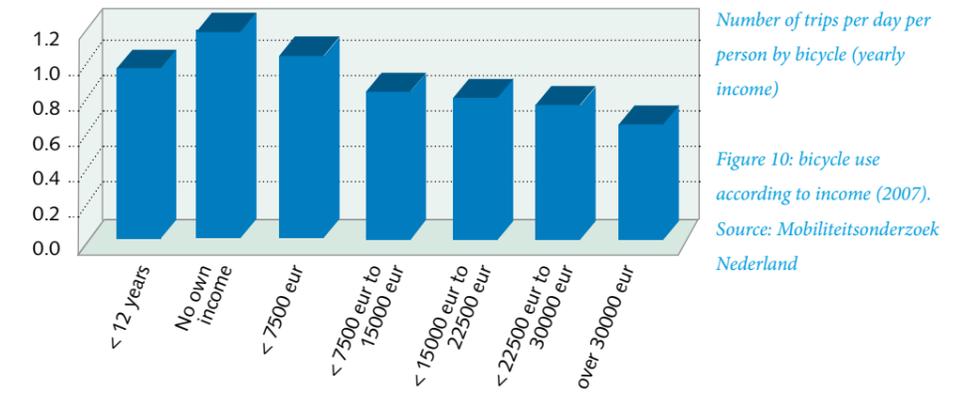
1.4 Bicycle use by population groups

In some countries, cycling has a bad image and represents low social status: the cyclist is apparently not able to buy a car. This is not the case in the Netherlands, where bicycle use is the same for almost every population group. In the Netherlands, cycling reflects a sporty, environmentally aware lifestyle. Figure 9 shows that the population groups with the highest and lowest educational level are the ones which cycle most. The groups with higher incomes tend to cycle somewhat less than those with lower incomes (Figure 10).



Number of trips per day per person by bicycle

Figure 9: bicycle use according to educational level (2007) Source: Mobiliteitsonderzoek Nederland



Number of trips per day per person by bicycle (yearly income)

Figure 10: bicycle use according to income (2007). Source: Mobiliteitsonderzoek Nederland

1.5 Theft

With a fleet of 18 million bicycles in a relatively small country in terms of surface area, the Netherlands is also unfortunately a haven for bicycle thieves. Compared with the rest of Europe, the Netherlands not only has an unparalleled level of bicycle ownership and bicycle use in Europe, it also has an unrivalled level of bicycle theft. Some 750.000 bicycles are stolen in the Netherlands every year. The state has certainly managed to reduce the scale of the theft problem to a degree since the mid-nineties – but it still remains a 'stable' major problem. (Figure 7)

On average only around 45% of bicycle theft victims report the theft to the police. Only a small percentage of all the bicycles stolen are ever returned to their rightful owners.



1.6 Bicycles and traffic safety

In the Netherlands cyclists are fairly vulnerable, given the chance of injury per kilometre covered. However, in recent decades, the safety of cyclists has steadily improved. The annual number of road accident victims has halved since 1980, both in terms of cyclists and those in cars. (Table 3, page 14). This decline must also be set against the enormous rise in car and bicycle use. (In total both cars and cyclists covered 32% more distance in 2001 than in 1980). Statistically, the number of potential confrontations between cars and bicycles should thus increase exponentially. Consequently, the decline in danger is spectacular. More traffic and a high bicycle use do not therefore automatically mean more traffic danger. Besides making a comparison over time, this can also be demonstrated by comparing countries and even Dutch municipalities. Figure 8 (page 14) clearly shows that the risks for cyclists are lower in countries with a higher bicycle use. The same pattern is visible when Dutch municipalities are compared. In municipalities with high bicycle use, the risk of a cyclist being injured in a traffic accident is on average 35% lower than in municipalities with fewer cyclists.

The same pattern recurs in various studies: the higher the bicycle use, the safer it is for cyclists. There are a number of explanations for this, involving the conduct of road users and the attention that policy-makers pay to the bicycle. Firstly, higher bicycle use leads to modified conduct on the part of all traffic participants, because cyclists are more dominant in the overall road picture and because more traffic participants have cycling experience. Secondly, higher bicycle use often goes together with lower car use, thus reducing the chance of conflict with car traffic. Thirdly, almost every car driver is also a cyclist (60% of the Dutch cycle at least three times a week, 80% at least once a week), which implies that car drivers know how cyclists behave. Finally the policy explanation: high bicycle use creates more support for bicycle policy, so that more is invested in a safer cycling infrastructure.

Something that should not be overlooked in the safety section: Liability. In some countries, bicycling is seen as causing danger, which sometimes ends up in an anti-cycling policy. The Dutch philosophy is: Cyclists are not dangerous; cars and car drivers are: so car drivers should take the responsibility for avoiding collisions with cyclists. This implies that car drivers are almost always liable when a collision with a bicycle occurs and should adapt their speed when bicycles share the roads with cyclists.

1.7 Bicycle policy works

It is regularly asked why there is so much cycling in the Netherlands. A difficult question – although the answer clearly lies in a combination of factors. Morphological and spatial factors are obviously involved: cycling is easier on a flat polder than in a hilly area. And in the compact Dutch cities, many trips can more easily be covered by bicycle because of the short distance. Historical-cultural factors also play a major role. Cycling is so embedded in the Netherlands that virtually every child gets the first bicycle around the fourth birthday – and learns to use it.

The arguments pro-cycling are overwhelming: it is sustainable, healthy, has zero emissions of everything, is silent and clean, cheap both in purchase as in providing infrastructure, is space and





traffic efficient, enhances urban traffic circulation and provides more livability to residential areas. From this perspective, the harsh anti-cycle policy of some foreign towns (see section 1.2) even more regrettable. Despite all this evidence, none of these are the reason for the Dutch to cycle. They just enjoy it, find it relaxing. (Figure 11)

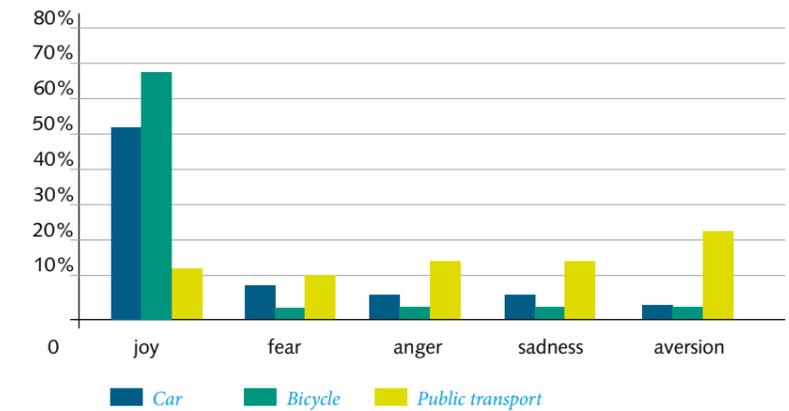


Figure 11: Emotions linked with various modes of transport. Source: Knowledge Institute Mobility, 2007

Obviously, to make all the advantages of cycling for society work, it is essential to have people cycle. And to have people cycle, therefore, it should be enjoyable, relaxing and safe. This can be achieved by what is usually called good 'bicycle policy'. Policy works, bicycle policy works in the Netherlands – that much is abundantly clear. Something has already been said about this in section 1.2: the relationship between bicycle use and improving traffic safety is inherently related to policy.

The results of the benchmarking 'Fietsbalans' project conducted by the Fietsersbond (cycling association) reveal a clear link for example between bicycle use in a municipality and the quality of the cycling infrastructure. The quality of the infrastructure has been recorded objectively with measuring equipment and is expressed in the so called bicycle Balance Score. In Dutch municipalities with a high bicycle Balance Score, bicycle use is on average 14% higher than in municipalities with a low bicycle Balance Score.

In 2005 a study was completed, giving a very well-founded answer to the question of how to explain municipal differences in bicycle use, and what role (elements of) cycling policy and (wider) traffic policy play in this respect. Research involved 44 factors in its analysis. Very diverse by nature, these factors were selected on the basis of existing knowledge about possible factors influencing bicycle use. The resulting explanation model contains eleven factors – a composition of traffic, spatial-economic, demographic, cultural and geographical factors. About one-third of the explanatory power of this model lays in the four factors denoting something like 'integral traffic policy'. Almost 73% of the variance in bicycle use among municipalities is explained by these factors. This is considerable, and we can therefore say that this model has great explanatory power.



1.8 Cycling and health

As in every other Western country, lack of physical exercise and obesity caused by this and by a poor diet are a major problem in the Netherlands. Around 11% of the population are medically obese. But also a lot of other diseases go together with lack of physical activities like coronary and vascular diseases, diabetes etc. According to medical experts, people are designed to move, but far too many people lead a sedentary life, even choosing seated transportation (e.g. in cars or public transport). Scientists agree that the bicycle is the ideal form of commuter travel and that it is an excellent way to tackle the exercise problem. Half an hour of moderate exercise a day is sufficient (besides a healthy diet), and this can be achieved in commuter travel: cycling all the way (up to 15 km) or in combination with public transport. Research has shown that absenteeism among employees who cycle is clearly lower than among other employees. Measures to promote cycling to work will easily recoup any investment.

1.9 International dissemination of cycling expertise and experience

Sustainable mobility is a 'hot topic' at a time when climate change is also a matter of concern. And the bicycle is the cleanest, most sustainable, healthiest and fastest mode of urban transport. In terms of greenhouse gas emissions, the bicycle is than 100 times more sustainable than the car and much more sustainable than public transport too. Furthermore, a bicycle friendly town (e.g. Houten, Groningen and Zwolle) results in a better quality of urban life.

This is why many countries and towns are showing more interest in cycling and promoting bicycle use, looking to the Netherlands as the birthplace and utopia for cycling. It is also the reason for the planned coordination aimed at sharing Dutch knowledge and experiences with cycling. An international version of the fietsberaad-website (www.bicyclecouncil.org) has been created which (initially mainly in English) provides translations of publications and examples of Dutch and international cycling policy. There is also a desk for questions from and presentations for foreign parties. Assist can be offered through the website for visiting excursions and other meetings. This desk is also accessible via www.bicyclecouncil.org.

A large number of bicycles are parked in a row in front of a historic building in Amsterdam. The building has a red brick facade with white decorative elements and a dark roof. The bicycles are parked on a wooden deck. The scene is set in a city street with other buildings and trees visible in the background.

The Dutch approach in brief

The previous chapter shows that a consistent approach by Dutch policy makers to the bicycle has had a demonstrable effect. Municipalities which have had a focused bicycle policy for some time have a higher bicycle share than other cities. Traffic safety has also benefited from the bicycle policy. This chapter outlines the Dutch approach. How does the bicycle policy come about? Which parties are involved in it and what is the link between the funding of policy and its implementation? Involvement at various governmental levels (state, provinces, city areas, water boards and municipalities) is also considered. Firstly, however, the objectives of bicycle policy are reviewed. Why do the Dutch authorities invest money and manpower in bicycle policy?

2.1 Objectives of bicycle policy

Encouraging bicycle use is not an isolated objective. Stimulating bicycle use and providing cycling facilities serve a broad range of social objectives. By way of illustration, here are the objectives of the Amstelveen bicycle Policy Memorandum 2006-2015:

- **Increasing the accessibility of companies and facilities.** Directly by improving the cycling facilities for clients and employees arriving by bicycle. And indirectly, by stimulating clients and employees arriving by car to switch to the bicycle or to a combination of bicycle and public transport. This improves accessibility for other car traffic.
- **Improvement in the quality of the living environment.** Directly, because many inhabitants value safe and comfortable cycling facilities. And indirectly, because the bicycle replaces short car journeys which produce a relatively large amount of (noise) disturbance.
- **Increasing social safety and traffic safety.** Both objectively (reducing the number of traffic accident victims) and subjectively (reducing feelings of danger).
- **Improvement of public health.** Directly, as bicycle use contributes to a daily exercise regime. And indirectly, the air quality improves if people use the bicycle for short journeys instead of the car.
- **Increase development opportunities.** Many inhabitants in Amstelveen do not have access to a car. Good and safe bicycle facilities may allow them to participate in activities independently. Disable people may also depend on the bicycle infrastructure. Indirectly, to promote independence and the development of children, it is important that they can move independently from a young age.
- **Reducing the number of bicycle thefts.**

2.2 Municipal bicycle policy: traditionally at the core

Traditionally, bicycle policy has primarily been the responsibility of municipalities. Municipalities are responsible for the majority of the facilities used by cyclists. This not only involves the road infrastructure, but also bicycle parking facilities at shops and schools. The local cycle path network is also a municipal responsibility.

Each municipality has a different approach to cycling. Some municipalities implement an independent bicycle policy, while others integrate bicycle policy in the general traffic and transport policy. There is seldom an independent implementation programme for cycling measures; it generally hitches a ride with other traffic and spatial measures. In implementing bicycle policy it is important that the various departments are aware of each other and that projects are carried out integrally to ensure inclusion of bicycle facilities.

The promotion of bicycle use and increasing traffic safety is often the main objective within the bicycle policy. The aim is to make choosing to bicycle as attractive as possible. The construction of good cycling networks and parking facilities are the main components. Combating bicycle theft is a major component of the bicycle policy in large municipalities. Besides physical and spatial measures to stimulate bicycle use, education and information are vital.

Where something needs to be done about bicycle traffic in a municipality and what measures need to be taken is generally based on accident figures and traffic counts. Municipalities often also carry out pragmatic research into bottlenecks, from which conclusions are drawn. Input from the cycling association is also an important basis for measures.

Funding

Bicycle policy obviously costs money. To fund the bicycle policy, most municipalities have specific budget allocations. These are used to ensure continuity in bicycle policy implementation. Municipalities also use external funding sources. Bicycle projects can often ride on the back of larger infrastructural projects, construction projects, traffic safety projects or spatial developments. Municipalities can also call on subsidies, which are administered by provinces and city areas (see 2.2). For infrastructure in business parks, there are often individual arrangements, and EU funding is increasingly being used for bicycle projects. In some municipalities, bicycle parking is financed from parking incomes (car), while they may also be financed by private companies or through public-private ventures.

In the municipalities with the most intensive bicycle policy, the issue is often one of substantial sums allocated on an annual basis to (infrastructural) bicycle policy. At the same time there are marked differences which, while not exactly implying that a municipality with a low budget is 'doing little', more often mean that these municipalities fund their bicycle measures by letting them hitch a (free) ride on the back of other policy. See the examples in [Table 4](#):

	Inhabitants	Budget (not just own funds: also subsidies)	Years	Euros per inhabitant per year
Amsterdam	742,000	100,000,000	2006 - 2010	26.95
Raalte	28,000	10,436,945	1990 - 2004	24.41
Nijmegen	159,000	10,000,000	2002 - 2005	15.66
Tilburg	200,000	11,200,000	2006 - 2009	13.98
s Gravenhage	475,000	24,000,000	2002 - 2005	12.62
Groningen	181,000	22,800,000	1989 - 1999	12.60
s Hertogenbosch	135,000	8,976,000	2000 - 2005	11.09
Zwolle	113,000	4,500,000	1995 - 1998	9.95
Deventer	69,000	1,361,341	1989 - 1994	3.29

Table 4: Some details of municipal bicycle budgets, as examples.

Water boards

Cycle routes outside built-up areas may be the responsibility of three types of governmental organisations. Most bicycle routes in country areas run on or alongside municipal roads. A smaller proportion of bicycle paths run alongside provincial roads. And in the third category, there are also bicycle routes on roads which are administered by water boards. Eight water boards, in the western coastal provinces, administer such roads in the outskirts. Alongside all the municipalities, they also implement bicycle policy, where necessary providing specific facilities for cyclists at dangerous intersections and stretches of road, and particularly by keeping vehicular traffic out of the outskirts as far as possible.



Example A Groningen: consistent policy

In terms of bicycle use the city of Groningen (180,000 inhabitants) has held the top ranking amongst Dutch bicycle cities for many years: the share of bicycle use is around 40%. In 2002 the 'Fietsersbond' awarded the city of Groningen 'City of the year'. How does Groningen do it? The answer is in three key words: policy, coherence and continuity. The municipality executes a broad-shouldered policy, which is solidly interpolated within the total traffic and transport policy. Alongside this, spatial planning is focused decades ahead with vision and persistence on a compact city, so that many activities are easily reachable by bicycle.

In Groningen the spatial policy is focused strongly on a compact city. The spatial structure exhibited strong compression around 2000, and the 1980 outline of the city is maintained. The municipality has worked on its policy with clear vision and persistence over some two or three decades. As a consequence, amongst other things, most travelling distances are easily covered by bicycle. Some 78% of the inhabitants live within a radius of 3 km from the city centre, and 90% of all jobs are located here; almost all major buildings are within 5 km radius.

During the seventies the management perceived that, apart from economic development, attention also needed to be devoted to an enduring, low-scale inner city as a central point for a host of activities, with a blend of living, working and shopping functions and favouring pedestrians, cyclists and public transport. In 1977 this perception produced the traffic circulation plan which divided the inner city into four sectors. It was not possible to travel between sectors by car, but it was possible by bicycle and bus. Passing car traffic was kept outside the inner city and motorists whose destinations were in the inner city were led via the shortest route to parking areas close to the centre. During the eighties and nineties the parking policy was strictly implemented. Parking with time restrictions was introduced in a broad radius around the inner city.





Example B Amsterdam: extensive bicycle policy and complex organisation

In Amsterdam (with around 744,000 inhabitants) promoting bicycle use is the responsibility of the Infrastructuur Verkeer en Vervoer (dIVV) (Traffic and Transport Infrastructure) department. A team of bicycle policy officers works within the Strategy and Policy department (60 employees). dIVV advises, coordinates and harmonises the bicycle policy with city areas and other relevant municipal organs and organisations. Responsibility for the bicycle policy lies with the 14 city areas which implement their own policy. This creates differences in implementation, producing problems in coordinating the bicycle network. To achieve good policy, the policy officers must spend considerable time in negotiation. A brief selection from the coordinating meetings:

- harmonisation discussions with other departments within dIVV and other city departments
- harmonisation discussions with the city districts,
- discussions in the urban 'Platform Fiets' (cycle platform), in which the dIVV, the 'Dienst Ruimtelijke Ontwikkeling' (DRO, or spatial development department) and the 'Fietsersbond' (cycling association) update each other on developments concerning bicycle policy and infrastructural measurements.

Amsterdam's ambitions:

To stimulate the use of bicycles for transportation, Amsterdam has drawn up a Long-Term Policy Plan for Bicycles (Meerjarenbeleidsplan Fiets –MJP). This plan details the following goals for the year 2010:

- In 2010, at least 37% of the residents of Amsterdam will use bicycles for each trip.
- In that same year, Amsterdam must achieve a score of at least 7.5 out of 10 in the Cyclists Satisfaction Survey.
- In 2010, the number of bicycle thefts will be reduced by 40%.

The following spearheads are distinguished in the Long-Term Policy Plan for Bicycles (2007-2010):

1. Creating more and better bicycle parking facilities.
2. Constructing the three main missing links in the 'Hoofdnet Fiets' bicycle network.
3. Reinforcing weak links in the 'Hoofdnet Fiets' bicycle network.
4. Proper management and maintenance of the 'Hoofdnet Fiets' bicycle network.
5. Persistently combating bicycle theft.
6. Promoting traffic safety for cyclists.
7. More non cyclists on bicycles
8. Monitoring developments in bicycle use

The improvements of the 'Hoofdnet Fiets' bicycle network will cost an estimated € 43 million in four years. The three most expensive projects (missing links in the form of bridges and tunnels) constitute as much as € 24 million. Funding must largely come from regional subsidies, contributions from city sectors, the municipal MobilityFund and through the central city's own budget. The assumed total spending including organisation expenses will be almost € 70 million in the period 2007 -2010.for Amsterdam's bicycle policy - excluding specific traffic safety projects.



Example C Zeeland: bicycle Action Plan

In the province of Zeeland, the Bicycle Action Plan has been set up by the 'Zeeuws Coördinatiepunt Fiets', or Zeeland Bicycle Coordination Point. The purpose of the bicycle Action Plan is to stimulate cycling and thus at least maintain the current number of cyclists or even increase it. To this end, the goal is the construction of a complete and safe bicycle network, so that the bicycle is an attractive transport alternative. Funding has been released to provide cycling facilities alongside provincial roads. The province implements the policy itself to a degree, but its greatest contribution is to exercise a directorial role towards the municipalities and water boards. It is specifically expected that the province will stimulate the conduct component, for example encouraging the use of bicycles on the school run.

Example D Gelderland: broad and progressive bicycle policy

The province of Gelderland implements a strong bicycle policy in areas where the province does have actual influence. Its own cycle paths are checked with a measuring bicycle to determine where (comfort) improvements are needed. In two years Gelderland will spend 21 million Euros on laying and improving provincial cycle paths. There is also a subsidy budget for sustainable municipal bicycle projects.

Bicycle parking facilities at bus stops are being improved and expanded – while Gelderland is also working towards an extension of the Public Transport Bicycle (see page 21/example K) to small stations and bus terminals. Amongst other things, this would involve the innovative 'cycle box': an automatic bicycle 'safe' providing locked storage for 10 and 16 Public Transport Bicycles.

Elsewhere, route marking has recently been highly improved on the Veluwe, the Netherlands' largest recreational and nature reserve, with the arrival of a 'junction network'. Finally, a striking new development involves the long-distance bicycle routes through Gelderland which have been and are being incorporated into regional planning. These routes will be protected through the spatial policy: if the routes are infringed by new spatial developments, the province will only agree if the national cycling platform, the organisation behind the long-distance routes, agrees to an alternative route.



2.3 Provinces and city areas: decentralised directors

Besides 12 provinces, in the Dutch agglomerations of the country's largest cities there are 7 city areas which, specifically in terms of traffic, have the same duties as provinces (except that they do not administer their own roads). The 19 'middle managements' have been allocated a central role in traffic policy by the state in recent years, through far-reaching decentralisation from the state level. Provinces and city areas have now acquired responsibilities to ensure policy cohesion at regional level – in other words to promote a stronger collaboration between municipalities. In this context, they are responsible for the division of the substantial annual subsidy funding which was formerly administered by the state: infrastructure subsidies and contributions to public transport operations, together some 1,600 million Euros a year for all decentralised authorities. Of the infrastructural subsidies, in practice almost all middle managements allocate a substantial part to bicycle projects – partly at the urging of the municipalities.

More intrinsically, provinces and city areas often play a leading role in determining and bringing about a regional/inter-local bicycle network. In this context they devote attention to the inter-local character of these bicycle networks: a bicycle path does not end at the border of a municipality but continues on into the next one. With city areas, the issue is of relatively compact networks in adjoining built-up areas – therefore strongly comparable to municipal bicycle networks. Province-wide bicycle networks place a much stronger emphasis on inter-local routes through the outskirts – and therefore often on recreational bicycle use. Utilitarian (intended for the focused journey from A to B) and recreational cycle paths (intended as relaxation, through an attractive environment or as a route to recreational facilities) are often integrated in one provincial network.

2.4 The state: support for decentralised policy

The national policy on space and mobility is established in a number of national plans. These plans set out frameworks, while decentralised authorities work out the policy in broad outline in their own plans. Compared with other European countries, bicycle policy in the Netherlands is strongly decentralised – intrinsically decentralised traditionally when it comes to the municipalities and policy decentralised since the recent decentralisation from the state to provinces and city areas.

The role of the state in bicycle policy is currently a supporting one. Bicycle policy must and can be decentralised - the state is there for the issues which require a national approach.

Four types of activities can be distinguished:

1. Setting intrinsic frameworks for the decentralised authorities
2. Looking after intrinsic issues which can only be arranged at a national level
3. Funding of decentralised bicycle policy
4. Support of decentralised bicycle policy with knowledge development and distribution.

The state established the intrinsic frameworks in a general sense in the recent Mobility Memorandum. This contains an agreement that: 'All authorities will stimulate walking and the use of the bicycle as the main means of transportation and as a link in the journey chain from door to door. Municipalities, water boards, provinces and city areas will do this, amongst other things, by ensuring a bicycle network which complies with the main traffic requirements of cohesion, directness, attractiveness, safety and comfort. The authorities will also ensure parking facilities for cyclists which meet their demands in terms of quality, quantity and location.'

Intrinsic issues which only the state can deal with are naturally legal issues surrounding traffic regulations and the building decisions (bicycle parking facilities!). It is also important that bicycle parking facilities at stations are regarded as part of the station, as part of the transfer function – and that they are thus regarded as an issue which, just like rail transport itself, lies with the state. For expanding the capacity (largely unguarded), so that capacity at all 380 stations will be sufficient, a total of 350 million Euros is available.

The third and fourth points, funding and knowledge support, are issues which the state has now emphatically 'outsourced' for the first time. Relatively little will now occur within the Ministry of Transport and Public Works itself. But conversely more will occur with other national organisations in terms of the knowledge function.

Knowledge development and distribution

The knowledge function in Dutch bicycle policy is strongly developed, but also somewhat fragmented. At least six organisations, all operating nationally, play an important role.

FIETS BERAAD

The **Fietsberaad**, or bicycle consultancy, funded by the Ministry of Transport, Public Works and Water Management, supports the bicycle policy of decentralised authorities with knowledge and information. The objective is to strengthen the position of bicycle traffic on the street and in policy. The Fietsberaad, comprising some 20 experts (largely from municipalities), assists its target groups through the collection and distribution of knowledge, statistical data, experiences and other information – mainly through a quarterly magazine and a website. Fietsberaad has also extended the website with a version in English language with a lot of information, experience, examples a glossary for bicycle words and a possibility to pay a virtual visit the Dutch bicycle towns : www.fietsberaad.org or www.bicyclecouncil.org



The **KpVV** (Kennisplatform Verkeer en Vervoer, or transport and traffic knowledge platform) supports the decentralised authorities with practical knowledge. In this it operates within five themes: policy, mobility, safety, infrastructure and public transport. Attention is paid to bicycle traffic on various fronts within these themes.



The **CROW** is the national knowledge platform for infrastructure, traffic, transportation and public spaces. It makes knowledge applicable in practice – in particular through broadly supported recommendations, guidelines and regulations, established in a large number of publications. There are also a number of guideline publications for bicycle traffic, mainly the 'Leidraad Fietsparkeren' (bicycle parking guideline) and the recently reviewed 'Ontwerpwijzer Fietsverkeer, (bicycle traffic design manual - see Chapter 4).



The **Fietsersbond** (cycling association) is the interest group for cyclists in the Netherlands, with a national office and 120 local departments. Financed by the Ministry of Transport, Public Works and Water Management, the Fietsersbond implements the Fietsbalans benchmarking project, aimed at stimulating municipal bicycle policy. The Fietsbalans, which actually measures the cycling climate in municipalities (the conditions for cyclists), was conducted in 125 municipalities during 2000-2004. Each municipality surveyed received an extensive report providing a relative assessment

of the cycling climate based on ten criteria. With the results in hand, the local department of the Fietsersbond asked the municipal management for concrete improvements for cyclists. From 2006 a slightly revised methodology (Fietsbalans 2) will be applied.



The **Stichting Landelijk Fietsplatform**, or national cycling platform association, is the independent coordination point for recreational cycling in the Netherlands. National and regional authorities and interest groups are represented in the platform. The Fietsplatform promotes opportunities for recreational cycling in the Netherlands. To this end, it develops and manages the national recreational bicycle routes, supported by government funding (Ministry of Agriculture, Nature Management and Food Quality). Besides the SLF, the ANWB, or Automobile Association, the major interest group in terms of holidays, leisure time and mobility, is also relevant when it comes to the knowledge function in bicycle policy. It is the ANWB, for example, which is responsible for much of the road signage, and more generally it is strongly involved in recreational bicycle use.



Finally **SenterNovem**, the organisation ('agency') allied to the state for subsidising innovations aimed at the environment and sustainability, has a number of programmes or subsidy arrangements through which, in principle, sustainable bicycle-related projects can also be supported. Substantial budgets are often at issue here (Regulation of CO2 reduction in personal transportation: 3 million Euros; Mobility Management programme: 2 million Euros) and in practice a number of cycling projects are supported, particularly involving bicycle parking and rental.



Facilities for all target groups

Chapter 1 described how bicycle use in the Netherlands affects everyone and everything. In virtually all important travel motives, the bicycle plays a serious role. Travel motives are also good connection points for stimulating bicycle use: why do people choose the bicycle, and how can this be promoted? Various types of bicycle use provide pretexts for focused policy. In particular, there is considerable experience in bicycle policy which focuses on commuter travel, cycling to shops and shopping centres and school traffic. These travel objectives are indicated together as utilitarian traffic. Then there is also the travel motive where the travel objective is not the journey's final objective: if the bicycle is used, for example, to get to the station. For these chain journeys, there are also plenty of opportunities for successful bicycle policy. And finally there is recreational cycling, where cycling itself is often the travel objective.

Example E Houten and Veenendaal: bicycle traffic and flourishing retail trade

Most of the shops in Houten (around 43,000 inhabitants) are in the centre of this municipality which is oriented towards cyclists. The residents appear to do virtually all their food shopping and half of their non-food shopping in their own municipality. The turnover per square metre of shop-floor space was considerably higher than the average in the Netherlands when measured some years ago.

Veenendaal (around 60,000 inhabitants) is a real bicycle city when it comes to its bicycle use and bicycle policy. A volume which led to it being rated 'the best shopping town in the province of Utrecht' in 2004 and an unprecedented purchasing power amongst its residents. A paradise for retailers, it appears - and in Veenendaal this was matched by considerable attention to the bicycle policy.



	Share in visitors				Share in turnovers			
	walking	bicycle	public transport	car	walking	bicycle	public transport	car
local visitors	32%	46%	13%	9%	19%	56%	14%	25%
regional visitors	1%	22%	41%	36%	0%	21%	32%	40%
superregional visitors	5%	7%	48%	39%	4%	5%	39%	37%
total	20%	31%	27%	21%	11%	34%	25%	35%

Table 5: 2004 survey amongst visitors in Groningen city centre; shares of the main modes of transport in the number of visitors and realised turnovers (in %)

3.1 Shopping by bicycle

Background

Even in the Netherlands, there are some misconceptions: cyclists don't contribute much to the till, so accessibility by car is very important for shopkeepers. However, this is not the case.

Cyclists spend less per visit, but they do come more often. Naturally this varies per city centre, but both older research in Utrecht and newer studies in Breda (where on average a cyclist spends one and a half times as much as a motorist) and Groningen have demonstrated this. Groningen's statistics speak for themselves. (Table 5)

Table 5 shows the profit that the Groningen city centre receives per individual mode of transport. In total, considering all visitors and the complete turnover, the bicycle is of major economic interest as well: 31% of visitors and 34% of the turnover. This obviously concerns mainly Groningen citizens: 46% of Groningen citizens cycle to the city centre, realising 56% of sales to citizens. Visitors from the region and further afield in the Netherlands have a slight preference for public transport instead of their cars, but visitors who come by car spend far larger amounts. In addition there is an interesting paradox which appears to address commerce in particular: The more local shoppers who switch from the car to the bicycle, the less parking space is available for (the cars of) shoppers from further afield. It is precisely for this reason that the 'Hoofdbedrijfschap Detailhandel' (trades council) suggested in 2004 that retailers might do well to take their own supplementary initiatives: 'Consider creating bicycle sheds in private premises in a shopping centre or town centre.' Because, this organisation of retailers also reasoned: more cyclists from the city itself means that more scarce parking spaces are freed up for the cars of regional visitors.

Measures

Suitable bicycle policies for city centres must therefore be focused in particular on encouraging local visitors to visit the centre by bicycle. This requires a broader approach than simply providing or improving bicycle facilities; it needs a more integrated vision. This also needs a concentrated parking policy (how much car capacity must be offered and how close to the centre?) and specific choices in traffic circulation.

Bicycle parking facilities are very important as part of an integrated plan for a city centre. The consumer wants to be able to park his or her bicycle safely, and especially near the destination. In fact this appears to be an important consideration in the choice of transportation. In many municipalities, the capacity of bicycle parking areas is much too small for the peak periods. In recent years it has become clear that free and guarded parking on the periphery of a pedestrian zone tempts many cyclists to leave their bicycles there - rather further from their destination - so that there is less hindrance from bicycles parked at random around the shops.



Example F Company bicycle: effective employer measure

Many employers have provided their workers with company bicycles in a 'tax-friendly' way. A simple measure which even in the Netherlands - where bicycle ownership is already very high - appears to have some effect. Employees appear to feel themselves morally stimulated to bicycle more when they have accepted a free bicycle from the boss.

Use of bicycle by employees

bicycle use	before	after	difference
always	42,2	47,3	+ 5,1
often	11,3	17,5	+ 6,2
regularly	18,3	24,2	+ 5,9
occasionally	13,2	7,5	- 5,7
never	15	3,5	- 11,5

Table 6: Use of bicycle by employees, before and after obtaining a bicycle from the business / employer (in%) (source: Van de Ven & Partners / Nationale Fiets Projecten (National Bike Projects) 2002)

Example G Trappers: Innovation in mobility management

'Trappers' (pedals in English) is a system to get employees on their bicycles. A recording sensor at the workplace records the bicycle whenever it is in the vicinity. Every time the employee cycles to work, he gets a number of points. The employee can use these points to acquire products and outings in the 'Trappershop' on the Internet. This system is free of charge for the employer.



3.2 Cycling to work

Background

Traffic problems occur primarily in the rush hours, when workers travel to or from work by car. So it is particularly attractive to encourage cycling for commuter traffic. This certainly applies to companies and establishments which have to cope with a dire shortage of parking spaces. The bicycle currently remains popular in commuter traffic – the major increase in car use plays out particularly over the longer distances. Most people believe half an hour's travelling time to and from work is acceptable. Cyclists can certainly cover some 7.5 km in this time. This is an interesting figure, because of all those working in the Netherlands, half live within 7.5 km from work. 45% of them already opt for the bicycle – but more is certainly possible. Those who cycle to work no longer actually need to go to the gym – even if you only live 15 minutes away from work. Someone who is fairly unfit can improve their performance capacity by 10% if they cycle a distance of three kilometres each way three times a week. This produces almost the same results as a training programme.

Measures

A wide range of measures can be considered to encourage the use of bicycles successfully in commuter traffic. The chance of success appears to increase if municipalities and commerce work together. Good bicycle routes and cycle paths - generally necessary to serve cyclists well - are and remain the most important factor. This is generally an issue for the authorities. But bicycle use can be further encouraged by companies themselves, for example if employers provide bicycles for employees who live within cycling distance. Facilities for encouraging the bicycle in the commuter traffic do not need to be extensive to achieve an effect. An evaluation of around a hundred transportation plans from major companies showed that the introduction of fairly simple measures encouraged an average 3% rise in bicycle use (Table 6). The measures included offering good bicycle parking, a shower or a company bicycle, for example.

More cyclists in commuter traffic.

Until recently, a maximum cycling distance of 7.5 km was considered realistic. However, more and more interlocal commuter routes are being designed with few obstacles and sometimes even real bicycle motorways. In the framework of the Fileproof project, five such routes were constructed. All over the country, there is interest in cycle routes for longer distances. As a result, distances of up to 15 km are achievable, with cyclists able to reach speeds of 25-30 km/hour. This means that cyclists are not much slower than other modes of transport and in congested areas they may be much faster. There is therefore a huge opportunity here to use bicycles for better accessibility and less congestion. Employers are also starting to promote bicycle use more, also with regard to improving health. In accordance with the Environmental Management Act, businesses are obliged to minimise emissions caused by transport to and from the company. This means that bicycle use (0 emissions) must also be stimulated. In autumn 2008, the Mobility Management Task Force, in which employers and government are working together to stimulate alternatives to car use, will introduce employers' measures to stimulate bicycle use, such as bicycle compensation and the introduction of a mobility budget. The latter is an exceptionally powerful method for stimulating bicycle use. The system, which is already in use at various companies, means that employees receive a fixed budget for their commuter travel. From this amount they pay all the actual costs of commuter travel, such as car costs, on-site parking costs, season tickets for public transport, etc. Any money left over is income for the employee. Because the bicycle is by far the cheapest mode of transport, employees who cycle to work will have a great financial advantage.



Example H Safer passage for children through Delft

A traffic-safe and socially safe environment enables a child to cycle independently to school or to sport or welfare accommodation and/or extramural activities sooner. This objective is the focus of the project 'Children more safely through Delft' (approx. 95,000 inhabitants). The municipal departments of Neighbourhood Affairs and Mobility are working together with schools, police, traffic safety organisations and parents.

A selection from the projects involved:

1. Safe school environment: covenants have been signed between schools, parents, police and the municipality. In various working groups, measures are being devised and implemented to improve the safety of children at and around schools.
2. From the back seat to the bicycle: the object of this project is that children will be able to bicycle independently from home or their school to a sports club or another activity. A pilot project is underway at three locations for extramural activities to enable children to cycle by themselves without supervision.
3. Kindlint (child ribbon): hard work is being done on two 'child ribbons' in Delft. This project combines play facilities, spatial arrangements, traffic safety and traffic lessons. Through the 'child ribbons' children can move independently while playing between places where they want to be.
4. Bicycle storage: the municipality has begun an inventory of all bicycle parking in Delft's primary schools. Based on a checklist, it will be assessed whether there are sufficient places and whether the places are of adequate quality. The results will be translated into an implementation programme.
5. Traffic teachers: practical traffic lessons are important for children learning to cope with traffic. In Delft a traffic teacher gives all groups practical traffic lessons. The traffic teacher also teaches the teachers, so that they can continue on their own after three years.

When the project is concluded shortly, it is expected that the schools will be enthusiastic enough to take their own initiatives.



Example I The Hague: Guarded parking in secondary schools

Guarded parking at secondary schools can yield notable changes, experience shows in The Hague (around 475,000 inhabitants). Of the 420 students at the Johan de Witt college, at least half arrive by bicycle – ten times more than previously (the school has many pupils of foreign extraction, who bicycle significantly less than average). The municipality wants more bicycle parking and is investing a one-time € 20,000 per school, intended for a – carefully considered – superintendent space. The staffing cost for the superintendent, who will be hired via the bicycle parking organisation Biesieklette (around € 6,800 annually), must be paid by the school. Guarded bicycle parking at schools has long been a familiar phenomenon in the city of Groningen. Since then there have been guarded parks at 15 high schools.



3.3 Cycling to school

Background

Many children cycle to school – with or without supervision. That is how it used to be and still is. Of primary schoolchildren, 49% cycle, 37% walk and only 14% are brought and collected by car, mainly children who live a long distance from school. In secondary school, the cycling share is even higher. However in the larger cities, there is more walking and a greater use of public transport.

Even though, as mentioned, an average of only 14% of primary schoolchildren are brought and collected by car, the school gate is often crowded and unsafe. This is because the percentage is only an average. Even that average quickly causes problems (14% of 250 children: 35 children in some 25 cars, with all 25 wanting to park at the school gate simultaneously...). Another factor is that many schools are situated in tight residential streets with few parking opportunities, or even on busy main roads. Thus in many instances it is desirable to focus on the dangers and the hindrances caused by the cars of parents who are bringing or collecting their children.

Measures

The bicycle routes to primary schools are not often joined: after all, the distance to the primary school is small. Generally it is only in the vicinity of the school that one could really refer to school routes. Improvement of primary school routes thus rapidly translates into the approach to traffic safety in the entire neighbourhood, or the complete town core.

Improving the school environment requires a broad approach, with the deployment of a variety of instruments, including infrastructural measures, traffic education, enforcement and communication with the parents. Shared responsibility is a key concept in resolving problems surrounding school routes. Many parties are always involved in traffic issues within the school vicinity: school authorities, (traffic) parents, teachers, the children themselves, but consider too those living in the vicinity, the police and the municipality.



Example J Recreational cycling in Zeeland

For the promotion of recreational cycling, the province of Zeeland must have a good and safe bicycle infrastructure, good signposting and supporting facilities such as rest areas. Bicycle routes constitute the link between the availability of tourist facilities and accommodation, for both inhabitants and tourists. To provide the holidaymaker with more structure and convenience, the junction and link structure has been introduced in signposting. The system of junctions began in Flanders: at the most important junctions (intersections) signs with numbers have been placed. A route can easily be compiled by linking numbers together. Promoting the junction (or route numbering) system falls to the local tourist offices and the Office of Zeeland Tourism.

Link points, also known as 'green transfers', are places where holidaymakers can switch to other forms of transportation. Even from a considerable distance, this makes it possible to reach recreational areas in order to cycle, walk, roller-blade, horse-ride or canoe. You can then arrive at such a link site by car, park there (even for extended periods) and transfer. A link site must therefore not only have good connecting roads and paths, but also parking spaces and bicycle rental opportunities, for example. At most link points, it is also possible to buy refreshments. Visitors should also be able to get information about the area from these sites. A start was made in the 2006 tourist season with six 'green transfers'.



3.4 Cycling and recreation

Background

Around 70% of the Dutch occasionally take to the bicycle for a recreational day trip. This means that after walking, cycling is the most important recreational day activity. The bicycle is used on a massive scale to reach other recreational destinations: around 232 million times a year.

For recreational trips in the Netherlands, there are various types of routes and networks available to the cyclist:

- National bicycle routes. A national network of routes enabling substantial circuits. The listed total distance of such bicycle routes is 6,500 km; of these some 4,500 km are signposted in both directions.
- Round trips: The round-trip regional circuits. These are of all types and distances, including long theme routes. In addition there are eight signposted long bicycle circuits. Round trip circuits are less flexibly usable, and in most cases it is necessary to complete the entire circuit in order to arrive back. Round trip circuits are only in the form of day trips. Municipalities, regions or provinces (also private initiatives) are responsible for these routes.
- Regional (junction) networks: An intricate regional network which enables many of the circuits in the region. This network now comprises some 3,700 km, signposted in both directions. Municipalities, regions or provinces (also private initiatives) are responsible for these routes.

Measures

It is often difficult to differentiate whether facilities are intended primarily for recreational cycling or also for other purposes. Thus a cycle path network in the country will certainly also serve a recreational purpose rather than simply conveying the cyclist from A to B. And bicycle/pedestrian ferries intended for recreational purposes in the summer are also used gratefully by commuter cyclists. In other words: bicycle policy often serves both utilitarian and recreational bicycle use.

From various surveys it appears that 40% of recreational cyclists use marked routes. The availability of routes is enormous and extremely diverse, both in length and in signposting. Of the route cyclists, 60% use signposted routes. The number of bicycle route networks is thus also being expanded, both in the Netherlands and Belgium.





3.5 Cycling in the chain: the combination with public transport

Background

The bicycle is also eminently suitable as pre- or post-transportation in journeys over a longer distance - in combination with public transport. The combination offers great advantages: the bicycle carries the traveller without any waiting from the front door to the bus stop or station (which public transport generally cannot do) and public transport then takes the traveller quickly and comfortably over greater distances to the destination (which the bicycle does with difficulty). Thus the two transport methods resolve each others' weaknesses, together forming a strong chain.

Of all train travellers, no fewer than 40% use the bicycle to get between home and the station. The rest of the travellers walk to the station (also a third) or use other public transport or the car. The explanation for the high bicycle share lies primarily in the fact that 45% of all Dutch people live no more than 3 km from a station. And this is an extremely acceptable cycling distance. So far, the number of (anticipated) bicycles at stations has always been underestimated. At its peak there are now some 10,000 bicycles at Amsterdam Central Station; Leiden Central Station has almost as many. The biggest bicycle storage area of all is planned at Utrecht Central Station: 17,500 guarded and unguarded places.

Due to the substantial rise in bicycle use to the station and the increase in train travel, there is a great shortage of bicycle parking facilities at stations. The prognoses for 2010 also take into account an annual 5% growth in train travel. This means that an extra incentive is necessary to expand the parking facilities. The aim is that supply must meet demand. In the campaign programme 'groei op het spoor' [growth on the rail], €20 million extra has been budgeted for parking facilities. It will also be investigated how municipalities can be encouraged to tackle the problem of abandoned bicycles. The bicycle plays a more modest role as post-transportation from the station to the destination (work, school etc.). This is because most train travellers do not have easy, cheap access to a bicycle at their destination station. Only extremely regular train commuters want to, or can, leave their own bicycle at the destination station. At the same time, nowhere near all the stations have a guarded storage area or sufficient bicycle safes. A small proportion of travellers take a collapsible bicycle with them on the train.

Measures

The strength of the bicycle and train combination very much depends on the facilities for storing and parking the bicycle at the station. Here cyclists may choose between a free (unguarded) place and a safe, paid and guarded place. The better bicycle parking facilities meet their needs, the more often travellers will opt to use the bicycle-train chain than the car. Through to 2010, ProRail, the company which administers the rail infrastructure on behalf of the Dutch government, is working on a major expansion and quality improvement of storage facilities for bicycles at all stations. The ultimate intention is that each station will have the capacity to offer good parking facilities, both guarded and unguarded, to match the demand. A particular problem at stations is derelict bicycles and those which are stored over a very long period. Almost 20-25% of the bicycles parked in non-secure bicycle storage in central stations remain there untouched for longer than four weeks. A reduction in this number would make a difference in the space and costs of new bicycle facilities. Naturally the removal of long-unused bicycles must be undertaken with due care.

Example K The Public Transport Bicycle

The OV-fiets

In an increasing number of foreign cities (Berlin, Paris, Vienna, Barcelona, Rome etc. etc.), bike rental schemes have been introduced with great success. In view of the high level of bicycle ownership in the Netherlands, no bike rental schemes have been set up yet in Dutch towns. However, there is also a need in the Netherlands for fast access to a bicycle for transport in another town. This is where the OV-fiets [public transport bicycle] comes in: after scanning the public transport (season) ticket, the traveller receives a bicycle. On return, the bicycle key is scanned. The rental price of 2.85 Euros per twenty hours is automatically deducted. The subscription costs 9.50 Euros per year. Customers are satisfied, particularly with the convenience, speed and low costs. Launched in 2003, the OV-fiets now totals 350,000 rentals per year, with 156 rental locations/stations. The OV-fiets (now owned by Dutch Railways) is generally used for business purposes (49 percent). Thanks to the OV-fiets, 35 percent of subscribers travel more frequently by train and 12 percent sometimes or regularly leave their cars at home. The goal is to exceed a million journeys in 2011. In addition, OV-fiets aims to become a city rental bicycle and will increasingly be available for rent outside stations, for example at big bus stations, as well as town centres, business parks and ferry quays.





Example L The storeroom in Leiden and the bicycle flat in Amsterdam

At Leiden Central station, partly obscured under the entirely renovated square in front of the station, there is a perfect place to park your bicycle – an unsecured and covered bicycle parking area which lies below the station square. The use of a narrow steel construction with glass floor tiles appears to make the taxi rank float above. The area was officially opened in 2002 and provides storage for 2,050 bicycles, in two stacked rows with racks. The distance between bicycles is 40 cm (and not the 30 cm which is often found), so that handlebars and brakes are less likely to become entangled.

Because of large-scale construction operations, the existing storage capacity at Amsterdam Central station dropped dramatically. A bicycle flat was built in 2003 as a temporary solution: 2,500 places in a structure 200 metres long, 14 metres wide and three floors high. The bicycle flat is free, covered, and is administered 24 hours a day. However the bicycle flat together with other (unguarded) sites and the guarded storage still provides too little capacity. For that reason the inventive decision was taken to provide 1,500 places on a old ferry and pontoon in the channel behind Central Station over the construction period up to 2012.

Example M Park and Bike Amsterdam

Amsterdam (around 742,000 inhabitants) has a large number of visitors attempting to reach the city by car. Finding a parking space in the centre is a major problem. Thus the municipality has sought alternatives such as Park and Ride facilities. Many places and facilities are not very easily accessible by public transport. For these sites, the bicycle is a good alternative as post-car transportation:

Park and Bike. The visitor parks the car in a garage and takes a rental bike. The visitor only pays the parking charge. In Amsterdam Park and Bike has been situated in two locations: at the Olympic Stadium (50 rental bikes) and at Sloterdijk station (30 bikes). Between April and September, the facilities are 60% used by incidental visitors. For the municipality the Park and Bike facilities are regarded as a type of promotion for the city. They are considered to be a service to tourists and incidental visitors. For this reason the municipality bears the costs of the facilities.





Practical measures

Chapter 3 indicated the facilities which are sought for particular target groups. This final chapter gives further consideration to the concrete practical measures. The following issues are considered in sequence: spatial planning, roads infrastructure, bicycle parking, tackling bicycle theft and finally education, information and enforcement.



4.1 Spatial policy: nearby destinations

Traditionally the Dutch government has always played a strongly guiding role in spatial planning. An important reason is the scarcity of space in this densely populated country. Nearness and compact cities are the two leading principles in city expansions. Bicycle use has benefited from this. Here there is a rule of thumb: the closer people live to their destinations (work, school, shops etc.) the more often they will make a short trip. And the more often they make a short trip, the more readily they opt to use the bicycle. This is also supported by the statistics. People who live a maximum of 3 km from central parts of cities, make 27% of their journeys over short distances. People who live further from central areas, or in smaller municipalities, make 22% of their journeys over short distances.

The siting decision for a new residential area influences the way in which people will or can travel. It is important that new business and, particularly, residential sites are not built on the edge of expanding metropolitan districts, but rather within the daily cycling distance of 3 km from the central areas of large and medium-sized cities. If there is no space, then building a new city or a new centre is preferable to a new expansion site at the city's edge.

Example N Houten: spatial structure aimed at slow traffic

The spatial structure of Houten remains a special example. Houten is a new town in the vicinity of Utrecht which now has 43,000 inhabitants. The railway station and the shopping centre form the core of the city. Around them are the most important non-daily facilities and some office sites. The residential areas are sited around the centre at decreasing construction density. From the centre a star-shaped bicycle and pedestrian network branches out into direct routes to the residential areas. Nevertheless everywhere can still be reached by car. But car traffic always needs to use the ring road to get from one residential neighbourhood to another, or to the centre. Thus in many instances walking or cycling is more attractive and quicker. The result in Houten is that there is relatively more walking and, particularly, more cycling, than in comparable centres.



4.2 Road infrastructure for cyclists

Traditionally the emphasis in Dutch bicycle policy has always been on improving the road infrastructure for cyclists. For many people, constructing cycle paths is also synonymous with bicycle policy. But in a bicycle-friendly infrastructure, the issue is more than just cycle paths. Also important is the development of junctions, circles and traffic lights, for example.

When designing the road infrastructure, most Dutch traffic experts use the CROW recommendations. In 1993 CROW produced the first version of a Design Manual for bicycle facilities, entitled 'Sign up for the bike: Design manual for a bicycle-friendly infrastructure'. This has also been translated into English. This Design Manual describes all the steps, from the decision to promote cycling through to actual physical implementation. This manual was entirely revised in 2006, and will also be translated into English. The Design Manual introduced the five main requirements for bicycle-friendly infrastructure.



Example O Zwolle: Independent bicycle network

Zwolle (113.000 inhabitants) figures among the top Dutch cities in terms of bicycle use and 'bicycle street climate'. To Willem Bosch, the face of cycling policy in Zwolle for almost fifteen years, it is more than clear: the success of Zwolle can be explained primarily by the structural, continuous improvement of facilities for cyclists. Simply making bicycle use more attractive is what it is about. "For decades we have been working towards according cycling a prominent place. This is a consistent policy; not just something from the past few years."

Continuous efforts from the '70s onwards enabled the municipality to produce most of the main bicycle route network, largely segregated from the busiest parts of the car network. Efforts had always been consciously directed at segregating car and bicycle networks. The concept of separate bicycle paths running along traffic arteries has therefore become a relatively unimportant phenomenon in Zwolle. A great advantage for cyclists of these segregated structures is that the main routes contain fewer traffic light crossings – in fact only where bicycle routes cross the most frequented car routes. Thus the municipality has been working for years on transforming these crossings into flyovers or underpasses.

The result is a main network virtually without barriers. Even the A28 motorway, dividing the city, is no barrier to bicycle traffic. Rutger Ekhart, transport and traffic policy advisor with the municipality: "Cyclists are really not aware of crossing the A28. This motorway fits in so well from a spatial viewpoint that it poses no problem at all to cyclists." Neither are the avenues together forming the Zwolle ring and the railway line traversing the city at right angles to the motorway, heavy barriers in daily practice.



The five main requirements for bicycle-friendly infrastructure

It is not only an improvement of traffic safety which is targeted in the strongly traffic-oriented and infrastructural approach to bicycle policy. Emphatically, safety is 'only' one of the five main requirements in the development guidelines. The other four are:

- **Direct:** short and rapid routes from origin to destination.
- **Comfortable:** good surface, generous space and little hindrance from other traffic participants.
- **Attractive:** an attractive and socially safe environment, without smell or noise inconvenience.
- **Cohesion:** logical and cohesive routes.

These main requirements apply to the entire network of bicycle routes, but also to the facilities at road stretches and intersections.

The bicycle network

Most municipalities have a network of principal bicycle routes based on bicycle policy. Such a network is developed through an analysis of the origin areas and the main destinations for cyclists such as offices, schools and the station. A traffic model is sometimes used for this, though generally a manual analysis serves, combined with local expertise. The main routes must meet higher quality requirements, for example always having tarred surfaces, or priority always being given to the main cycling route. Tackling bottlenecks on the main cycling routes is generally also accorded more priority.

The cycling network cannot be considered in isolation from the network for vehicle traffic or - to a lesser degree - the bus network. When main cycling routes coincide with traffic arteries for vehicular traffic, this often has negative consequences for cyclists. The larger number of conflicts leads to more traffic danger, hindrance and delay. In a number of Dutch cities attempts have been made - often successfully - to disentangle the cycling and vehicle networks. Car traffic using the historic radial to the centre has been reduced, for example, in favour of bicycle traffic. Or a railway level crossing for cars and bicycles is replaced by a bicycle underpass.



Example P Veenendaal: A fixed structure cycle network

Veenendaal (60,000 inhabitants) is one of the many new towns in the Netherlands, with all the familiar characteristics from elsewhere: uniform residential areas, large business parks and motorway interchange junctions. Yet, Veenendaal has another characteristic, absent in other municipalities: a high degree of bicycle use, in line with the top-10 Dutch cities.

To Leo Smolders, until recently head of the traffic department of the municipality of Veenendaal, the town's spatial structure is a decisive factor. The built-up area is virtually 4.5 by 4.5 km square, with the town centre neatly positioned in the middle. So: ideal for bicycle use. In turn this structure is due to coincidences such as the limited municipal surface, and certainly to the conscious spatial policy conducted over the past few decades.

An essential characteristic of Veenendaal's bicycle facilities is the small, persistently applied mesh of the network. The bicycle route network of Delft, to which the national government contributed heavily, is familiar far outside the Netherlands. In this early '80s project example, fixed widths were applied systematically: 500 metres for main routes, 200 to 300 metres for the town quarter network and 100 metres for the adjacent network. Very few cities applied this system right through to the very last route in recent decades. But Veenendaal has, with a philosophy all its own: no distinction - or virtually none - between network levels (or, in other words, the main and town quarter networks coincide) and a strictly applied 300 metre mesh. Smolders: "We have thus been able to achieve a fine-mesh network within which the ideal line is practically always attained. So: very short diversions, and especially when heading for the centre, many inhabitants can choose between two or three route options for instance. There is a variety of routes, each with its own characteristics, so something for everyone. What we see is that this works in practice: the socially less safe routes through parks are used relatively less in the evenings than their alternatives close by. In short, a perfectly appropriate range for our inhabitants."

The design of these bicycle facilities is equally significant: comfort and speed across all routes. In a number of connections in Veenendaal, this resulted in the striking decision to have bicycle paths - most of them bi-directional - running alongside a residential street with a very limited degree of car traffic. The concept behind this is that a high-quality uninterrupted route for bicycles outweighs the advantages of the greater economy of space and costs of bicycle routes running partially through car-restricted streets. And these routes are truly perfect for cyclists! As a result, most Veenendaal bicycle routes are in a constellation of individual stretches, especially in the latest new town enlargements, and bicycle paths run parallel to residential streets, particularly in the older layer encircling the centre. The bicycle routes in this 30 km/h area have priority all the way.

In a number of new towns from the 1970s, 80s and 90s such as Lelystad, Almere and Houten, an entirely segregated traffic system has even been used as the starting point for the urban development structure. The effect on traffic safety has been unsurpassed. These are the safest cities in the Netherlands. In practice there have also been a number of disadvantages to this strictly segregated traffic system: problems with orientation and a greater vulnerability to social danger.

A recent innovation has been the classification of roads in accordance with the principles of 'Duurzaam Veilig' or sustainably safe. All Dutch municipalities classified their roads network around the turn of the century. According to 'Duurzaam Veilig', a number of roads within the centre are designated as 'traffic arteries'. Here there is a maximum speed limit of 50 km/h. In principle these traffic arteries must always have specific bicycle facilities. Other roads belong to the residential areas with a maximum speed of 30 km/h. Here no separate bicycle facilities are needed, but if required a municipality may certainly provide autonomous facilities for bicycles on a main cycle route through a residential area. Unfortunately many roads fall betwixt and between: too busy for a residential area, certainly lots of crossing movements and no space for autonomous bicycle paths. Solutions for these so-called grey roads are still being sought.



Roadside facilities

Although there are more than 7,000 kilometres of cycle paths in Dutch cities, almost half the kilometres cycled are on roads with a combined profile for car and bicycle traffic. There is nothing wrong with this, as long as the number of cars is limited and they don't drive too fast. (More interestingly: cyclists often prefer a quiet residential street to an autonomous bicycle path alongside busy traffic arteries). The bicycle facilities for combined profiles are then also speed-limiters and circulation measures. Unfortunately speed-limiters, such as humps, plateaus and road-constriction, often form hindrances for cyclists themselves. A number of inventive solutions have appeared in Dutch street policy to exclude cyclists from these disadvantages, such as constrictions with separate bicycle thoroughfares. Often the cure is worse than the disease. The most robust solution appears to be the half-sine-shaped 30 km/h hump. This smooth hump (length 2.4 m; height 0.12 m) does not hinder cyclists, but is certainly effective for speeding car traffic, because the hump interferes with the car's suspension. Circulation measures often applied are one-way traffic (excluding bicycle traffic) and a clamp for car traffic (pole in the road).

A relatively new phenomenon for combined profiles is the bicycle street. Everything has been done in designing the bicycle street to emphasise the bicycle's important function (see box on the Oss municipality).

Around 40 per cent of the kilometres cycled in urban areas are on cycle paths. These are largely autonomous cycle paths alongside busy traffic arteries. Solitary bicycle paths have often been laid in new residential areas, running entirely independently between the houses and the green zones. The desirability of cycle paths is under discussion in many countries, given the possible danger these facilities pose at intersections. This is barely an issue in the Netherlands, where cycle paths



Example Q Innovative bicycle bridges

In the Netherlands, fast cycle routes to the suburbs are essential for many residents living in these new areas. If they are separated by a wide canal or a river, a good bicycle bridge is a vital link, as many existing road bridges either require a long detour or do not allow cyclists on them at all. Because of their important function, such bridges are often given affectionate nicknames. Two examples are the Snelbinder in Nijmegen and the Nesciobrug (nickname 'Palingbrug' or 'Eel Bridge) in Amsterdam.

Snelbinder (which is Dutch for bicycle luggage straps, but literally also refers to a quick connection) is the name of the bicycle bridge alongside the existing railway bridge over the river Waal in Nijmegen. It provides a fast cycle route to Nijmegen from the new residential areas in the Waalsprong district on the opposite side of the river Waal. For cyclists travelling from the new areas to the station, this means a 10 minute reduction in their journey time by cutting out the detour over the Waalbrug bridge. This makes it a real alternative to travelling by car over this distance. The Snelbinder was not built directly onto the railway bridge, but assembled on a platform on the north bank of the river Waal near Lent.

In March 2004, the Snelbinder was suspended and attached to the railway bridge using four derricks. A few weeks later, the bridge was opened to cyclists.

The Nesciobrug named after the Dutch writer Nescio, is a curved cable-stayed bridge and the longest bicycle and pedestrian bridge in the Netherlands. The bridge totals 780 metres in length.

The Amsterdam-Rhine Canal, the canal linking Amsterdam with the most important river in the Netherlands, forms a barrier between IJburg, the new residential area in Amsterdam, and the city centre. Although the bridge is adjacent to the Zeeburgerbrug road bridge on the A10 motorway, no cyclists are allowed on that bridge. The Nesciobrug, a bicycle and pedestrian bridge, provides faster cycle routes between IJburg and Diemen and the Amsterdam district of Watergraafsmeer, and the Zuidas, for instance.

The bridge was opened to cyclists on 7 June 2006.

The bridge is popularly known as the 'Palingbrug' (Eel Bridge) because of its shape.

In 2006, the design was awarded the National Steel Award for its 'elegance'.

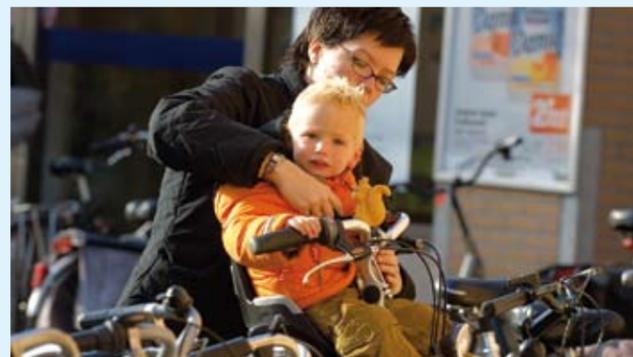




Example R Zwolle: the city of bicycle lanes

Apart from being a city of bicycle tunnels, Zwolle is also a city of bicycle lanes. This is also a consequence of policy choice, aimed at segregating main bicycle routes from car routes. Where the bicycle lane is often a temporary solution elsewhere in the Netherlands because of a lack of space for separate paths, in Zwolle this is mostly a conscious, positive choice. It is visible in the lanes here; not those very narrow lanes defying all traffic guidelines, making it impossible for cyclists to ride in pairs, but generally wide, comfortable lanes. Zwolle works towards a respectable width of 2 metres; most of the bicycle lanes are already 1.75 metres (except on routes like the boulevards surrounding the city centre, where they are 1.50 metres). They are also situated in streets with relatively little car traffic.

In choosing bicycle lanes, Zwolle also accords a prominent role to cyclist comfort. After all, bicycle lanes are far easier to embody in maintenance schemes than separate cycle paths, because lanes are an integral part of the road surface.



are generally regarded as safe facilities. Dangers at intersections are largely related to moped traffic. After successful experiments in a number of municipalities, in 1999 it was decided to exclude moped riders from most bicycle paths within the built-up areas. Moped riders would have to use the adjacent lane. Municipalities could designate exceptions by placing a sign indicating a dual moped/cycle path, or '(brom-)fietspad' in Dutch. This has mainly been implemented on the aforementioned solitary cycle paths in new residential areas, because there is no equivalent alternative here for moped traffic. The lane is permanently missing. To limit the inconvenience of mopeds to a degree, moped humps are placed at strategic sites. The sophisticated design (hollow-spherical-hollow) prevents young moped riders using the hump as a ski-jump.

Finally there is the profile with bicycle lanes. Part of the roadway is reserved for bicycle traffic using marking and bicycle symbols. For preference the lane is coloured red. The bicycle lane has a legal status. Motorists may not stop or park on it. Bicycle lanes are often used in traffic arteries where there is no room for autonomous bicycle paths.

Facilities at intersections

In the Netherlands the intensity of car traffic also determines the choice of intersection type. Should there be a set of traffic lights, a circle or a priority crossing? Often the safety or flow of bicycle traffic is decisive.

Traffic lights in the Netherlands generally have separate indicators for bicycles. A number of facilities have been developed to increase the safety and flow of bicycles. Some examples are:

- Detection sensors at a distance, to register the cyclist in advance.
- Two green sequences per bicycle for cyclists.
- Simultaneous green lights for cyclists in all directions. Particularly useful for cyclists turning left, enabling them to cross the intersection diagonally.
- Display timer, giving cyclists an indication of how long they need to wait for a green light.

Despite all the facilities, traffic lights are a major irritation for cyclists. Understandably, because 70 per cent of the delays in urban areas are caused by traffic lights. Thus cyclists in the Netherlands ignore red lights on a major scale, which in turn annoys motorists. And when bicycle accidents occur at traffic lights, the high speeds involved often mean serious injury. These are all reasons why traffic experts often seek alternatives to traffic lights. The most important alternative is the traffic circle.

Just as in other Western European countries, the advance of the traffic circle is almost unstoppable. Justifiably, given its advantages for flow and safety. Originally traffic circles were constructed with autonomous bicycle paths, so that cyclists had to give way to car traffic approaching and leaving the circle. In the interests of his own safety, it was simply better that the cyclist gave way, so the logic ran. This was a huge bugbear for the cycling association the Fietsersbond, which saw this as the thin end of the wedge whereby cyclists would also lose their priority rights at other intersections. The municipality of Enschede was the first to experiment with a circle with autonomous bicycle tracks and priority for cyclists. Ultimately years of discussion resulted in a broadly adopted recommendation of the CROW: within the built-up area cyclists also have priority at circles. Ideally the bicycle track takes the form of a perfect circle and the distance between the circle lane and the bicycle path should preferably be 5 metres. Outside the built-up area, cyclists do not have priority at circles. The bicycle track is separated from the circle by a divergent shape. The bicycle crossing places are at a considerable distance from the circle (at least 10 metres). These recommendations have been adopted by most road administrators, but a substantial proportion of the municipalities and provinces have still opted not to accord cyclists priority within the built-up area.



Example T Oss municipality bicycle street

The Heesch-Oss bicycle street is the longest in the Netherlands and an example to other municipalities. The bicycle street is based on a principle whereby a street with mixed traffic acts as an important bicycle link. The bicycle link is easily recognisable through its design and set-up, but also offers limited access to car traffic. In this bicycle street, the car's status is subordinate to that of the bicycle.

On the Oss bicycle street, the cyclist definitely has the advantage over the car. This is expressed in the profile. The Oss bicycle street has two profiles: bicycle street with a plinth lane without lane separation, and bicycle streets with lane separation in a different surfacing material.

The motorist is a guest in the profile. A special logo embodying the interests of the cyclist has been designed to make this clear. It shows that the motorist must make way for the cyclist on this route. Cyclists have priority, but motorists may overtake cyclists.

The first section of the bicycle street was opened in September 2003. This runs from the south to the centre. The result of the project is an 11% increase in bicycle use on the bicycle street. The project ultimately cost around 2 million Euros. Of this 1.2 million was subsidised by the province.

Example S Bicycle highway between Breda and Etten-Leur

In 1998 the province of North Brabant staged a competition challenging municipalities to design a bicycle route to encourage the improvement of inter-local bicycle connections. The project submitted by the Breda municipality was the winner of the competition.

The bicycle highway is a 7 km bicycle link between Breda and Etten-Leur. One of the aims behind the construction of this bicycle highway was continuity and identifiability along the entire trajectory. With the exception of one junction, the network gives cyclists priority at all intersections. The tarred bicycle tracks are identifiable in red. Lining the cycle path, considerable attention was paid to trees due to any possible underlying root pressure. Consideration was also given to good positioning of the lampposts. Along the route there are three rest and shelter areas, where cyclists can find information about the route.



Example U Bicycle parking in Utrecht

The municipality of Utrecht (270,000 inhabitants) is working on an integrated network of bicycle parking facilities. Their starting point is that sufficient storage facilities must be present at homes (origin site) and the destination. There has been considerable experimentation in Utrecht with various bicycle parking facilities. However due to the lack of any administrative structure to this, this led to a great variety of forms and charges. The lack of integrated guidance meant the stagnation of facility construction. For this reason the municipality assigned responsibility to the bicycle parking company from 1996. This bicycle parking company can take its own initiatives, produce policy and penetrate the network of municipal services. The advantage of this is that more attention to bicycle parking is fostered within the entire organisation.

Since 1997 Utrecht has had a funding system in which bicycle parking facilities are partly financed by car parking fees. Up to 2016 this involves an amount of 750,000 annually. This budget is supplemented from other municipal budgets. In particular the costs for administration and enforcement are paid from the parking fees, while investments tend to be funded from other sources. In areas where paid parking is implemented (public funding areas) an inventory is drawn up of the need for parking spaces for both the car and the bicycle. If necessary, a maximum of 2% of the car parking spaces are converted into bicycle parking facilities. In this effort, they want to work together with residents to achieve sufficient space for bicycles. Of the users of bicycle facilities, 62% appear to be extremely satisfied with the quality of the storage facilities. These storage facilities are well utilised.

Example V Free guarded parking in Apeldoorn

In April 1998 Apeldoorn (155,000 inhabitants) abolished fees at three guarded storage areas in the centre where parking previously cost 45 eurocents. A year later the number of users of the guarded storage had increased by 70%, increasing by the same amount the following year. Surveys showed the storage facilities to be full at busy shopping times. The number of randomly parked bicycles fell by 20% in two years.

"Now the number of stored bicycles has tripled compared to 1998. It's still rising, but obviously not as fast as initially," says traffic expert Wim Mulder. There are more positive effects. Two years after its introduction, 18% of guarded storage users said they had previously travelled to the centre by car or bus.

Apeldoorn now has 2,800 free guarded places in five storage facilities. The municipality does not believe it is necessary to ban random bicycle parking. "At peak periods in the main street, there are few pedestrians with bicycles, so there are also fewer randomly parked bicycles. You do see them at quieter times, but we are not doing anything about that. These people are not being a nuisance to anyone and their bicycles are not in the way. No shopkeepers are complaining." Apeldoorn funds the free guarded storage from its car parking revenues. The parking garages and automats yield some 2 to 2.5 million Euros annually. A quarter of this is earmarked for public transport and free bicycle storage together. The budget for bicycle parking is now € 220,000 annually. Alongside this amount for administration and maintenance, € 1 million is reserved for new storage facilities.



4.3 Good bicycle parking facilities

Cyclists not only need good and safe bicycle routes, they also need facilities to park their bicycles safely, easily and neatly. In practice, the fear of theft and vandalism leads to lower bicycle use. Good bicycle parking facilities are not always self-evident. Nonetheless cyclists want to be able to leave their bicycles – temporarily! – as close to their destinations as possible. It is precisely in the door-to-door relationship that the bicycle has the competitive edge over short distances. Given the substantial number of randomly – and often inconveniently – parked bicycles in city centres and at stations, the bicycle is often almost a victim of its own success.

The CROW publication 'Leidraad Fietsparkeren' (bicycle parking guidelines) from 2001 answers the question of just how many storage places are needed at which facilities, and what must be specially considered. This set of guidelines offers planners and designers the information for setting up, implementing and maintaining good bicycle parking policy. The guideline first contains policy-oriented information: for example how to get bicycle parking onto the agenda, and how to move from analysis to policy measures. The second part provides practical information, from market demand to technical aspects and costs.

By far the most bicycle trips depart from or are destined for the home. Good bicycle parking facilities here are therefore essential – ideally positioned so that the resident first passes his bicycle to get to the car. New building projects are able to incorporate bicycle storage space in their plans. However, in many existing, older neighbourhoods – particularly in the cities – this space is not available, even though this is where the bicycle is eminently suitable as a means of transport. This requires policy attention: bicycle stands near homes, bicycle safes or boxes and secure neighbourhood stalls.

To an increasing degree municipalities are taking initiatives to regulate bicycle parking more tightly. Many municipalities which want to limit the random parking of bicycles in pedestrian areas are providing large and well-guarded bicycle storage facilities at the edge of the centre. These are often free – which appears to be extremely effective in concentrating parked bicycles.

In 1998 the so-called 'Fietsparkeur' (or bicycle parker) formulated quality requirements for bicycle parking systems for the first time in the Netherlands. The norms were drawn up in collaboration between manufacturers, designers, user representatives (such as the Fietsersbond cyclists' association) and principals (such as the rail travellers' organisation NS Reizigers). Whether such systems involve clamps, bicycle boxes or more advanced systems, they must comply with norms for user-friendliness, avoiding possible bicycle damage, providing resistance to vandalism and durability, for example.



Example W Winterswijk: winner of best approach to bicycle theft

In Winterswijk (30,000 inhabitants) the police work together with the municipality, housing corporations, justice, bicycle dealers, schools, the hospitality industry, media and neighbouring German municipalities to combat bicycle theft.

A selection from the activities: police, municipality, bicycle dealers and schools mount regular campaigns to engrave postal codes on bicycles and provide information about locking bicycles, the importance of reporting thefts and the punishability of fencing. Police monitor risk areas actively and catch the perpetrators, including repeat offenders. People riding stolen bicycles are detained. The housing corporation provided storage and assumed responsibility for providing safe bicycle storage for new constructions. At the largest discotheque there are bicycle racks in strategic positions so that doormen can keep an eye on them. The police assist with bicycle checks in the neighbouring German municipality of Vreden, and a very clever idea: the police park unoccupied surveillance vehicles near bicycle theft risk areas in the evenings.

This approach has produced a major drop in the number of bicycle thefts, making it a successful project. The project has been voted the best approach to bicycle theft by the Fietsersbond cyclists' association.

Example X Innovative approach in Amsterdam

In Amsterdam bicycle theft is being tackled structurally, through the 'Integraal werkprogramma Fietsendiefstalpreventie 2002 - 2006' or integrated bicycle theft prevention programme. This was certainly necessary, because in the Amsterdam-Amstelland police region the risk of theft was an average of 16% in 2001. The objectives have definitely been achieved, because in 2005 the risk had already been reduced to 10%. The programme is based on two pillars, i.e. tackling the sites where many bicycles are stolen and breaking the chain of unregistered bicycles.



As part of its broad approach, the municipality of Amsterdam is also doing its best to return stolen bicycles. The Amsterdamse Fiets Afhandelcentrale (AFAC), or Amsterdam Bicycle Handling Centre where all found and removed bicycles end up, does everything it can to track down the owner.

The cyclist victim may also do his or her own search: all bicycles are on the AFAC website.

Even more technology: in a test run 4,000 Amsterdam cyclists received a free chip in their bicycles in 2006. In the case of theft this should make it easier to locate the rightful owner.

The Amsterdam cycling sector has drawn up a code of conduct for used bicycles. The conduct rules are aimed at dramatically reducing bicycle theft in Amsterdam.

The participating bicycle dealers – recognisable by consumers through their stickers declaring 'Hier geen gestolen fietsen' (no stolen bicycles here) – will not buy, sell and/or repair any (suspected) stolen bicycles. This will make it considerably less attractive to steal or fence a bicycle. The code of conduct has now been adopted nationwide by the BOVAG motor industry association.



4.4 Tackling bicycle theft

A stronger approach to bicycle theft has even been agreed in the national Mobility Memorandum: "All authorities are working on reducing bicycle theft, whereby efforts are being aimed at halving the number of bicycle thefts in 2010 against those of 1999 (Police Monitor 1999: 6.4 bicycle thefts per 100 bicycles)." This is certainly necessary, given the brake which the risk of theft has applied to bicycle use in the Netherlands.

Just as with other policy fields, the rule here too is: a broad approach is the most effective. A broad approach begins with the good bicycle parking facilities covered in section 4.3. Furthermore, good collaboration is required between police, bicycle dealers and municipalities amongst others – an integrated approach. Integrated means tackling the entire chain of bicycle theft: ensuring that bicycles are secured against theft (e.g. through the aforementioned storage, information and monitoring); ensuring that dealing in stolen bicycles becomes unattractive (registration with dealers, tackling fences and buyers); and finally tracking down stolen bicycles.

In 2007, a total approach was chosen, including the following parts:

- There is now a national bicycle theft register at the Government Road Transport Agency, in which all bicycle thefts are recorded.
- Since January 2008, this register has also been accessible to the public. This means that if you enter a frame number or chip number, you can see whether the bicycle is registered as stolen (or whether it has been reported stolen). This helps tackle the traffic in stolen goods.
- Increasingly, the police will have access to scanners to read the anti-theft chip (built into new bicycles by Dutch manufacturers for some years). With a link to the register, it is easy to see whether a bicycle has been reported stolen.
- From June 2008, the Ministry of the Interior and Kingdom Relations plans to launch a major public campaign against bicycle theft, highlighting the register and the usefulness of reporting thefts. A knowledge centre about bicycle theft has been set up.



Example Y Province of Brabant Traffic Safety Label

To combat the number of young traffic victims, the Traffic Safety Label has been introduced for schools – and has since been adopted by other provinces. This label can be earned by primary schools which devote sufficient attention to traffic safety for young children. Whether or not a school is awarded the label is based on five points:

- school organisation
- traffic education in class
- practical projects
- school environment
- communication with and involvement of parents

Increasing traffic safety thus not only occurs through education, but also through the entire surrounding environment. The conditions must be good enough, as it were, to achieve a goal. The core issue is that schoolchildren must therefore learn to move safely in traffic under the motto about learning young for life.

The Traffic Safety Label is a quality hallmark for schools which accord traffic safety a permanent place in their school policy. It is also a comforting thought for parents. Participating in the Label scheme is free. The provinces provide subsidies for acquiring a good traffic method, for example, or traffic direction staff or projects.

4.5 Education, information and enforcement

Education, information and enforcement play a supplementary role in Dutch bicycle policy. The point of departure is that people opt for bicycles themselves, if this is a quick, safe and comfortable possibility. Hence the emphasis on improving infrastructural facilities. Traffic safety is also best served by structural modifications to the infrastructure.

Education and information focus initially on teaching. Traffic education is a permanent part of the teaching programme in primary schools, which focuses on traffic regulations and rules of conduct for cyclists. Ideally a practical cycling exam is also taken.

Most children are taught to ride a bicycle by their parents or a brother or sister at a very early age. This is less apparent amongst the growing of migrant population. Traditionally the bicycle is not part of Turkish or Moroccan culture. Often the parents cannot ride a bicycle, so no suitable bicycles are available in the household. In large cities with many migrants, extra attention is thus devoted to cycling skills in primary school. To ensure that all children gain cycling experience, the Amsterdam municipality makes bicycles available to schools, for instance. In a number of cities cycling courses for migrant women are also held. They can then master cycling in a protected environment. Many participants enjoy this as an opportunity to develop more skills.

Cyclists' bad conduct is a favourite topic over drinks. Cyclists ride through red lights, without lights or on the wrong side of the road, irritating many motorists. The renewed attention to norms and values in Dutch society at the beginning of the 21st century has also led to greater attention being paid to cyclists' violations. A national bicycle lighting campaign is combined, for instance, with enforcement actions by regional police forces.

Wearing a bicycle helmet for daily trips is unusual in the Netherlands. Only competitive cyclists or mountain bikers tend to wear a helmet for their sport. Some parents give young children bicycle helmets. Usually the helmet is simply packed away for good before the offspring are 10 years old. There is certainly no support for mandatory helmeting. The fear exists that making it mandatory would cause a drop in bicycle use.





Appendix Other English-language information about cycling in the Netherlands

www.fietsberaad.org (or www.bicyclecouncil.org) is now translated into English and provides everyone interested with masses of information, knowledge, experience, examples and even a virtual visit to the Netherlands

CROW, Sign up for the bike: Design manual for a bicycle-friendly infrastructure, 1996. This manual can still be supplied. See www.crow.nl. An English translation of the revised Ontwerpwijze Fietsverkeer (Cycle Traffic Design Method) may appear in 2007.

The SWOV organisation for traffic safety research also has an extensive website in English, containing considerable information about bicycle use and bicycle safety: www.swov.nl

The research unit of the Ministry of Transport, Public Works and Water Management, AVV, has a large number of reports on traffic in the Netherlands in the English section of its website, including 'passenger transport' and various publications relevant to bicycle policy: www.rws-avv.nl

The Fietsberaad, or bicycle consultancy, recently issued an English-language publication outlining bicycle policy in a number of cycling cities: Continuous and integral: The cycling policies of Groningen and other European cycling cities (Fietsberaad-publication no. 7, April 2006). This publication contains a number of accounts on the traffic policy of several cities characterised by a relatively high degree of bicycle use, extending over a prolonged period. Each account gives a specific picture of the 'course of development' of bicycle use in a municipality and the relationship between bicycle use and local policy. It covers five cities in the Netherlands known as 'cycling cities': Groningen, Amsterdam, Enschede, Zwolle and Veenendaal. This is augmented by a selection of five cities from other neighbouring countries also featuring a reasonable level of bicycle use: Münster and Freiburg in Germany, Copenhagen and Odense in Denmark and Ghent in Belgium. The publication can be downloaded from www.fietsberaad.org, or www.bicyclecouncil.org via 'knowledge bank'.

On the website of the Fietsberaad, www.fietsberaad.org, or www.bicyclecouncil.org, the 'kennisbank' also has several publications in English:

- [Plan en proces gemeenten](#): Integrale verkeersplannen: Groningen en Reno vergeleken (2005).
- [Plan en proces gemeenten](#): Fietsplannen: Groningen - Number 1 of European cycling towns (2006).
- [Plan en proces gemeenten](#): Fietsplannen: Bicycle policy in Utrecht Netherlands (2003).
- [Plan en proces gemeenten](#): Draagvlak en organisatie: Success factors and limitations: Amsterdam as the bicycle city (2006)
- [Plan en proces gemeenten](#): Benchmarking en evaluatie: BYPAD-audit of the cycling policy of Zwolle (2001).
- [Fietsgebruik](#): Fietsgebruik algemeen: Facts about cycling in the Netherlands (2000).



[Cycling in the Netherlands](#)

[Published by:](#)

Ministry of Transport, Public Works and Water Management
Directorate-General for Passenger Transport

PO Box 20901
2500 EX Den Haag
The Netherlands
Phone: +31 70 351 61 71
www.minvenw.nl

and

Fietsberaad (Expertise Centre for Cycling Policy)
Jaarbeursplein 13
3521 AM Utrecht
The Netherlands
Phone: +31 10 282 58 18
www.fietsberaad.org or www.bicyclecouncil.org

[Texts](#)

Mobycon
Fietsberaad
Ligtermoet & Partners

[Translation](#)

Bothof, Nijmegen

[Final Editing](#)

Mario Fruianu (DGP)
Gordon de Munck (AVV)
Hans Voerknecht (Fietsberaad)

[Design and layout](#)

nu:rotterdam

[Photography](#)

POL! Fotografie
Collectie Gemeentearchief Rotterdam
Hollandse Hoogte
Trafficing

[Printing](#)

Mosaic Media

No parts of this publication may be reproduced in any form by print, photoprint, microfilm of any other means without prior written permission from the publisher

(c) 2009 Ministerie van Verkeer en Waterstaat, Fietsberaad