



Ministry of Transport, Public Works
and Water Management



An average of almost 500 people reside, work and live on each square kilometre of the densely-populated Netherlands. It is a dynamic country with the world's sixteenth largest economy. Trade, transport and the provision of services are major cornerstones of our prosperity. An attractive public transport system is vital for our country that relies heavily on fast connections. Not in competition with cars but as an essential component of a robust mobility system that offers people realistic choices.

*Camiel Eurlings,
Minister of Transport, Public Works and Water Management*

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Public transport in the Netherlands





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and Water Management

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Breaking new ground in building a stronger public transport system

The Netherlands has a long tradition of innovations in public transport. As far back as the early seventeenth century, a network of permanent public transport links existed between cities. A very Dutch system – it was a network of waterways.

We do not, however, have to go so far back in time. In 1970, the Netherlands was the first European country with a national, symmetric rail service. In 1980, we were the first to have a national ticketing and fare system for local and regional public transport. And in 1992, for the first time, travellers could phone a single national telephone number with all their questions about departure times, fares and other matters.

Our ambition is to work constantly on further improvements. In 2010, we began the introduction of the OV-chipkaart; an electronic card similar to the Oyster card in use in London, that can be used for travel on all modes of public transport in the Netherlands. We are also significantly strengthening infrastructure and services in many places. In the years leading up to 2020 it will be possible to travel between the major cities in the western Netherlands without the need for a timetable. In other words, over-ground trains will depart as frequently as those running on a metro system.

A distinctive feature of the Netherlands is the strong position of cyclists on the roads. One-quarter of all travelling is done by bike. This means that good facilities for cyclists, at railway stations, for example, are essential. The Netherlands desires to lead the way in this as well.

The sharing of knowledge and experiences, at home and across borders, helps us to make public transport better and better. The Netherlands is very interested in the best practices of other countries and is always willing to provide insight into the way in which the Dutch public transport system operates. This brochure contains all the information you may need.

*Camiel Eurlings,
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1 Introduction to public transport in the Netherlands

Public transport in the Netherlands operates in a specific Dutch context, which is the starting point for its examination. The subjects to be considered are population, building development, the economy and prosperity, the need for mobility and the history and current organisation of public transport.

Figure 1.1:
Gross Domestic Product (GDP) per inhabitant.
Source: Eurostat 2007

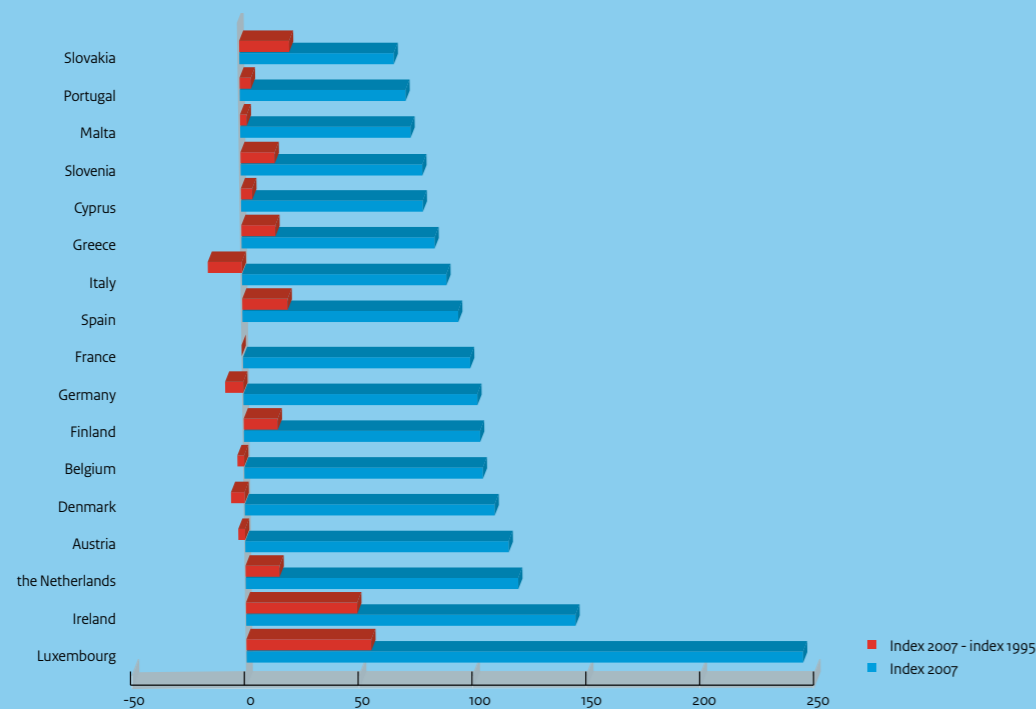


Figure 1.2:
Modal split in the Netherlands in (1) passenger kilometres performed and (2) trip number
Source: Mobiliteitsonderzoek Nederland

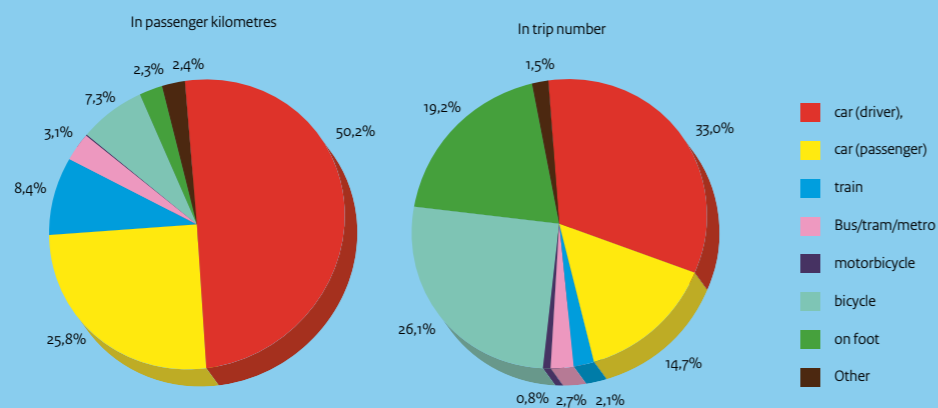
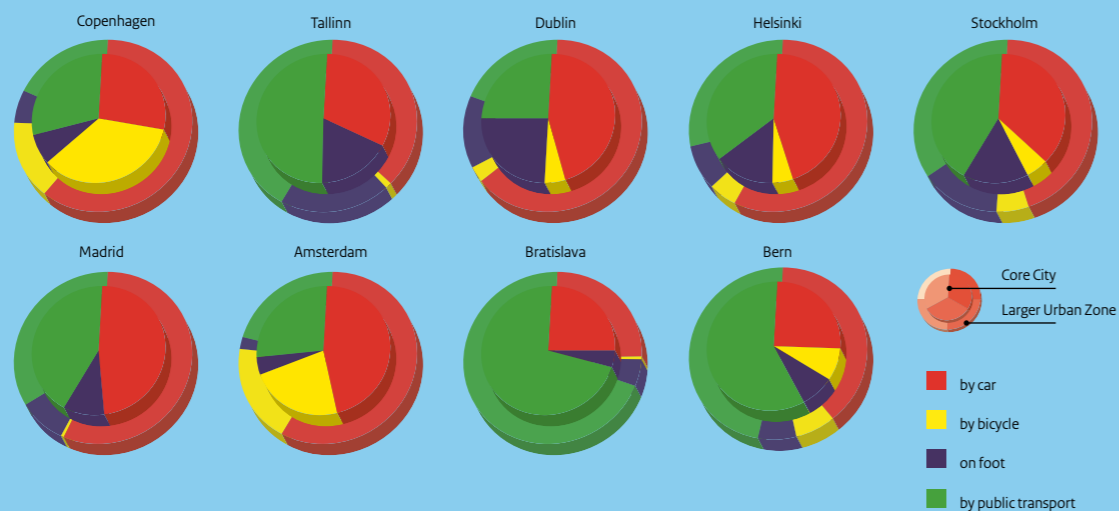


Figure 1.3:
Modal split in core city (inner circle) and larger urban zone (outer circle) of a selection of European cities.



1.1 The Netherlands in a nutshell

The Netherlands is a densely populated country with 16.5 million inhabitants. The average population density is close to 500 inhabitants per km² (2009), more than seven million of whom live in the Randstad conurbation, an area roughly the size of greater London. Here, most economic activity takes place. The Netherlands is also characterised by a sharp contrast between town and country: there are highly urbanised areas with several different (sub)centres on the one hand and rural areas on the other. New, densely populated residential areas have grown up around larger cities in particular (Vinex). In recent years greater emphasis has been placed on urban compression. A concern for the future is the decline in the number of people living in the more rural areas.

The Netherlands is the sixth largest economy in Europe and is seen as the logistic gateway to Europe. Accessibility is therefore more than a basic facility and public transport has a full part to play. The Dutch labour market has been reasonably stable over the last ten years, while prosperity in the Netherlands is relatively high in European terms, rising by some 25% between 2001 and 2007. A concern for the future is the country's ageing population.

All areas in the Netherlands have a fixed function, with the Port of Rotterdam and Schiphol Amsterdam Airport as main ports. A number of economic core areas, which are regions of great economic activity and a high(er) population density, have also been defined. Planning policy is aimed at strengthening these areas, which is in line with the Dutch tradition of strong governmental influence in land-use planning.

Prosperity and population growth have led to rapid growth in the need for mobility in recent decades. The Dutch – just like other Europeans – are increasingly turning to the car to meet their mobility needs. The road network is reaching the limits of its capacity, especially in the morning rush hour, so keeping the Netherlands moving is a constant challenge. The construction of more and wider roads is seen as part of the solution; public transport and the bicycle are also important tools in meeting the need for mobility.

1.2 The need for mobility

Every day 4.5 million trips are made by bus, tram and metro in the Netherlands, one million are made by train and no fewer than 14.5 million by bicycle. The average distance that the Dutch travel each day is slightly below the European average. What an average Dutchman thinks of as 'a long way' will not be so bad for the average European. On the other hand, the Dutch make just as much trips as other Europeans and spend just as long doing so.

Looking at the modal split, the relatively high share of the distance travelled by train and bicycle is striking. On the other hand the Dutch travel few kilometres by bus, tram or metro on average, at least where the national average is concerned. There are, however, great regional differences. In highly urbanised areas public transport accounts for as much as 40 to 50% of journeys, more than half of journeys in the core area of Amsterdam being made by public transport or bicycle.

In European comparison it is noticeable that the share of the distance travelled by train is above the European average. The explanation for this is that a large part of the population lives in urban areas and that the train has advantages as a means of transport over (medium) long distances between cities. On the other hand the share of the distance travelled by bus, tram or metro is relatively low. This can be explained by the fact that the Netherlands is a cycling country; people often cycle short distances, at the expense of public transport use.



1.3 The history of public transport

Public transport has a long tradition in the Netherlands. As early as the 17th century people- or horse-drawn track boats, one of the first forms of public transport, connected the major towns with one another. New waterways and canals were even excavated for them. Later they made way for bus services and (steam) trams. In the meantime the railways arrived, initially with different transport companies, which merged into one train operator named Dutch Railways (NS) in 1929. In regional public transport this concentration only began in the 1960s. After 20 years nearly all the local and regional transport companies had been brought together in one holding company. A separate (municipal) urban transport company continued to exist in just nine large cities.

The Netherlands has a tradition when it comes to innovations in public transport. Some of them have led to directional innovations for European and global thinking on public transport. Examples include:

- the national, fixed and symmetrical rail transport timetable (1970);
- the national ticket and fare system for local and regional public transport (1980);
- the broad application of traffic signal pre-emption in favour of public transport;
- the national public transport season ticket for all students aged 18 and over (1991);
- one national telephone number for all public transport travel information (1992).

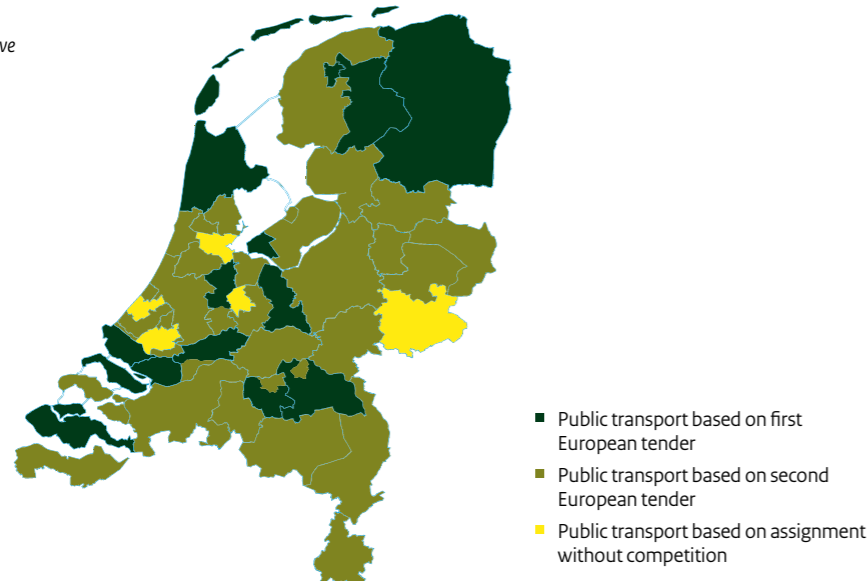
The EU regulatory framework introduced in the early nineties was also cause for change in the Netherlands. Local and regional public transport was transferred to the provinces and urban regions in two stages. The Passenger Transport Act 2000 stipulates that public transport be placed in concessions, which – with the exception of urban transport in Amsterdam, Rotterdam and The Hague – are put out to competitive tender.





Major changes also took place in rail transport. From 1996 the rail network was opened up to third parties, giving freight transport a significant boost. In passenger transport a national concession was introduced on the mainline rail network and assigned without competition to rail operator NS (from 2005). From 1999 responsibility for a number of unprofitable regional train services was transferred to regional authorities, which put them out to competitive tender, as a result of which new rail operators became active which modernised the rolling stock, improved the timetable and improved the transfer between bus and train transport. As a result the regional railway lines whose continued existence had been under threat changed to successful projects with strong growth in passenger numbers.

Figure 1.4: status of competitive tenders in the Netherlands in January 2010.



1.4 Current organisation

All Dutch public transport is organised in the form of area- or line-based concessions, which are awarded by governmental authorities: central government awards the concessions for the mainline rail network and High Speed Line South (HSL South), the local authorities (provinces and urban regions) award concessions for local rail transport, while the regional authorities are also purchasers for urban and regional transport (bus, tram and metro).

The government retains responsibility for the infrastructure. In rail transport, management and maintenance, capacity distribution and traffic control are placed with ProRail, a public enterprise. The infrastructure for buses is nearly always the property of the road maintenance authority (municipality, province or central government), while the tram and metro networks are mostly the direct or indirect property of the (municipal) transport companies.

The different public transport concessions are run by several companies. Rail operator Dutch Railways (NS) holds the concession for the mainline rail network, making it the largest passenger carrier in the Netherlands. Subsidiary NS-HiSpeed operates the High Speed Line and – in association with foreign partners – the international train links to Brussels – Paris, Cologne – Frankfurt and Hanover – Berlin for instance. In regional bus and rail transport there are five transport companies operating: Arriva, Connexion, Q-Buzz, Syntus and Veolia. Newcomer Q-Buzz was set up in 2008 and only provides bus transport services. In Amsterdam, Rotterdam and The Hague local public transport is provided by the privatised municipal transport companies GVB, RET and HTM.

Powers and responsibilities have been decentralised because the regional authorities have a better understanding of regional needs. Central government sets the frameworks and provides a budget to the regional public transport authorities for public transport organisation and network development. The regional authorities have great freedom in how this budget is spent. The greater part is spent on running urban and regional transport. Above certain levels recourse can be made to additional central government subsidy for infrastructure construction.

Figure 1.5: Dutch public transport organisation chart

Level	Authority	Concessions
National	Central government, infrastructure manager (ProRail) operator (NS)	Mainline rail network HSL South
Metropolitan, urban and regional	12 Provinces 7 Regional PTE's	Bus/Tram/Metro Regional Railway Services

The decentralisation of regional public transport does not just have functional benefits. It also makes it possible for ties to emerge between the population and local public transport. Buses and trains become objects with which people can identify, which contribute to the identity of the region and which fit in with regional wishes and opportunities. Examples of such developments are the Twentse Ros, the Valleilijn and the Zuidtangent.



2 Policy goals

The accessibility of towns and cities, the shortage of land, the quality of life in neighbourhoods, the social isolation of people – public transport contributes to a modern balanced society such as ours. We will consider the main goals and policy themes of regional public transport policy with reference to the core themes of the Mobility and Land-use Planning policy papers.



Natural Gas Bus
Veolia, The Hague



Environmentally
friendly
public transport:
trams operating on
green electricity

2.1 Traffic and transport policy development

Mobility is an essential part of modern society; it has a positive impact on prosperity (accessibility) and well-being (freedom). Unfortunately, it is also associated with side effects. Car traffic in particular for example causes emissions (dust, NOx and CO₂), large land-use reservations (roads and car parks), traffic safety risks and damage to the quality of life in both urban and rural areas.

Until the 1970s mobility policy was based on the predict and provide approach, that is identifying bottlenecks, setting priorities and as far as possible expanding road and rail capacity. In this context public transport mainly had a social function. As more land-use interests began to play a part in the (re)development of the land, this approach came under increasing pressure. As a result the perception changed; the growing mobility no longer had to be merely facilitated. People started thinking of ways of restricting the growth of mobility, especially the growth of car mobility (predict and prevent). The role of public transport consequently changed into that of increasingly important alternative to the car. The main policy line therefore became the realisation of a modal shift from car to public transport.

Current policy is shifting the emphasis again. The approach now being chosen is one in which all the options are utilised both to stimulate accessibility and development opportunities and to limit the negative impacts of (car) mobility, that is to facilitate high quality alternatives for mobility and to stimulate conscious choices. For this the mobility system must be coherent and robust and all the modalities must be sufficiently solid to form fully-fledged alternatives. Work is also being done on a wide range of mobility management measures such as teleworking and rush hour avoidance. Finally, an increasingly important role has been set aside for spatial planning in the limitation of (the further growth of) mobility.

2.2 Outlines of public transport policy

Current mobility policy is set down in two policy documents:

- Nota Mobiliteit (2004) 'Towards reliable and predictable accessibility;
- Mobiliteitsaanpak (2008) 'Safely and smoothly from door to door.'

The secondary titles of the policy documents illustrate the ambitions in the Netherlands: it is not actually technical aspects such as time lost, delays and punctuality that predominate, but transcending aspects such as reliability and speed from door to door. The most important tasks are the facilitation of the expected and desired growth of public transport use and the tackling of congestion. The use of public transport by rail is expected to increase by one percent per year and urban and regional transport by 2.1 percent per year.

The Mobility policy document is an elaboration of the Land-use Planning policy document. The common focus in both documents is to bring about a strong economy, a safe society, a good living environment and an attractive country. The strong economy has been translated into goals in the area of accessibility. The emphasis lies on the main links between urban networks and economic core areas. At the two main ports, the Port of Rotterdam and Schiphol Amsterdam Airport, land has even been reserved for future infrastructure expansions. Accessibility has been broadly defined. Consideration has not just been given to average speeds and time lost; it is actually reliability and predictability that play an important role. It is not so much a matter of links, but more of relationships from door to door.

Although Dutch road traffic is particularly safe (in terms of traffic deaths per car kilometre the Netherlands shares second place in Europe with the UK), a further reduction in the number of traffic deaths to 2020 will be pursued. In public transport it is mainly social safety that is important; it will be promoted through greater supervision (on metro lines and at busy stations) and a fully closed access system with the public transport chip card. The good living environment and the attractive country have been translated into environmental objectives. Targets have been formulated for emissions (use of increasingly clean bus stock) and noise (protection of residential areas from noise). Attention has also been given to defragmentation of the habitats of plant and animal species with ecoducts, for example.

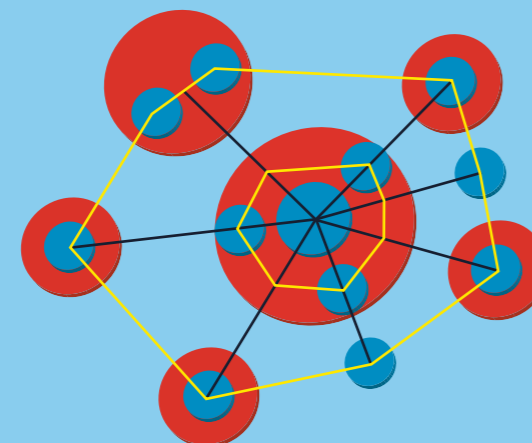
Figure 2.1:
Parallel
infrastructure to
provide alternative
mode choices



Figure 2.2:
Multimodal
intersections so
that different
modes of transport
can come together



Figure 2.3:
a coherent urban
and regional public
transport network
in a web structure



Public transport has an important part to play in the achievement of accessibility (speed, reliability, predictability) and environmental objectives. It also has a social function: it is a basic requirement that central facilities such as schools and hospitals are as far as possible accessible to everyone. This includes both “traditional” public transport services and innovative (small-scale) transport systems, such as the RegioTaxi or the neighbourhood bus.

People can be offered a real choice by strengthening and developing all the links and modalities. Examples include:

Parallel infrastructure

Work is being done on the development of multiple parallel car and train infrastructure between important cores. The idea is that the link remains in place if one of the modalities fails. In this way the link becomes more reliable. At the same time public transport on these links becomes an increasingly attractive alternative to the car whenever delay on the route by car is anticipated.

Multimodal intersections

Work is being done on the development of intersections where different transport modes come together. A traveller can for example travel to the intersection by car and continue his journey by bus or train. Multimodal intersections are likely both ‘in the middle’ of a link and shortly before the end of the journey. The traveller usually doesn’t have the station or the stop as final destination, so additional travel options (such as public transport, bicycle or the Regional Taxi) simplify the onward travel. More and better options in access and egress modes of transport make public transport more attractive to travellers.

Multimodal travel information

Work is under way to increase the integration of travel information for different modalities. Multimodal travel information helps travellers choose the best (combination of) transport modes for their specific journey. Up-to-date and multimodal travel information increases the reliability of public transport.

Frequency increase

The frequency of trains in the Randstad conurbation and on routes much used by passengers is increasing all the time. Currently four Intercity trains per hour run on these routes. In the future there will be six per hour, so travellers will have to take no further account of departure times. This both increases the capacity of public transport at peak times and improves the reliability of the journey from door to door because the impact of disruptions on the journey becomes less.

Web structure concept

Further work is being done on the development of coherent urban and regional public transport networks with a web structure. The train (region) and/or metro (city) links form the backbone of the system; from here a web structure is provided with other forms of public transport (bus, tram) and bicycle facilities. The different forms of public transport will dovetail with the railway lines, with the spatial developments being concentrated around (multimodal) nodes.

Strong international links

Strong international links are very important because the continuing unification of Europe is stimulating international traffic. The Netherlands is a central point in (pan-)European freight transport. In passenger transport too the position is being strengthened, in part by taking the high-speed line (HSL South) to Brussels and Paris into service. HSL South is expected to make some short-haul air traffic superfluous. In this way international rail transport can make an important contribution to the environmental and quality of life objectives.



2.3 Policy coordination

Different governmental bodies are involved in public transport, both horizontal (land-use, economy, traffic and transport) and vertical (central government, provinces, urban regions, municipalities). The successful development of public transport projects requires a good partnership between the different authorities and detailed coordination of their policy. This partnership and coordination take place in several policy areas. Examples include:

Coordination of spatial planning, traffic and transport

The Netherlands wants to develop the economy, land, traffic and transport more coherently. This is comparable to the internationally popular concept of transit oriented development. In the Netherlands an integrated approach is being taken towards this concept. Infrastructure has been included in the Land-use planning policy document as a structuring element. In concrete terms this means that optimal utilisation of the existing infrastructure and of the strength of multimodal intersections within this infrastructure will be pursued in expansions of towns and villages and in centre development. The designation of development sites for living and working locations is essential in this regard. Extra mobility can be prevented by taking greater account of the impacts of spatial plans for traffic and transport. Emphases in this regard are:

- more housing within existing towns rather than on the edges of towns;
- a higher density and the mixing of functions near public transport intersections;
- paying heed to the rush hour direction and the reverse direction in planning new functions.

The opportunities for developing new homes, shops and offices (compression and mixing of functions) around transport intersections in the built environment will be utilised as far as possible: this creates attractive (urban) centres. For economic specialisation consideration will be given to concentration and clustering. If greater account is taken of mobility impacts in the placement of new functions, the infrastructure will be better utilised.

Parking policy

Parking policy has a strong bearing on people's choice of mode of transport. In the Netherlands local authorities can take a regulatory approach to the number of parking spaces, their use and charges. Local authorities can pursue an integrated policy by, for example, establishing low-traffic zones. In this case parking spaces are strictly regulated and public transport and the bicycle are assigned a central role. The availability of good public transport and bicycle facilities makes it easier to introduce a stringent parking policy, as is the case for example in the major cities (Amsterdam, Rotterdam, The Hague and Utrecht). Parking policy can have an almost identical impact to the congestion charge used in London and Stockholm for instance. In Amsterdam parking policy is for example resulting in fewer car movements and therefore fewer negative impacts and (probably, a direct link has not been demonstrated) growth in the use of urban public transport and the bicycle.

ABC location policy

In the 1990s the Netherlands had a unique tool whose purpose was to coordinate the interests of spatial planning, the economy, traffic and transport: the ABC location policy. Central government used this tool to impose detailed requirements of parking standards on business parks and office sites. A distinction was made between three types of locations:

- A-locations: optimal accessibility by public transport, accessibility by car secondary;
- B-locations: good accessibility by public transport, restriction of parking facilities;
- C-locations: optimal accessibility by car and optimum supply of parking facilities.

The traditional ABC location policy with strict parking standards was ultimately found to be too rigid and not very effective and was abandoned.

Mobility management

Mobility management is the name of a range of measures to stimulate conscious mobility behaviour.

By providing people with ways not to travel, to travel later or to travel other than by car, the impacts of anticipated bottlenecks (such as reduced accessibility in the course of road works) can be reduced. The blueprint for mobility management was the successful approach during the closure of two important motorways in Amsterdam in the summer of 2006. During the closure public transport passes were issued to road users, giving them free use of public transport. The effect was that Amsterdam South remained readily accessible, while 1,200 of the pass holders continued to use public transport once the arrangement came to an end.

A national Mobility Management Task Force has been set up to record concrete and non-negotiable results. It encourages concerned parties to make mobility management agreements at regional level and helps them develop measures tailored to regional needs and capabilities. Examples include teleworking, car sharing, flexible working hours and/or public transport. The programme aims to improve accessibility by reducing the number of car kilometres in the rush hour by 5%.



2.4 Top-down and bottom-up policy

In principle public transport policy in the Netherlands has a top-down structure. However, bottom-up exchange also takes place. Every layer of government sets frameworks within which underlying layers shape the policy. At the same time nearly all the layers of government also have executive functions in relation to public transport.

Central government policy is translated into laws, rules and budgets on the one hand and projects on the other. In practice this often does not seem to be an obstacle to local authorities setting new developments in motion or trialling new (public transport) applications. Conversely, local authority experience is often used to adjust national legislation and regulations. The competences and objectives of the different authorities in relation to public transport come together in different policy areas.

Traffic safety

The stimulation of public transport use may improve traffic safety, the most obvious example being the use of night-time public transport, which nightlife users can use to travel home safely.

Spatial planning

The presence of a high-quality public transport link can create the conditions for setting certain spatial developments in motion. Conversely, public transport can benefit from spatial developments.

Target group policy

Municipalities in the Netherlands are for instance responsible for the transport of schoolchildren (school transport) and people with a functional impairment (mental and physical). In some cases such types of transport can be combined. Part of this target group transport can also be handled by public transport by improving the accessibility and usability of public transport. Finally, public transport users can in some cases use this special transport to access places where otherwise no public transport would go.

Economic development

The development of local economic activities can be boosted by public transport. In the provinces of Gelderland and Fryslan for example the use of biogas as a fuel for public transport is being stimulated for the development of local gas production.





3 Public transport in the Netherlands in the 21st century

Market development, efficiency, customer orientation: public transport is going through a gradual transition from supply-driven to demand-driven. This changed the character of Dutch public transport in the 21st century. This chapter focuses on the effects of this policy: supply and use of public transport, access and egress transport modes and the passenger quality experience.

3.1 Development of public urban and regional transport supply

Public transport supply can be described in a variety of ways. Important aspects are the number of vehicle kilometres, the number of timetable hours, the number of stops serviced, the number of routes and the frequencies. All these aspects determine the development of public transport supply. The number of vehicle kilometres by urban and regional transport in the Netherlands rose by an average of 6% between 2000 and 2007. The introduction of market forces in Dutch public transport has led to an improvement in the efficiency both of the operators and in the way supply and demand are met.

Figure 3.1: indexes public transport network characteristics
Source: NEA, 2008

Area	Length	Stops	Routes
3 largest urban regions (Amsterdam, Rotterdam, Haaglanden)	+6,6%	-13,7%	-9,9%
4 other urban regions (Utrecht, Arnhem-Nijmegen, Eindhoven, Twente)	+2,6%	-12,2%	-7,2%
Western provinces (Noord-Holland, Zuid-Holland, Utrecht, Flevoland)	+8,9%	-16,2%	-13,9%
Northern/eastern provinces (Groningen, Fryslân, Drenthe, Overijssel, Gelderland)	+4,1%	-5,2%	+1,6%
Southern provinces (Zeeland, Noord-Brabant, Limburg)	+7,5%	-4,8%	-1,4%
Total Netherlands	+6,1%	-10,1%	-6,2%

Between 2000 and 2007 the number of stops serviced by fixed routes decreased by 10% on average. It is notable that the fall in the number of stops in the more rural provinces is relatively low. It seems that there is a greater commitment to the retention of the social function in these provinces. In the urban areas the network has become more coarsely meshed.

Between 2000 and 2007, the number of routes fell by around 6% on average. An important difference in this regard is that between high-frequency and low-frequency routes. The number of low-frequency routes fell by nearly 20 per cent (from 1,107 to 893), while the number of high-frequency routes rose by 17 per cent (from 629 to 736). This indicates that there was a sharp increase in frequency in the Netherlands during this period, which usually leads to an increase in the number of passengers. Because the expansions have mainly occurred on busy(ier) links – the routes that many motorists also use – the competitive position of public transport has been strengthened. A small number of (little used) fixed routes has been withdrawn. The social function of public transport in the (more) rural areas has in most cases been taken over by the RegioTaxi, while in the large(r) urban areas the walking distances to stops have increased. Public transport is, particularly as a result of frequency increases, increasingly better able to match the requirements of its customers. Because of the shorter waiting times, average journey time was shortened and journey time reliability improved.

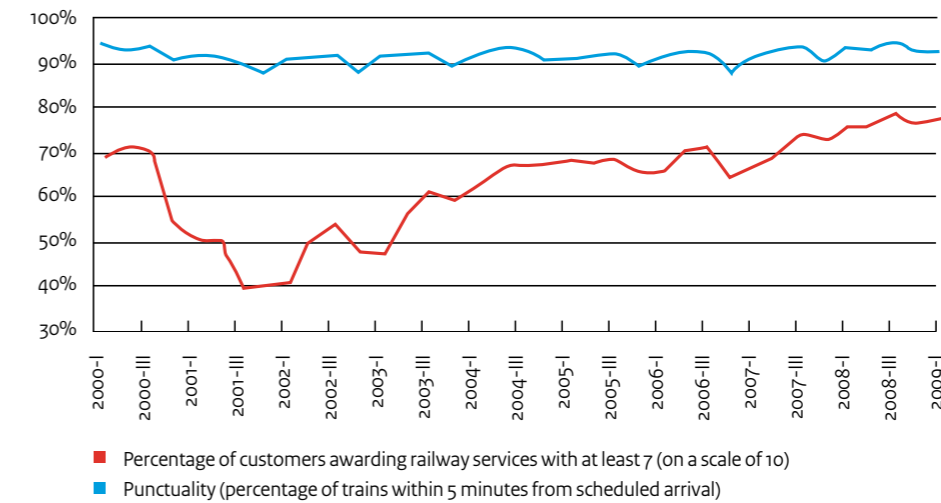
To fulfil the social function of public transport, collective demand-responsive transport is available in many areas where a regular route is not sufficiently profitable. The RegioTaxi for example offers almost unlimited travelling possibilities within its service-area, as the system has no fixed stops or routes. There are certain service provision agreements. The obligation to make a reservation at least one hour in advance and additional charge do however represent a barrier to daily use. In 2007 66.5% of the Dutch population had the opportunity to use a RegioTaxi.

3.2 Development of public transport supply on the mainline rail network

Mainline rail network

The majority of rail services are part of the mainline rail network, a concession that gives Dutch Railways (Nederlandse Spoorwegen) the exclusive right to carry passengers. A number of services with a primarily regional function are not part of the mainline rail network concession.

Figure 3.2: Customer satisfaction and train punctuality railways



Between 2000 and 2008 the punctuality of the mainline rail network remained reasonably stable. Initially the customer satisfaction fell sharply over the same period, but it has been rising steadily since 2002. Now 80% of passengers rate the transport provided with a score of seven or more (on a scale from a worst possible score of one to a best possible score of ten). Over the last years, the number of train services has continued to grow, mainly through increases in frequency. Since December 2006 all Intercity services in the west and centre of the country are operated with a 15-minute headway. The number of night services also increased with the introduction of new night trains from Rotterdam and Utrecht to Brabant and from Rotterdam to Utrecht via Gouda. Also, a number of Intercity-services was rerouted to provide direct services from nearly all big cities to Schiphol Airport.





Figure 3.3:
Indexes
passenger
kilometres
Source: NEA 2008

3.3 Public transport use

Urban and Regional bus

Passengers in the Netherlands have had to become accustomed to the arrival of new carriers as a result of tendering in urban and regional transport. After a long period of relative stability, new carriers with new rolling stock and new timetables were introduced. The new timetables in particular initially led to fewer regular passengers; it took some time before the changes bore fruit in the form of transport growth. The transport figures demonstrate this clearly: the use of urban and regional transport initially fell sharply after 2000 and then rose again. Passengers started travelling more often by public transport again as they became accustomed to the new situation with both quantitative and qualitative improvements in the services.

Indexes passenger kilometres (2000=100)	2000	2004	2007
3 largest urban regions (Amsterdam, Rotterdam, Haaglanden)	100	99,0	99,7
4 other urban regions (Utrecht, Arnhem-Nijmegen, Eindhoven, Twente)	100	92,3	102,2
Western provinces (Noord-Holland, Zuid-Holland, Utrecht, Flevoland)	100	94,5	102,3
Northern/eastern provinces (Groningen, Fryslân, Drenthe, Overijssel, Gelderland)	100	99,5	100,7
Southern provinces (Zeeland, Noord-Brabant, Limburg)	100	103,8	101,4
Total Netherlands	100	97,9	100,8

Rail

The number of rail passenger kilometres has risen sharply in recent years, with an annual rise on the mainline rail network of between one and four per cent. Expectations for 2010 are lower because of the economic crisis. There are also great regional differences in the development of train services.

Passenger growth in recent years is the consequence of infrastructure expansion to facilitate further timetable improvements. Dutch Railways implemented a comprehensive change to the timetable in close consultation with the concession provider, with a view to provide large groups of customers with a better service. At the same time, infrastructure was extended in a number of places, allowing more trains and new direct services. Another explanation for the growth is the relatively sharp increase in long-distance transport and commuter traffic (as a result of the economic growth up to the third quarter of 2008). In the same period there was a sharp increase in congestion, encouraging motorists to travel (more often) by train.

RegioTaxi

Use of the RegioTaxi has been rising for a long time. In some cases the concept threatened to become a victim of its own success. For the authorities it is a relatively expensive form of transport: one passenger kilometre by RegioTaxi costs the government roughly seven times the amount of a public transport passenger kilometre. The sharp increase in use has been slowed by municipal measures, such as income limits and maximum journey distances for specific target groups. The measures led to a decline in the use of the RegioTaxi by an estimated 42 per cent between 2004 and 2007.

Figure 3.4:
Indexes
passenger
kilometres
Source:
V&W 2010 /
NS 2009

Indexes passenger kilometres (2006=100)	2007	2008	2009
Part of the country:			
Northern Randstad	101,9	104,5	105,7
Southern Randstad	101,1	105,1	105,5
North & East Netherlands	100,7	105,0	103,9
South Netherlands	97,3	102,1	104,1
Corridors			
Arnhem-Nijmegen - Randstad	99,2	104,7	110,8
Rotterdam / The Hague - Utrecht	118,1	127,1	133,8
Antwerp/Breda - Rotterdam	101,3	103,9	105,9
Eindhoven - Utrecht - Amsterdam	107,3	113,3	114,9
Amsterdam - Schiphol Airport - The Hague	101,3	101,0	100,5
Northern part of the Netherlands	101,2	106,1	104,7

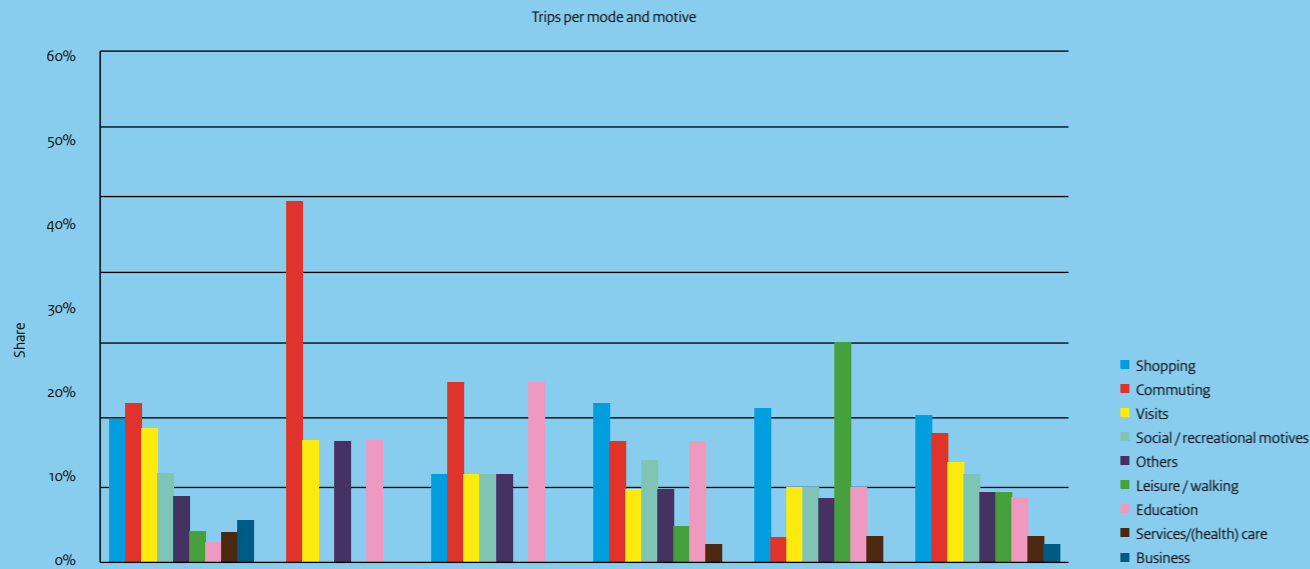


Figure 3.5: Trips per mode and motive

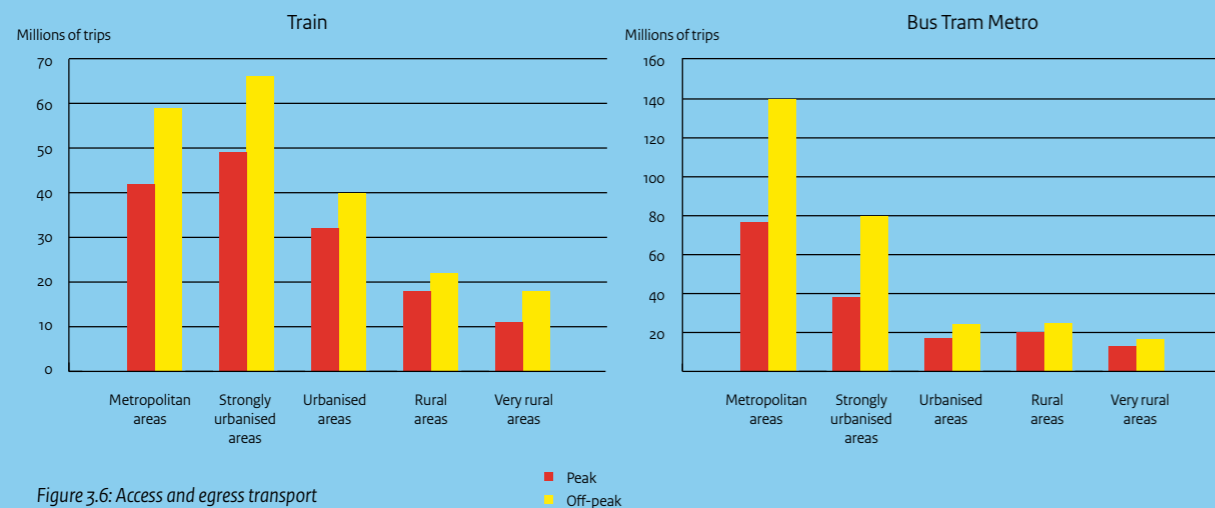


Figure 3.6: Access and egress transport

3.4 Public transport users

Public transport in the Netherlands has both a role in providing an attractive alternative to travelling by car in order to reduce traffic congestion (the accessibility function) as well as a social function, allowing different target groups to be served. In urban areas the accessibility function has the upper hand, in rural areas the social function. The role public transport plays in passenger transport varies, depending on reason for travel, passenger type and degree of urbanisation.

A distinction frequently drawn is that between ‘captives’ and frequent passengers. Captives are passengers who have no alternative to public transport, while frequent passengers do have an alternative (a car), but sometimes choose the train, bus, tram or metro because it is faster, easier or cheaper. Research has shown that around half of train passengers could also have used a car, but deliberately opted for the train. Among bus users, the share of passengers with a car at their disposal is smaller; in this case it is mainly a choice between the bus and the bicycle.

Travel motives

The reasons to travel by train also differ from the reasons to travel by bus, tram or metro. The major part of all train trips in the Netherlands is commuter traffic (50%), while a smaller share (13%) uses the train for education or social reasons. More of a mixed picture applies where bus/tram/metro are concerned; travel by bus, tram or metro is often for work or education (both 25%) or for going shopping or visiting (both 13%). Education is a reason for travel for both students and scholars. An important difference between these two groups is that students have a public transport card, allowing them free travel: they also travel greater distances than scholars. Students use both the train and bus/tram/metro; scholars mainly use the bus. Apart from employees and students/schoolchildren, older people use public transport relatively often. It is also noticeable that working people use public transport roughly just as much during the rush hour as outside the rush hour. Schoolchildren travel more outside the rush hour than during it, while older people also travel mainly outside the rush hour. Public transport use outside the rush hour is strongly stimulated by the pricing policy: the introduction of an off-peak-ticket by Dutch Railways, giving passengers a 40% discount after 9.00 in the morning, had a particular impact on the travel behaviour of older people. The degree of urbanisation also influences public transport use, on the one hand because the public transport-network in urban areas is denser, on the other because car movements in urban areas are less attractive (congestion, parking charges, etc). For both train and bus/tram/metro more urbanised areas seem to generate more public transport movements





3.5 Access and egress transport modes

A journey by public transport is nearly always a multimodal journey, that is a journey in which several modes of transport are used. Few people live close by a station or bus stop; few people have a station/stop as their final destination. Access and egress transport modes can be on foot, by bicycle, car, public transport or taxi. Travel is only multimodal if several modes of transport are actually used (such as cycling, train, walking).

Multimodal travel for the most part uses the train as main mode of transport (67.2%). Trips by bus (16.4%) and tram/metro (6.9%) are also often multimodal. Finally, 10% of the car trips (driver and passenger) are multimodal. For access transport, the bicycle, bus, tram, metro and walking are the main modalities. For egress transport walking and bus/tram/metro are dominant.

Above all, it is the position of the bicycle in both access and egress transport that is special in the Netherlands. In access transport, people use their own bicycles and store them at the bus stop or the station. The bicycle plays a far more limited role in egress transport. It is however growing: people are increasingly taking their bicycle with them on the train (folding bicycles), storing a bicycle of their own at the destination station or renting a bicycle. The latter, renting a bicycle, has become very popular in recent years.

Figure 3.7
How do passengers travel to and from the railway station?
Source: Nota Mobiliteit

Mode of transport	Access transport	Egress transport
Bus, tram, metro	28%	27%
Bicycle, moped	30%	9%
Walking	25%	49%
Car	13%	11%
Other	4%	4%



Taking a bike on a train



Bicycle storage facility at Amsterdam Central Station

3.6 Quality perception

An important public transport quality gauge is the customer satisfaction. In the Netherlands, annual research is performed to determine (changes in) customer satisfaction in public transport. The 'public transport customer barometer' measures passengers' opinions on public (urban and regional) transport. Passengers rate different aspects of their journey, ranging from the chance of a seat to the feeling of security. Since 2004 the customer rating has improved in every respect.

Figure 3.8: Customer satisfaction 2009

Aspects	2004	2005	2006	2007	2008	2009
General appreciation	7,1	7	7	7	7,2	7,2
Information and safety	7,4	7,2	7,4	7,3	7,5	7,5
Comfort	7,1	7	7	7	7,2	7,2
Punctuality and speed	6,3	6,1	6,2	6	6,2	6,5
Price	6,2	6	6,3	6,3	6,5	6,3

There are regional differences. The customer barometer 2009 shows that transport by water achieves the highest customer satisfaction. Urban and regional services in less urbanised areas in general score slightly higher than the urban services in the biggest cities. Public transport in urban areas scores higher on frequency and travel time and lower on safety, while public transport in more rural areas scores higher on chance of a seat and comfort for example, but lower on frequency.

The public transport customer barometer measures the customer satisfaction by concession area, showing how well the operator is doing for each concession. This happens frequently. Many public transport authorities even use the customer barometer as a performance indicator for settlement with the operator. The authority sets a target rating, or lets the operator set its own target rating. If the he achieves the target rating, he receives a bonus. If it fails to achieve the target rating, a penalty has to be paid.

In practice the customer barometer results are a means of encouraging the operator to focus on the wishes and needs of (potential) customers. The rising ratings demonstrate that public transport is becoming more customer-focused; it develops in the right direction.

Figure 3.9: Customer satisfaction 2009

Type of transport	score
City buses big cities	7,3
Tram	7,1
Metro	7,2
Train	7,3
City buses other cities	7,4
Suburban bus services	7,4
Regional bus services	7,4
Ferries	7,7



3.7 Fares

Urban and regional transport fares are revised annually. They have risen by more than 36% over the last ten years. The fares of Dutch Railways were raised by 30 % during the same period. It is worth noting that since 2006, the fare increase in urban and regional transport has been more than 6% higher than the increase of the consumer price index. For Dutch Railways, the fare increase was more than 4% higher.

There are firm agreements between central government and Dutch Railways and between local authorities and carriers about (maximum) fare increases. The fare increase in urban and regional transport is linked to the national ticket system; ticket prices are determined centrally each year by the State Secretary for Traffic and Transport. The Dutch Railways fare increase is set annually by NS itself, on the basis of agreements in the concession and following consultation with central government and consumer organisations.

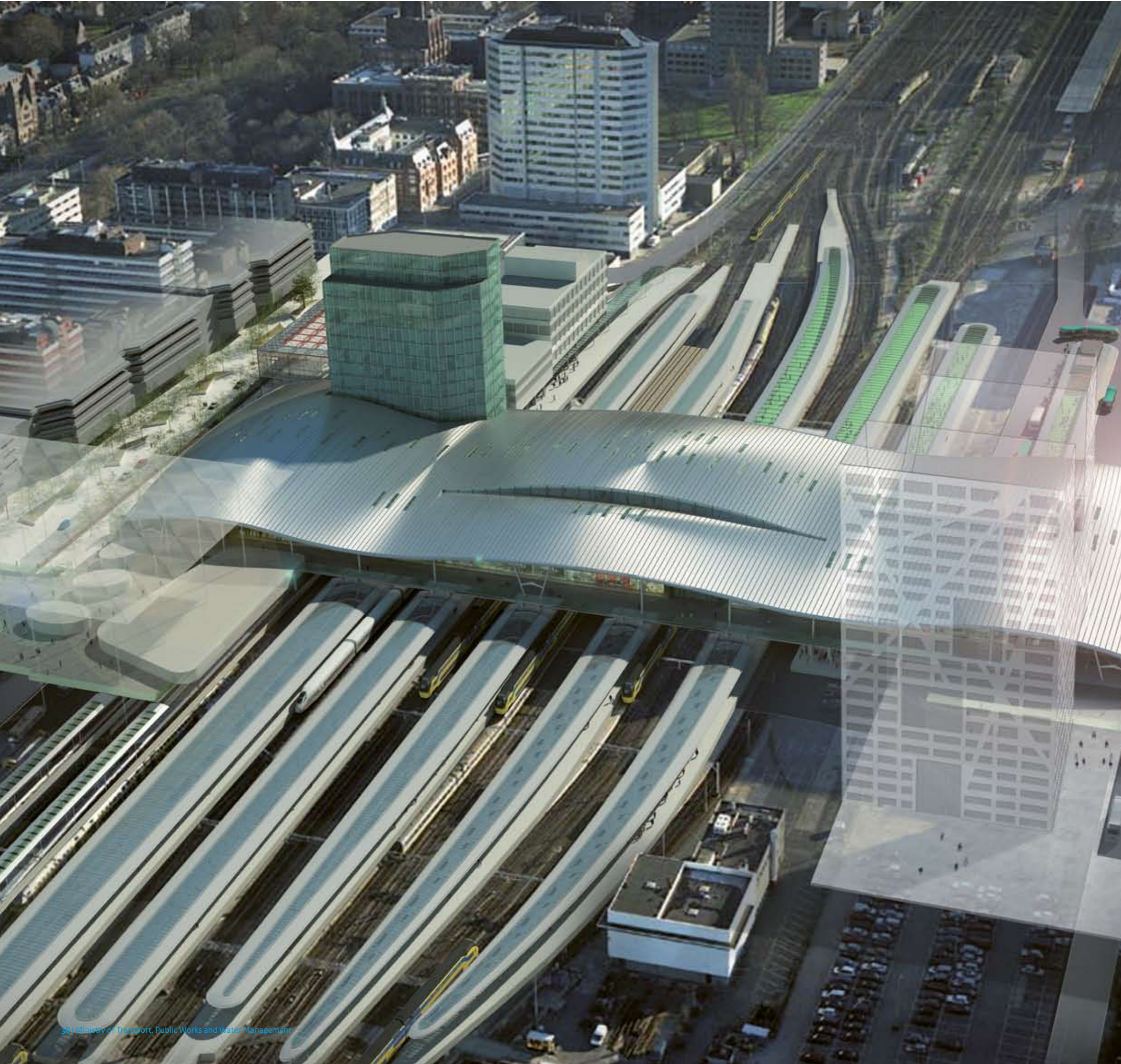
Figure 3.10: Average annual fare increase bus/tram/metro and railways

Year	BTM	Year	BTM
2001	3,90%	2006	2,62%
2002	4,22%	2007	1,60%
2003	5,50%	2008	2,50%
2004	4,87%	2009	4,50%
2005	2,60%	2010	4,30%

Average annual fare increase bus/tram/metro

Year	Railways	Year	Railways
2001	3,15%	2006	3,00%
2002	0,00%	2007	1,50%
2003	4,90%	2008	2,00%
2004	6,08%	2009	3,71%
2005	3,25%	2010	3,00%

Average annual fare increase railways



4 National public transport

A robust, comfortable and customer oriented public transport system requires constant improvement, which is happening at every level. All kinds of national initiatives to improve infrastructure, rolling stock and customer focus can be found in this chapter.



In the future: “timetable-less” services

The aim is to provide timetable-less services on the busiest routes in the Randstad conurbation and to Gelderland and Brabant by increasing the frequency on these routes to six Intercity services per hour. In this way the rail network will develop into a metro-style system with such frequent services that a timetable will be superfluous.

Access and egress travel by public transport is made more attractive by improved coordination of the regional public transport systems and the IC network. In this way, from the customer’s perspective the various public transport systems (national, regional and urban) are increasingly developing into a single logical coherent transport system.

The first trials with high frequency train services were held between Eindhoven and Amsterdam in 2009 and they demonstrated that timetable-less services are feasible on this route. However, on some routes infrastructure expansion is needed to operate with these metro frequencies. The Dutch railway network is in fact one of the busiest railway networks in the world.

Access and egress transport modes

Work is not only being done on the quality of the railway on the mainline rail network; the quality of stations, access and egress transport modes will also be improved. Access transport (i.e. waiting for a connecting bus or train) and egress transport are actually the weak links in the chain. Many people arrive at the station by bicycle or by car. The number of bicycle trips to stations has risen by 50 per cent in the last ten years.

New bicycle storage facility at Amsterdam Central Station

4.1 Attracting optional passengers to rail

The mainline rail network

The national mainline rail network, consisting of Intercity trains, express trains and stopping trains, is the backbone of the Dutch public transport system. The network is operated by a single operator (Dutch Railways), which ensures good coordination between the services without the need for government intervention. The challenge is to make the train even more attractive to a greater number of passengers. To this end, a Railway Action Plan has been drawn up, consisting of specific measures to enable more people to travel between the major cities fast, in comfort and frequently. The implementation of this plan is fully under way. In the past, frequency increases in particular have been implemented, leading to increasing patronage. Furthermore, new stations have been built and several others are planned; all new stations provide facilities for optimum interlinking with all kinds of access and egress transport modes.

Performance

Important passenger transport quality standards are included in the transport concession for the mainline rail network: a reasonable chance of a seat, good passenger information, clean trains and stations as well as the percentage of trains that must depart and arrive on time. The performance of Dutch Railways is monitored by Performance Indicators, describing output-factors. The most important indicators are (a) social and actual safety of staff and passengers, (b) punctuality, (c) seat availability and (d) passenger-service and travel-information. The output-based monitoring-system is already showing first improvements: punctuality (defined as the percentage of trains delayed for no more than three minutes at destinations and interchanges) improved from 80% in 2000 to 87% in 2008. The general customer satisfaction rating has risen; communication with passengers during service disruptions has improved through the provision of information screens, the presence of information providers on larger stations and the provision of up-to-date travel information via (mobile) internet. On smaller stations service pillars have been installed, which passengers can use to seek assistance and information. Despite these improvements, passengers still mention the availability and reliability of travel information during service disruptions as the main area for improvement.





Hispeed lounge, Amsterdam Central Station

To facilitate this persistent growth, central government and station manager ProRail are working hard on the extension and improvement of cycle sheds, Park and Ride and Kiss and Ride facilities. ProRail is building 100,000 new cycle shed spaces at more than 150 Dutch stations and renovating the 35 existing monitored cycle sheds. More than 100,000 unmonitored spaces, 25,000 monitored spaces and 10,000 cycle locks have been created and 300 sheds were converted since 2000.

At the same time waiting at stations is being made more pleasant and more comfortable. Leiden Main Station (the fifth largest station in the Netherlands in terms of passenger numbers) has been set up as a test station, where numerous innovations, such as new platform layout and new station-furniture, can be evaluated by passengers (see www.proefstation.nl). The expansion of the number of services and shops on (larger) stations enables the passenger to use his or her waiting time for useful activities such as shopping, attending to banking matters or taking clothes to the dry cleaner's. On the largest stations Dutch Railways introduced the 'HiSpeed Lounge' for business passengers, where they can work in peace and quietness (power and internet available), relax (TV screens, newspapers and magazines on hand) or have a drink (from fresh espresso to soft drinks). A final area for attention in the chain is egress transport. Half of passengers walk from the railway station to their destination, using bus, tram or metro for longer distances. Business passengers more often take the taxi. However, it not possible to offer a wide variety of transport-modes on each station. Alternative solutions have been successfully introduced for this, the public transport bicycle (OV-fiets, a rent-a-bike-system offered on a large number of railway stations and bus-stops) and Greenwheels (car-sharing) being the most eye-catching of them.

The public transport bicycle (OV-fiets)

The OV-fiets is a rental service, especially for public transport users. They can easily and quickly rent a bicycle at a railway station or bus stop to cover the last kilometres of their journey. Some rental points are manned, others are not. Following registration, people with a personalised public transport card can rent a bicycle for a maximum of 20 hours for €2.85. It is also possible to return the bicycle at a different rental point. After a period of acclimatisation, the OV-fiets has become very successful. In 2009, 67,000 passengers made 670,000 journeys by OV-fiets, 40% more than in 2008. The number of rental points grew by almost 10% in 2009. The OV-fiets is surprisingly popular amongst business passengers, who make up half of customers.

4.2 Easy payment

The Netherlands has a long tradition of ticket and fare integration. National tickets, which people can use on the bus, tram and metro throughout the country and which are even valid on some rail services, were introduced in 1980. The national ticket and fare system is based on a zonal division and has appropriate ticket types for every target group, ranging from individual tickets obtainable on the bus to a national season ticket for all forms of public transport.

Apart from the national ticket for urban and regional transport, there is also a uniform ticket and fare-system for rail services. Train tickets can be bought from any station to every station; they are valid on all trains of both national rail operator Dutch Railways and regional operators.

Recently a new step has been taken to improve the ease of payment: the introduction of the public transport chip card (OV Chipkaart). An electronic card onto which journey balance and transport rights (single journeys, season tickets, etc) can be loaded for all public transport in the Netherlands. The card is designed for contactless reading according to the Check-In, Check-Out principle. The card can be loaded either in a shop, in a ticket vending machine or over the internet; when ordering over the internet the ordered journey product is automatically loaded onto the card the next time the card is registered, wherever the passenger may be! The technology is being managed at national level, but transport operators and public transport authorities fill in the details themselves. The public transport chip card has already been introduced in many regions and is designated to replace the national ticket and fare systems on both the train and other transport.

Step-by-step introduction

Urban operator RET (Rotterdam) was the first to introduce the chip card step by step. From February 2005 on, a small group of test passengers started using the card on the metro-system; gradually the card was offered to other passengers and made valid for other services. The step-by-step-introduction made it possible to correct errors and solve teething troubles, allowing the system to perform reliably from the moment of wide introduction on. The phased introduction also gave passengers the opportunity to get used to this completely new system. The chip card has replaced all other tickets on the Rotterdam metro since January 2009 and on all RET trams and buses from February 2010. Even national tickets are no longer valid here.

Regional operators Q-buzz and Connexion switched over at the same time, but national tickets will remain valid for some time. This so-called dual phase will end once the system has proven its reliability here too and passengers have had the chance to become accustomed to it. Introduction will take place elsewhere in the country in the same way; the public transport chip card is expected to have finally replaced traditional tickets throughout the Netherlands from 2011.



Cardreader for the chipcard



Ticket Vending Machine for chipcards



4.3 Special fares to attract new passengers

Public transport in the Netherlands is being made attractive to specific target groups in different ways, in an attempt to meet their specific needs and wishes as good as possible. For students, a national 'student public transport card' was introduced from January 1991. Academy and university-students can use the ticket to travel free on public transport. Although the card was originally introduced nationally as an economy measure in 1991, it has become very popular. The card was originally valid every day of the week, but after a while its validity was restricted to weekdays (valid from Monday to Friday) or weekends (Friday afternoon to Sunday night). Students can travel at a discount whenever the card is not valid. Public transport use outside the peak hours is strongly stimulated by the pricing policy. The introduction of an off-peak-ticket by Dutch Railways, giving passengers a 40% discount after 9.00 in the morning, had a strong impact on travel behaviour, especially of older people. Bus, tram and metro in more and more cities have special tickets aimed at events or recreational facilities, such as city shopping tickets, park-and-ride-tickets and combination tickets for public transport and theatre or cinema visits.

Finally, there is a separate transport pass for people who have a functional impairment that hampers them to travel independently by car or by regular public transport. This group receives a Social Support Act transport pass on medical grounds, which allows them to travel by RegioTaxi at a reduced fare (comparable to the bus fare); users can travel from door to door and – where necessary – are given assistance with getting in and out. The scheme has been set down in law at national level: the aim of the Social Support Act is that everyone should be able to participate in society. In this Act, the municipalities have the responsibility to offer compensating facilities to people with disabilities; in most municipalities, transport arrangements by RegioTaxi are regarded as suitable for almost all handicapped people.

4.4 Up-to-date and integrated travel information

Passengers set great store by reliable information on departure and arrival times. Important key words are up to date, dynamic and comparable.

Up-to-date and integrated travel information

Since 1991, a national public transport travel information system is provided in the Netherlands. In the early year's information and travel advice was only given by telephone, but from 1998 the information was accessible from the internet as well. Currently, passengers can enter their starting and destination addresses on the web site www.9292ov.nl and see a summary of the whole journey, including departure and arrival times, stops and platform numbers as well as fare-information and information about service disruptions and short term changes to the timetable. They can also compare the advice with the costs and speed of journeys by car or bicycle. The site is also available in English and via mobile internet; the latter has proven to offer passengers huge benefits in case of unexpected service disruptions. In 2009 the 9292 service issued more than one hundred million pieces of travel advice.

Dynamic exchange of up-to-date travel information

Many stations and stops in the Netherlands have real-time travel information available. But the development is continuing. A new system in the Netherlands is making integrated travel information possible at stops and stations: Unlimited Public Transport Information. Operators and public transport authorities use this common standard to exchange data automatically and in uniform format. The hardware of different suppliers and users can be combined as required, because the interfaces between the various system parts (such as the computer on the bus, the module that manages dynamic travel information systems at stops, etc) have been defined together and in a uniform manner. An additional benefit is that a change of operator (following a tender process) has no consequences for the information systems at stops and stations; they can continue to operate without difficulty. It also provides additional opportunities for even better monitoring of the carrier's transport performance.

Reliable travel information makes switch from car to public transport easy

A journey time comparison between car and public transport is increasingly often available along motorways, that is in places where congestion makes it unattractive to travel by car and where the possibility to switch to public transport is available. Such a journey time comparison allows a motorist to see whether it may be attractive for him to continue his journey by public transport.

iPhone App with dynamic travel information Dutch Railways



Dynamic travel information at Amsterdam Central Station



4.5 Public transport for all

Apart from providing an attractive alternative to travelling by car (the 'accessibility function'), public transport also has a social function. This means that everyone in the Netherlands must have the opportunity to travel and to participate in society, which not only applies to people without a car or driving licence, but also to people with a functional impairment (such as wheelchair users, people with impaired hearing and impaired vision). Two major efforts have been made to provide access to public transport: making vehicles and stops accessible and tightening the standards for stations.

Accessible public transport

A wide range of agreements has been made at national level between central government, provinces, urban regions and municipalities to make public transport easier accessible for people with a functional impairment, older people and passengers with buggies or lots of luggage. In 2015, about 75% of the journeys made by urban and regional transport must be accessible; the improvement of the accessibility of rail transport is –due to the long amortization of rolling stock– targeted for 2030. The accessibility of stations and stops on the one hand and rolling stock on the other are being tackled simultaneously. Since 2001, in all urban and regional transport tenders the use of accessible (semi-)low floor buses is required. As a result nearly all vehicles in 2010 are (semi-)low floor. At the same time road operators (provinces and municipalities) are constructing elevated platforms at the selected bus stops (for instance at hospitals or shopping centres), allowing level access. In some regions, this scheme has already been largely completed.

Quality requirements for railway stations

In the Netherlands, the railway stations and platforms have a standardised and uniform layout, allowing passengers to find their way around any station easily. The layout has been described in national railway station layout standards and guidelines. These also contain minimum station and platform accessibility requirements for people with a physical or visual impairment, which also applies to other forms of public transport. For instance, ribbed tiles are required along all routes and every platform must be accessible by lift. On local railway lines nearly all trains are equipped with a low floor, providing for level access in combination with 760 mm high standard platforms.

4.6 The train as international alternative

In international travel within Western Europe, public transport must be a fully-fledged alternative to the car and air travel. A high-quality international rail network contributes to the sustainability objectives of the Netherlands and the European Union. Rail journeys are far less polluting than journeys by road or air. A high-quality rail network above all contributes to CO₂ emission reductions, but also to the robustness of European mobility networks. The ash cloud following the volcanic eruption in Iceland in 2010 illustrated the importance of a robust European transport system.

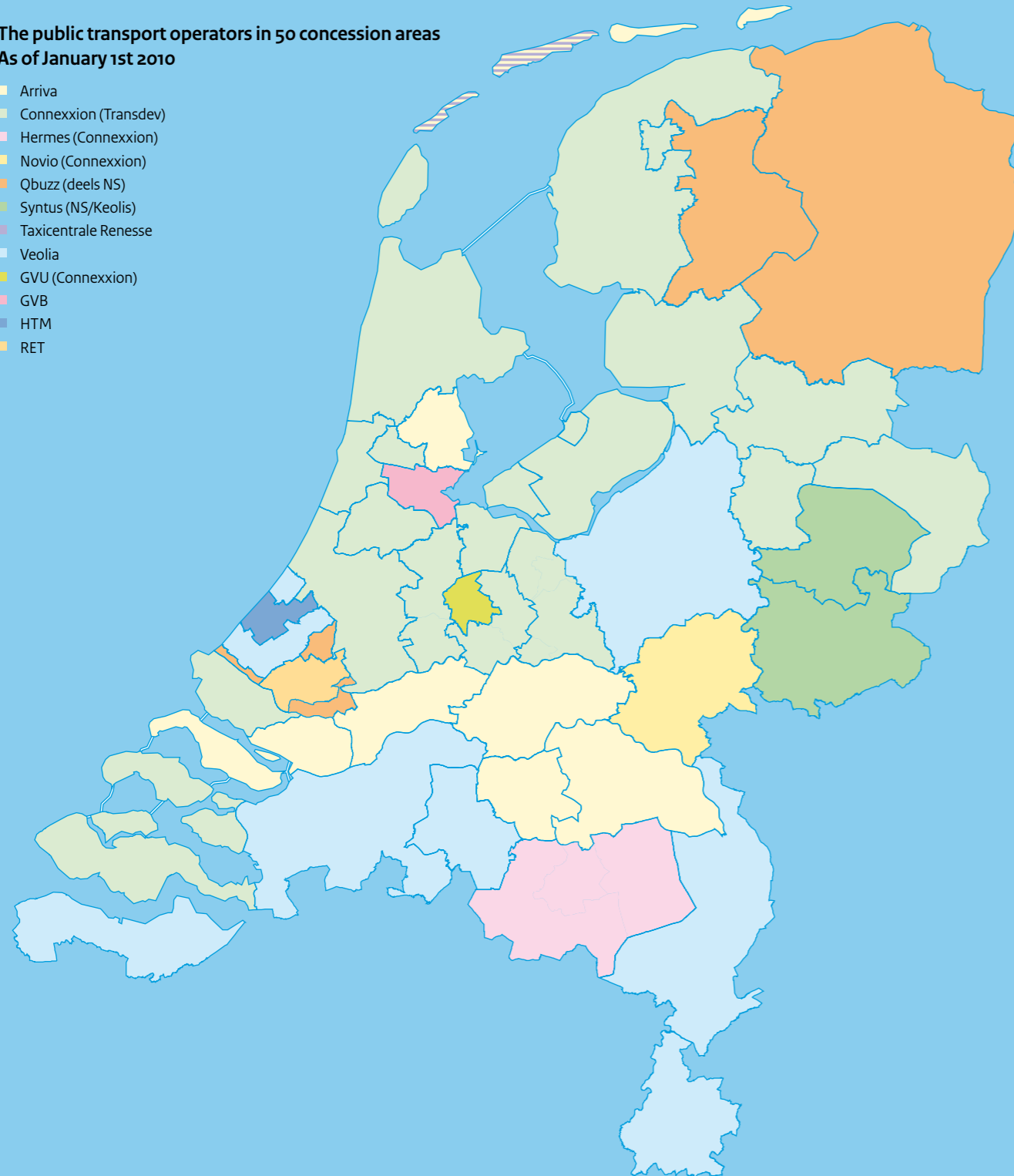
International rail services are operated by NS Hispeed, part of national rail operator Dutch Railways. NS Hispeed is a member of Railteam, the alliance of seven European railway companies operating high speed routes, making the Netherlands part of the international rail network. This development is in keeping with the policy of the train as a high-quality alternative to the car and air. Currently, there are different rail links with other countries. There are two links that connect to the European high speed network (the ICE to Cologne/Frankfurt/Basle) and the Thalys/Fyra link to Brussels and Paris. There are also a number of Intercity links, for example to Germany (Intercity to Hanover/Berlin), to Belgium (Intercity-services from Amsterdam, The Hague and Rotterdam to Antwerp and Brussels, as well as an Intercity-service from Maastricht via Liège to Brussels) and a connection to the European CityNightline network.

There are also various cross-border regional rail routes in the border regions, on which attractive services are offered.

Dutch public transport in maps

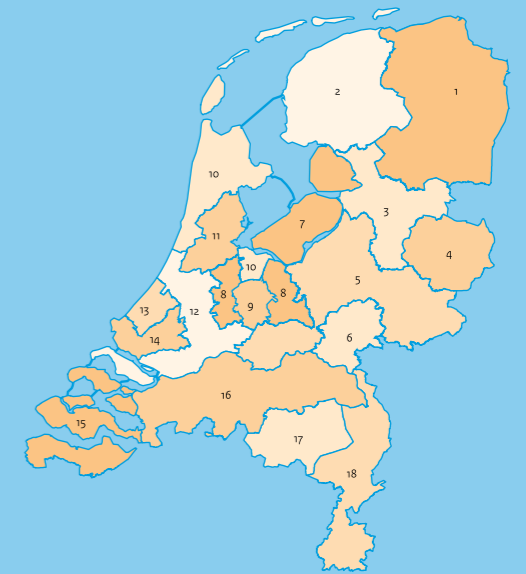
The public transport operators in 50 concession areas As of January 1st 2010

- Arriva
- Connexxion (Transdev)
- Hermes (Connexxion)
- Novio (Connexxion)
- Qbuzz (deels NS)
- Syntus (NS/Keolis)
- Taxicentrale Renesse
- Veolia
- GVU (Connexxion)
- GVB
- HTM
- RET



Number of stops per PTE

- 1 PTE Groningen Drenthe 6,159
- 2 Provincie Fryslân 3,400
- 3 Provincie Overijssel 1,796
- 4 PTE Twente-region 1,962
- 5 Provincie Gelderland 3,604
- 6 PTE Arnhem Nijmegen-region 2,387
- 7 Provincie Flevoland 760
- 8 Provincie Utrecht 1,754
- 9 PTE Utrecht region 1,822
- 10 Provincie Noord-Holland 3,435
- 11 PTE Amsterdam region 4,095
- 12 Provincie Zuid-Holland 3,686
- 13 PTE The Hague region 2,464
- 14 PTE Rotterdam region 2,968
- 15 Provincie Zeeland 1,241
- 16 Provincie Noord-Brabant 4,204
- 17 PTE Eindhoven region 1,740
- 18 Provincie Limburg 3,335



Free and reduced fares public transport

Gratis en goedkoop openbaar vervoer in 2009

- Target group impaired mobility
- Target group elderly
- Target group commuters
- Target group shoppers
- Target group tourists
- Promotion of public transport
- Reduced fares



Small scale public transport systems

Per January 1st 2010

- Area without RegioTaxi-service
- Area with RegioTaxi-service
- Specific form of small scale public transport
- Treintaxi (taxi-sharing from/to railway station)
- ⓪ Number of neighbourhood bus-services per PTE





5 Metropolitan public transport

For the purpose of this publication a 'metropolis' is an urban area with more than half a million residents, usually surrounding a major city. The biggest concentration (consisting of the four major cities) is found in the Randstad conurbation, but three other urban cores in the Netherlands are also classified as metropolitan areas: Amsterdam, Rotterdam, The Hague, Utrecht and the regions Arnhem/Nijmegen, Eindhoven and Twente. All seven are also Passenger Transport Executives (PTE). These regions have specific public transport requirements and undergo developments that are associated with the extremely high population and employment densities and the (inter)national relations.



5.1 National Train Station Key Projects

A location within walking distance from a public transport stop has greater potential for successful (re) development than other locations in areas where it is impossible to facilitate all the transport requirements by car. This potential depends on the hub value, in other words the number of routes, the frequency and the number of transfer opportunities. The hub value influences the location value. Calculations have shown that in the Netherlands an office location that is within 500 metres of a train station (walking distance), is on average worth 16% more. We talk about unutilised potential if the hub and location values are not balanced.

The development of high-speed railway lines in the Netherlands generates a lot of opportunities for the stations that are served by high speed trains, as well as for their environment. The excellent services to these stations generate good opportunities for spatial developments for both business districts and housing areas. The investments in the development of these areas are of national importance, which is why investments are being made in projects around the stations involved: Amsterdam-South Axis, Rotterdam, The Hague, Utrecht, Arnhem, Breda, Leiden and Delft. These eight projects are referred to as the New Key Projects (NSP).

In Arnhem the realisation of the national key project has been in full progress since 2005. The station is being transformed into a large-scale work site and multi-modal hub. The current station is being replaced by a new transfer hall and the station is being expanded with a fourth island platform. By using naturally occurring differences in level in the area, a complex transport hub is being realised without traffic flows intersecting each other. The traffic situation in the immediate surrounding area will be improved considerably and a substantial real estate programme will be realised.

Although the project is turning out to be more expensive than anticipated it is being realised as it was intended. Furthermore, despite the very tight space available, both train services and (trolley) bus services were maintained during the construction work. Finally, the early development of nearly 22,000 m² of office space provided a boost early in the project. The first phase of the project will be completed in 2011, the second phase in 2013. The project will give the city of Arnhem an economic boost and generate more public transport users.

5.2 Urban-regional link to public transport

In urban regions, new neighbourhoods, business parks and facility centres arise in a large number of places in existing urban areas and on the outskirts of the cities. These developments enhance the need for high quality public transport on the scale of the urban region. Light rail is the preferred option, as it provides investors with more certainty about the public transport connection.

A good example of the development of a high-quality regional public transport system is RandstadRail. RandstadRail is a light rail and bus system for the southern part of the Randstad (the area between The Hague, Rotterdam and Zoetermeer). The light rail part of RandstadRail was opened in 2006. One of the main characteristics of RandstadRail is the use of two former railway lines which have been converted to light rail operation. Furthermore, links to the tram network in The Hague and the metro network in Rotterdam were built, allowing through running into the city centres. This means that RandstadRail is largely utilising existing tracks. The trains on the two aforementioned railway lines have been completely replaced by light rail vehicles (through running on the HTM tramway network in The Hague) and metros (through running on the Rotterdam metro network), offering quick fast and direct access to central business districts.

Investments have been made in the conversion of the railway infrastructure, the construction of a new branch line in Zoetermeer as well as links to the metro and tram network. Furthermore, the quality of the (former) train stations was improved and new stations were constructed. The new link to the tram network in The Hague is constructed as a spectacular viaduct through the Beatrixkwartier, a fast-growing office district in The Hague. The design has a striking support construction in the form of a net and is therefore also referred to as de Netkous (the Fishnet Stocking). In the middle of the viaduct a new station gives the office district excellent access to the public transport system.

Although initially there were a lot of delays because of the necessary coordination between the infrastructure and light-rail rolling stock, RandstadRail ultimately became a success with nearly 100,000 passengers on lines 3, 4 and the Zoetermeer City line daily, about 35% more compared to the period of railway operation.

5.3 Public transport in expansion neighbourhoods

Residents in new neighbourhoods travel more than the average Dutch person, they travel by car more often and own more cars, while they use public transport and bicycles less. To offer residents of new housing estates a high-quality alternative to the use of the car, the concept of the Vinex neighbourhoods was conceived and realised in the 1990s.

Vinex neighbourhoods are large new residential neighbourhoods, usually with more than 5000 homes, located close to the city. The idea was that high quality public transport had to become the backbone of the Vinex neighbourhoods, as good connections to the rest of the city depend on good accessibility via public transport. Many Vinex neighbourhoods have now been realised. However, the development costs are high and the densities are sometimes too low to be able to offer a large number of stops and a high frequencies. An example is the new residential area Wateringse Veld in the municipality of The Hague. Between 1996 and 2009 7,500 homes were built here. Het Wateringse Veld is one of the three Vinex neighbourhoods in The Hague. Although the construction of the Vinex neighbourhood had barely started, the no. 17 tram line was extended to this location in 1998. The line connects Wateringse Veld with the Rijswijk train station, and with the both stations and city centre of The Hague. This early extension of the line proved to be a success: by the end of 1999 the number of passengers per day was already 12,000, and today this tram is one of the busiest routes of the urban public transport system in The Hague.

The mobility behaviour of residents in Vinex neighbourhoods appears to differ from that of residents in other new neighbourhoods, because public transport in Vinex neighbourhoods proves to be a serious alternative for car use. The accessibility by car is good and 70% of homes in Vinex neighbourhoods are also easily accessible by public transport. Because public transport and the bicycle offer high-quality alternatives to the car, a bigger spread across these modalities is observed in Vinex neighbourhoods.

5.4 Development of the metro network

A metro system is sometimes also called the lifeline of a metropolis. In the Netherlands, Amsterdam and Rotterdam have metro systems. Existing metro systems are an achievement from the past. The construction of new, underground metro systems in metropolitan areas with high construction density is a complex and expensive affair. The transport value must be extremely high and the determination very strong to allow the construction of a new metro infrastructure.

An example of the development of a new metro line is the North/South Line in Amsterdam. Two links are missing in the Amsterdam metro system. These are the connection between Amsterdam Central Station and Amsterdam North (underneath the River IJ) and a faster connection with Amsterdam South (the South Axis). Amsterdam North is relatively inaccessible because of the barrier effect of the River IJ. This lack of accessibility is hampering the further development of Amsterdam North as an economic area and living environment. Amsterdam South has good public transport access. However, this area has developed into what is mainly an economic key area. The new metro service will contribute to further economic growth.

The North/South Line was designed to connect both the North and the South of Amsterdam to the metro network. Many hyper-modern underground construction and foundation technologies were used in the construction of the North/South Line, because tunnels are being bored under valuable (monumental) structures in the inner city. The soft peaty soil in the area is an extra challenge. After intensive testing of the technology, the construction of the North/South Line started in 2003, completion of the line is expected in 2017.

The preparation and the first phase of the construction were cumbersome. Groundwater leakage caused soil subsidence and created delays and damage to the aboveground constructions. Thanks to expert and careful operations, the damage was kept to a minimum. The process characterises the strong desire to progress the project. The North/South Line will give Amsterdam North and the South Axis an important boost. However, results achieved in the past provide hope: after 50 years a metro line is always in the right place.



5.5 High-quality bus network

When talking about high-quality public transport, the first thing that comes to mind is often rail transport (light rail). However, a versatile high quality bus network can provide a good alternative with high flexibility, as buses are not tied to infrastructure. A versatile bus network does not consist of just bus-only lanes. A completely separated infrastructure offers the best traffic flow and highest commercial speed, but when considering all the interests this solution is not always desirable or financially feasible.

One of the ways to invest efficiently in bus infrastructure is the development of a network of bus corridors with different layers. On sections with a high transport value and/or a lot of obstruction from car traffic, separated bus-only lanes are built. On sections where the benefits are lower, it may be an option to open up the hard shoulder for use by buses or to give buses priority at intersections.

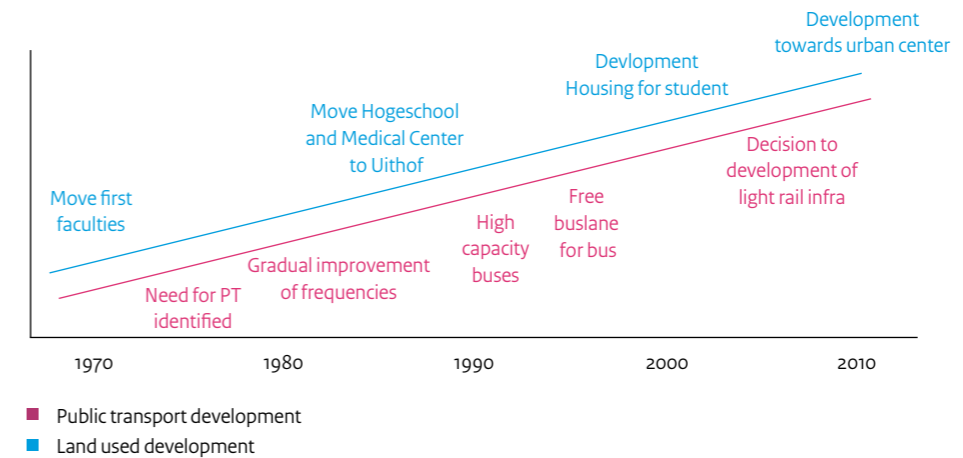
A good example of an integral network of bus corridors is the Eindhoven region. Here, the Eindhoven regional PTE (SRE) is responsible for organising the public transport. The SRE decided to strongly improve the quality of the bus services throughout the entire region, with bus-only lanes (HOV axes) or improved through-flow axes on which bus routes are concentrated.

The first section of the HOV axes, the Eindhoven Veldhoven/Airport route has been in use since 2004. The innovative guided bus Phileas covers this route on a largely bus-only infrastructure. In the period leading up to 2015 the second part will be realised on the Nuenen – Eindhoven section, according to the same 'recipe'. The transport value on both axes is very high.

The HOV axes are reinforced with so-called through-flow axes. On these axes a good through-flow of the bus transport is guaranteed as much as possible by, for instance, the construction of bus lanes on motorways and priority for the bus at traffic lights, or by bundling the bus lines where needed. These options are being evaluated, in conjunction with the road management companies and transport company, for all the connections that are defined as through-flow axes.



Figure 5.1
Integrated
development
of land use and
public transport



every working day. This has brought the bus system to the limits of its capacity, and seems to provide support to construct a new tramline as replacement.

5.6 HOV-routes that grow with the demand

The transport requirement is not always big enough to offer a high-quality service immediately. However, the transport requirement can change as a result of (planned) spatial developments. This is why in a number of Dutch cities, the quality of the public transport is being improved step by step. This means that a bus route is not converted to HOV-standards at once, but is developed step by step on the basis of an integral vision of the change of transport requirements (number of passengers) and location development (anticipated increase in number of residents and jobs). In the first instance it may suffice, for instance, to offer a regular city or regional bus, then a high-frequency bus rapid transit connection with a (partially) bus-only infrastructure, and finally a lightrail or tram service with a completely separated infrastructure, high frequencies, speed and capacity. The development therefore not only takes place in the area of operation, but also in the area of infrastructure. In addition, every step in the development of a transport system can be seen as an end point in its development as well as a starting point for further upgrading.

A good example is the step-by-step development of the public transport connection between the centre of Utrecht and University Complex and Science Park De Uithof, a centre of higher education institutes, knowledge-intensive companies and medical institutions. (Student) housing is also increasingly realised in this location. The development of De Uithof resulted in a drastic increase in the demand for transport, particularly with regard to the route to the city centre and Central Station. This development was further enhanced by the introduction of the public transport pass for students.

The public transport services between De Uithof and Central Station started in 1970 as a normal city bus line. Around the middle of the 1990s the continuing increase in the number of passengers resulted in a need for quality improvement and capacity expansion. Based on the number of passengers at that time and the expected resistance against a proposed tramway, it was decided to construct two HOV bus lanes (Bus Rapid Transit) to De Uithof instead. Both lines are operated by double-articulated buses at high frequencies. Partly as a result of this, line 12 is now the busiest bus line in the Netherlands, with an average of 30,000 passengers

Another example of an HOV route that grows with the demand is the Zuidtangent. The Zuidtangent is a high-quality bus service between Haarlem and Amsterdam South East and –since 2007– between Nieuw-Vennep and Amsterdam South WTC. Both lines take in Schiphol airport. The Zuidtangent route is over 40 km long. The luxury buses use a bus-only lane with viaducts and tunnels. In the design of the infrastructure a possible future conversion to tram/light rail operation was taken into account.

An average of 8 buses per hour covers the route. The 18-metre long buses are easily accessible, recognisable and equipped with an electronic information system. They also comply with high emission standards. Since the introduction of the Zuidtangent the number of passengers has exceeded the forecasts every year. In 2007 11.9 million passengers used the Zuidtangent, an increase of 14% over 2006. Every day more than 33,000 passengers use the two lines.

Eight years after the opening of the line the transport value appears to be high enough to convert (parts of) the Zuidtangent to a tramline. At the end of 2009 a quick scan feasibility study was conducted, resulting in the start of a thorough formal cost-benefit analysis. This analysis investigates aspects such as investment costs, travel time benefits, frequency, waiting and driving times, operational costs, costs for management and maintenance, impact on the environment, traffic safety, use of space and connections to the other high-quality public transport network. The cost-benefit analysis is supposed to be completed in 2010 after which a decision will be made.



5.7 Dynamic, multi-modal travel information

In metropolitan areas the range of available public transport is large and diverse. Travel information is an essential quality aspect. Technological developments enable multi-modal, up-to-date travel information that can be used to inform passengers even more accurately about departure times and transfer options; it also provides information about delays to allow passengers to choose a different mode of transport or transport system.

A large number of parties are trying to improve the supply of travel information in the Rotterdam region. In varying compositions the Central government, the municipality, the urban region, the Province and the transport companies work together on improving the travel information in metro, tram, bus and P+R locations and on the road.

The Rotterdam metro has installed a dynamic travel information system in 2003. At each station the latest waiting time for the metro is displayed on hall and platform display boards. Changes to travel times, for instance because of delays, are included. In 2009 the rollout of a comparable up-to-date information system started at around 800 tram and bus stops in the city. The Rotterdam region is also working on dynamic travel information for the regional transport. In 2010 around 1500 digital, solar powered displays with the latest information about departure times will be installed at regional transport stops in the South Holland region. In addition, 120 hub displays will be installed which will display the times for a number of buses.

Work is not only being done on travel information at public transport stops. In the context of mobility management the website www.bereikbaareregiorotterdam.nl was set up, which provides up-to-date travel information for all modalities. Finally, on motorways there is a lot of advertising for the many P+R locations around the city. Many P+R car parks are directly accessible from the public transport stops. Dynamic and multi-modal travel information is also being provided on motorways. Drivers on the A15 motorway can see whether their trip could be faster using public transport via the nearest P+R location.

5.8 Contribution of public transport to air quality

Air quality is an important component of European and Dutch legislation. The legislation imposes limits on the emission of harmful substances. To continue to enable economic developments in the future, it is essential to keep the air quality within the established norms. For this purpose environmental zones for freight traffic are being established as part of a strategy to improve air quality. This means that public transport, too, must be 'clean'. In practice this is not such a problem, as most buses already comply with standards that are stricter than the current limit values (Euro5) and can therefore be used without problems.

Even cleaner buses can make an extra contribution to reducing the emission of harmful substances. This applies especially on the roads and in areas where public transport makes a large contribution to the total number of vehicle movements. Dutch public transport authorities and operators have done major investments in the introduction of CNG buses; there is also a move toward the use of biogas as fuel. An example of the important contribution made by clean buses is the city and regional transport in the Haaglanden urban district. Since 2009 transport company Veolia introduced the largest natural fleet of gas-powered buses in the Netherlands in this area, consisting of 128 buses. The buses emit 90% less nitrogen and soot, and comply with the strictest European emission standards. In the region Haarlem/IJmond, transport company Connexxion also uses natural gas buses, by order of the Province of North Holland. Along busy bus routes in the Haarlem inner city the contribution that traffic makes to the concentration of nitrogen dioxide has been halved.

Finally the rapid development of hybrid technology offers opportunities to make diesel-buses even 'cleaner'. As is the case in other countries in the EU, trials with this technology are in progress. The first trials using hybrid power have now been concluded with positive results. It is expected that Utrecht will be the first to see this technology introduced on a large scale. The Utrecht region is planning the purchase of as much as 200 hybrid buses, which will give it the biggest fleet of hybrid buses in Europe. This will also mean the final breakthrough of hybrid technology.





5.9 Public transport over water

When the possibilities for transport over land are limited, other options must be utilised. Because the Netherlands is a water country par excellence, transport over water is an obvious solution. Water-based public transport is therefore as old as the Netherlands itself. In many big cities public transport using the waterways has been very successful in the past. For instance, in 1890 there were at least 10 shipping companies on the route between Dordrecht and Rotterdam. The development of railways forced out these shipping companies. In 2010 public transport over water is once again a realistic alternative because of increased congestion on the roads.

Since the end of the 1990s there has been official water-based public transport in the Netherlands. Water-based public transport does expressly not include the many ferries that transport cars, cyclists and pedestrians from one side of the river to the other throughout the Netherlands. The ferries to the West Frisian Islands are not classed as water-based public transport either. Public transport over water cannot go faster than 30 km/h, the capacity must exceed 12 persons and it must not carry cars. Public transport over water must also be put out to tender.

In the Netherlands a number of different services were started from the 1990s. In the Drechtsteden region, which is dissected by rivers, the Waterbus started in 1999; a fast ferry service between Rotterdam and Dordrecht followed later. Although modest in scope, water-based public transport has now become a valued addition to regular public transport. The Waterbus has proven to be an attractive mode of transport for travellers (particularly for leisure use). Every year more than 3 million passengers use these lines.

The Waterbus in Drechtsteden and Rotterdam is not the only example. In addition to Drechtsteden and Rotterdam-Dordrecht (Doeksen/Arriva), water-based public transport services can also be found in Amsterdam (Connexion Fast Flying Ferries), Vlissingen-Breskens (Veolia Fast Ferries) and from Hook of Holland to Maasvlakte Rotterdam (RET).

5.10 Supporting policy: parking policy

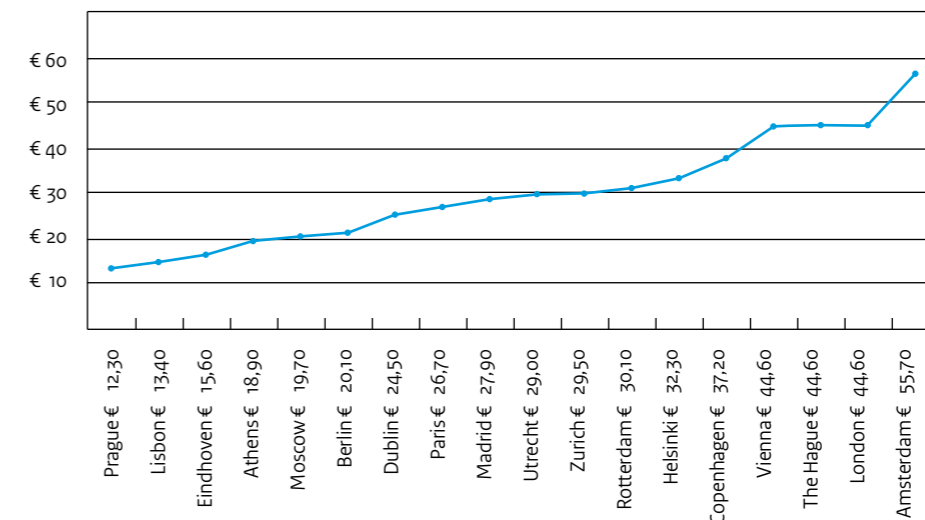
Park and Ride, or P+R, is an emerging concept. The idea is to tempt drivers not to take their car into the centre of the city. However successful, a temptation method will never convince all drivers. Especially in the four largest metropolitan regions in the Netherlands this means that, in spite of temptation measures, there are still (too) many car movements in the centre of the city. In the Netherlands a different method is used, namely a strict parking policy. The best example is seen in Amsterdam.

The municipality of Amsterdam is improving the accessibility of the city by investments in public transport (among other means by new tramlines in new trams and buses, promoting the use of bicycles and improvement of the P+R locations). In addition the municipality enforces a strict parking policy. Space, and therefore parking space, in Amsterdam is scarce. High tariffs are necessary in Amsterdam to keep the city accessible and liveable for people with and without a car. The revenue from paid parking in Amsterdam pays for the enforcement and the parking equipment. The rest of the revenue is spent on traffic and transport projects, such as the introduction of a 'dynamic' parking reference system and the restructuring of the traffic space.

Daily parking fees in Amsterdam are the highest in Europe. In Amsterdam Centre people can pay in excess of 55 euro per day. This is considerably higher than in other metropolitan regions in Europe (London 45 euro, Berlin 20 euro, Paris 27 euro). Other Dutch cities also score highly. As a result of the high parking costs drivers often avoid the city and use public transport or park their cars on the outskirts of the city.

The Netherlands Environmental Assessment Agency claims that a parking policy can result in 6% fewer car movements in the city, 9% more bicycle movements and 6% more public transport movements, 3% fewer emissions and 3% less noise nuisance.

Figure 5.2:
European daily
parking rates





6 Urban public transport

Public transport in urban areas is highly interwoven. Therefore coordination between different types of transport is needed. Services between different areas inside and outside urban areas are not as self-evident as in metropolitan areas, because the population density is lower. Furthermore, distances are shorter so bicycles are used more frequently. This results in completely different challenges with respect to guaranteeing the accessibility and quality of the public transport network.



6.1 Optimising networks

In smaller urban regions there are services with both high and low passenger numbers. This is why it is important that the public transport connections are coordinated as carefully as possible. For each concession area the operator of the public transport authority can optimise the network for this purpose. In the concession, a conscious choice between prescribing services, timetables and interchanges in detail and giving the operator freedom to design the network himself is important in this context. The contract type depends on the objective of the public transport authority. Both types can result in an optimum realisation of the desired network. The provinces of Noord-Brabant and Zuid-Holland demonstrate this.

The province of Zuid-Holland has formulated a concession for the region Duin- en Bollenstreek/Leiden, containing only a low level of minimum requirements for the level of service as well as a higher number of timetable hours. This allowed transport company Connexxion to optimise its service provision. Frequencies on busy routes were increased, while on the underutilised routes some cut-backs were implemented. Even on these routes, the level of service is still much higher compared to the minimum requirements of 3 departures per day. The aim of this concession was to challenge the operator to increase the number of passengers on the network. An example of this approach is the busy route from Alphen aan den Rijn to Amsterdam Airport Schiphol, on which the frequency was increased to a 7½-minute interval during peak hours. In combination with marketing this resulted in a firm increase of the number of passengers.

The reverse is also possible. The province of Noord-Brabant opted to prescribe the service levels and quality of the network more detailed. This allows the Province to maintain control over the level of service. A cost contract has been signed with the transport company, pursuant to which the development function and revenue responsibility rest with the Province. The urban and regional transport in Noord-Brabant is divided into five concession areas. A specialist consultancy rather than transport company Veolia was assigned to analyse the transport demand, transfer options and waiting times for each concession area. Based on the outcome of this analysis the line network was reviewed.

6.2 Optimising the coordination between train and bus

In addition to the optimisation of the line network, benefits can also be achieved with inter-modal optimisation; the coordination between bus and train. Bus and train lines are usually regarded as different worlds, and not only because different vehicles use a different infrastructure; the services often form part of different concessions. Looking beyond these boundaries can provide opportunities for further optimisation. In the first place because there may be previously unnoticed parallels in the network; buses and trains that service virtually the same route and are therefore in competition with each other. Secondly it is possible that an important connection is not integrally facilitated, but is served with separate, consecutive bus and train connections. In both cases inter-modal coordination can result in further optimisation.

An example is the public transport connection to the village of Twello. This village is located between the medium-sized cities of Apeldoorn and Deventer, on the railway line that connects these two cities. The Twello train station was closed in 1947 and since then public transport has been provided using a number of bus lines. In 2006 a new station was opened in Twello and at that time the structure of the public transport changed. A number of regular bus lines to Apeldoorn and Deventer were cancelled. The surrounding villages were connected to the train station in Twello with the use of so-called station buses provided by transport company Veolia. The cost savings realised through this method were used to purchase the train service. Now the train from Apeldoorn to Deventer stops in Twello. This has reduced the parallels between bus and train on this route, and increased the overall efficiency.

Another example is the relationship between Amersfoort, the Ede-Wageningen train station and Wageningen Centre. There is a strong link between the nodes. Previously, people could travel between the Ede-Wageningen station and Wageningen Centre by bus and between Ede-Wageningen and Amersfoort by train. They were contracted out separately: the bus line is part of the Veluwe concession and is provided by transport company Veolia. In 2006, the train service was contracted out as a decentralised rail service, and is provided by Connexxion. Nonetheless, because of the strong collaboration between the Province, municipalities and transport companies a product with a single identity was the result: the Valley Line ('Valleilijn'). The buses and trains have the same colour scheme and image, and complement each other seamlessly. The timetables were better coordinated and frequencies of both bus and train increased. After a number of start-up problems the line is performing increasingly better. The number of passengers is growing rapidly (more than 50% until 2009) and customer satisfaction is high.



Valleilijn, integrated design of trains and buses



6.3 Rediscovering regional railway lines

Since the privatisation of the Dutch Railways (NS) in 1995 a process of decentralising regional train services was started up. These were train services for which the NS considered the operation impossible in terms of profitability. However, the Central government saw opportunities in the decentralisation for improved cohesion between bus and train and for improved embedding in the regional policy. As a result, a number of train services have been decentralised. The concessions to operate the services were tendered. Decentralisation, tendering and concession granting have initiated and contributed to new operational opportunities. The new transport companies and decentralised authorities have taken measures that were lacking before. Examples of such measures are efficiency improvements as one man-operations, integration with bus transport and elimination of parallel bus services, introduction of new rolling stock, increase of the service level, improvement of station environments, improvement of the image and targeted marketing actions. The extra services and higher quality were financed by the effects of improvements of the efficiency as well as by an expected increase in revenue due to passenger growth. On most services, the passenger growth exceeded the expectations by far.

A good example of the success of decentralised rail services is the line from Groningen to Leeuwarden. In 2006, this service was tendered in combination with all regional railway services in the northern provinces (all regional train services to and from the cities of Groningen and Leeuwarden). The tender of the 15-year concession was won by Arriva; the length of the concession allowed the investment in new rolling stock as well as the increase of frequencies. On the Leeuwarden – Groningen route, a new intercity-service was introduced on working days. Between 2002 and 2006 passenger transport between Leeuwarden and Groningen increased by nearly 22%. In 2007 there was a further growth of over 2%. In addition, the passengers are satisfied. The trains with platform-level entries and on-board travel information, the tariff actions and the increased frequencies have resulted in higher customer satisfaction levels. Since last year there is also free Internet on the Arriva trains.

6.4 Intercity bus transport

Intercity services are usually provided by train on the main rail network. However, there are also alternatives using the bus. In some contexts the intercity bus concept is an interesting alternative to the train, because of the higher number of stops and the lower costs. At the end of the last century there were 30 Intercity bus routes called 'Interliner' operating in the Netherlands, as an addition to the rail network.

After the decentralisation of the urban and regional transport most Interliners initially disappeared from the scene. The fact that the concept is once again successful is shown from the variants on the Interliner that emerged after decentralisation. Today there are two lines in Zuid-Holland, the Q-liners in the Northern provinces and the Brabantliners between cities in the Provinces of Noord-Brabant and Utrecht.

A good example of the rediscovery of the intercity bus concept is the Brabantliner on the services from Utrecht to Oosterhout and Breda. This services were tendered as a separate concession, that is now operated by transport company Veolia. The route has a lot of motorway-running, where the bus utilises the (unused) hard shoulder and is therefore able to avoid traffic jams. The bus only stops at the major bus and train stations on the route; from where good connections to and from other services are offered.

The line is relatively fast and cheap, and stops at more stops than a train connection. This makes it a high-quality alternative to the train and car. The Brabantliners transport over 1600 passengers per day. Since 2009 the quality has continued to improve. Since then, the buses run 4 times an hour. New, comfortable buses also service the line with, among other things, more luxurious seats, reading lights and power points. The stops on the line are also being upgraded.



6.5 Joint contracting out of bus and train services

The optimisation of public transport networks in urban regions can be realised separately or in a coordinated manner, as in the previous examples. But things can be taken even further. A successful formula is the integral tendering of public transport by rail and bus. A single tender for both rail and bus transport encourages transport companies to think about an optimised integral public transport system. This has resulted in the so-called fishbone model.

The fishbone model is a multi-modal approach to urban and regional transport, whereby the bus is used to 'feed' the train. The fishbone model was first introduced in the province Gelderland (Achterhoek region). Here, a network was created whereby the bus lines served to supply the trains, and the trains took the passengers further. Contrary to the situation before, bus and train do not compete but complement each other.

Another example is Zuid-Limburg: an urban region that centres around Maastricht, Heerlen and Sittard-Geleen with a rural core area. In Zuid-Limburg the train, bus and regional taxi service were incorporated into a single multi-modal system in 2006. Together with transport company Veolia the Province of Limburg introduced the fishbone model throughout all of Limburg, in which trains and high-speed buses create the basic connections from which other lines branch off.

Veolia has created transfer points between bus and train at the train stations. This is where the passengers transfer. The previous transport company deployed the buses parallel to the train service. As the trains are much faster than buses, passengers get to the major cores of Maastricht or Heerlen much more quickly. The faster travelling times and the higher frequencies contributed to the attractiveness of public transport. Veolia is responsible for the revenue and, to meet its budgets, depends on passenger revenue. This means that it is in Veolia's interest to make optimum use of the fishbone model. Despite the fact that there were some problems with the introduction of the new train types, the number of passengers has increased by 40% in the last 2½ years.



6.6 Customisation for target groups

To further optimise public transport in urban-regional areas it is often necessary to look at target groups. Many locations with a regional catchment function attract travellers from the region and benefit from customised public transport. Customisation can be very diverse and, among other things, consists of high-quality bus services, peak hour services for commuters, student lines, lines to recreational or healthcare destinations, night services and target group transport. There are also different ways of organising this customisation. A line can form part of the concession of the regular urban and regional transport. Alternatively, it can be organised on a local level by the municipality. In both cases the authorities can work together with social organisations that have an interest in target group transport.

An example of target group transport is student lines. In the Netherlands there are no designated school buses: students and scholars use the regular public transport services. However, recently 'the school bus' was reinvented. The operation of public transport does not always correspond with the requirements of schools. The problems lie in the connections between lines, the frequency of public transport connections or the punctuality of the bus arrival times. Other travellers using regular public transport may also suffer nuisance from the many students using the same public transport. Separation is therefore beneficial.

An example of customisation for students is the Province of Gelderland. Gelderland has a large number of school communities in or on the perimeter of its area. Because of their special foundation some of the schools have a region-surpassing function, whereby students travel long distances. Often these school concentrations are also situated on the outskirts of the city rather than in the centre. The introduction of direct services to and from these schools reduced travelling time for students and –as an important side effect– restored tranquillity on the regular bus services. Furthermore, customisation can be offered with these lines in adjusting the time table to changes in school rosters. However, this is only possible if the size of the passenger flows is sufficiently big that they can no longer use existing bus lines because they have insufficient capacity. Where this is not the case students have to rely on regular public transport. The Province of Gelderland is taking the initiative of having school communities and the transport company join forces to look for a solution for any obstacles.



Bus in 'Twents'-livery



Transferium car park at Barneveld Noord railway station

6.7 The power of a recognisable product

Marketing and branding of public transport have the objective of improving the image people have of the product, and of stimulating the use of the product. Many people, especially those with cars, over-estimate the time, money and effort it would take them to travel by public transport. A better image of public transport contributes to people making a conscious choice for the best transport method.

In addition it is also important that public transport is given its own identity. A strong identity supports the quality image of public transport and is easily remembered. Everyone can name a public transport product that he/she has noticed. An important aspect in this context is association. If people can identify with a product they perceive the product more positively. Urban and regional transport are increasingly utilising more opportunities in this area. Public transport authorities are encouraging transport companies to actively market by linking subsidies to increased passenger numbers and customer appreciation. In the concessions they also increasingly impose conditions on the image of the equipment.

A good example of regional branding is the formula 'Twents' that is used in the region Twente (translated it means 'from Twente', thus supporting a local identity). To visualise the local identity, all city and regional buses were painted in a striking red livery with a recognisable image of the 'Twents Ros', the horse that is the symbol of the region. The reason for a different corporate identity is to increase public attraction and to make it easier to recognise the image of public transport. The Twente region has obligated transport companies to use this style on all their equipment. Since the start of the concession in 2005 the Connexxion buses have been carrying this corporate style. Transport company Syntus, which provides a number of regional lines in this region, also uses the exact same red corporate style. Since 2007 the Almelo – Mariëberg train service has also been realised under the name Twents. The only difference is the logos of the transport companies in question.

6.8 Transferiums along busy corridors

Urban networks often have highly visited locations with accessibility obstacles in specific corridors and at specific times. The corridor in question is often a motorway. In some cases there are parallel public transport facilities. In this case we talk about multi-modal corridors. On these corridors, it is possible to offer travellers the possibility to park their cars and continue their journey by public transport. To facilitate this, improved P+R-facilities called Transferium were built.

Transferiums are aimed at taking public transport to the motorist. Transferiums are therefore often positioned along busy motorways, so that people can choose to complete part of their journey by public transport. The effect of transferiums is partly determined by parking tariffs (at the destination location), awareness (publicity), the choice of location (get onto public transport before the traffic jam) and the quality of the public transport (high quality). Finally, what also makes a positive contribution to the freedom of choice between the two transport options is inter-modal travel information along the motorway, which indicates how long the journey to the (most popular) end destination will take by car and by public transport.

An example of a successful transferium is Barneveld North. This transferium with 250 secure parking places is located to the north of Barneveld on the A1 motorway; an important corridor for home-work travel to Amersfoort and the Randstad. In 2006 the Barneveld North train station was relocated in order to realise the transferium. Information signs have been placed along the motorway referring to the transferium and giving a comparison of the total travel time to Amersfoort by car and by public transport. The transferium is right next to the motorway so the traveller can be on the train platform within 5 minutes. The train journey to Amersfoort takes 11 minutes and trains run every 15 minutes; in Amersfoort passengers have good connections to Intercity services to the Utrecht, Rotterdam, The Hague, Hilversum, Amsterdam and Schiphol Airport. Especially during peak hour this travel time rivals that of a car.

6.9 Transferring upon entering the city

In most cases, cities have a catchment function and consequently receive numerous visitors. Many journeys to the city take place by car. This results in problems in the city centre area: congestion and a shortage of parking places, unsafe situations and high emission concentrations. A way to limit the number of car journeys into the centre of the city is to develop multi-modal park and ride facilities at all approach roads into the city. Here the driver can choose to park his car and continue the journey by public transport. This concept is being realised in many major cities in the Netherlands; one of the successful examples is the city of Groningen.

In Groningen an integral package of measures has been developed under the name P+R Citybus. P+R locations have been built on all approach roads. Since 1998 over 3000 P+R places have been created around the city. From the P+R locations a city bus line runs directly to the centre of Groningen at least six times an hour. The city bus has its own corporate style: blue buses branded clearly as 'City Bus' featuring drawings of the Groningen townscape. All City bus P+R locations offer flat fares and simple tickets. The concept is actively advertised throughout the whole catchment area.

The P+R City bus concept has proven extremely successful. The number of passengers has increased from fewer than 0.5 million in 1998 to 1.8 million in 2008. Every day between 1,000 and 3,000 car trips into Groningen city centre are prevented. Passenger surveys show that 68% of passengers use the City bus more than once a month and that 60% visit the centre more often since the start of the City bus service. The City bus also has a demonstrably positive effect on retail, reduces the parking problems and improves traffic safety in the centre. Finally, the bus has resulted in an improvement in the air quality in the centre of Groningen.

6.10 Room for the bicycle

In the Netherlands the bicycle is an integral part of the transport concept. The relationship between the bicycle and public transport is bilateral. On the one hand the bike is a popular part of the public transport chain, mainly used to travel to the public transport and/or to use after leaving the public transport. On the other hand the bicycle competes with the city transport, especially over the shorter distances.

The bicycle use is not the same in all cities. Research has shown that the bicycle is used more if the population density is higher and bicycles are allowed to use the shortest routes available. Things like the availability of bicycle storage facilities and the possibility of taking the bike along on the public transport have also been shown to play a role. In order to stimulate bicycle usage (in itself) and the use of public transport, cities invest strongly in bicycle facilities, such as separate or divided bicycle lanes, expansion of (guarded) bicycle storage facilities, favourable traffic light sequences for cyclists and bicycle hire options such as the public transport bicycle.

Good examples of bicycle-friendly cities are Houten and Groningen. Groningen has a policy for promoting the use of bicycles and discouraging the use of cars for short distances. A lot of investments are made in bicycle-only lanes, storage facilities and adjustments to traffic lights. The bicycle policy is effective: people in Groningen are cycling more. In 2009, 230,000 cyclists were counted on the forty main bicycle routes in the city. Compared to two years previously the increase exceeds 15%. The busiest routes are used by more than 14,000 cyclists a day.

Good facilities for bicycle storage have been shown to be an important factor in 'feeding' the public transport. In Groningen a new bicycle storage facility for 4,000 bicycles was built under the station square. The new facility proved to be so popular as a way for people to get to the public transport that a mere two years after its construction the decision was made to increase the capacity even further. This trend can now be seen everywhere in the Netherlands.



6.11 Creating space for public transport

Public transport is most effective if it has its own, exclusive infrastructure. However, there is not always room available for such infrastructure. The effects of the infrastructure on the living environment, safety, emissions of hazardous substances and interference with natural areas weigh heavily. Incorporating infrastructure into densely built-up areas is expensive and time-consuming.

An example of how to do things differently is Almere. Almere is a medium-sized city to the east of Amsterdam, which was created in 1976 in the new Flevoland polder. Almere is a fast growing city. Today the city has nearly 190,000 inhabitants, which makes it the seventh-biggest city in the Netherlands. The city is going to develop over 60,000 homes and 100,000 jobs in Almere between 2008 and 2030.

Since its creation in 1976, land-use and public transport in Almere are developed in an integrated manner. The public transport network is planned in such a way that bus-only lanes are possible everywhere. The bus stops along these lanes are then made the focal points in the design of the neighbourhood. The construction of the infrastructure takes place at the same time (and sometimes even before) the construction of the neighbourhood, and the new line will operate from an early stage. The added advantage of this approach is the fact that new residents in the neighbourhood don't necessarily need a car to get around before the public transport connection becomes available. The past has made it clear that people are unlikely to change to public transport once they have chosen the car as their means of transport.

In addition to the immediate realisation, space is also reserved. The reserved space for public transport infrastructure is reflected on a so-called reserve map. The reserves provide maximum flexibility and cause minimum obstacles in future projects. The reserve map expressly does not indicate desirable developments, it simply leaves room for potential developments.



7 Public transport in rural areas

Rural areas in the Netherlands are characterised by a great deal of small-scale development and, in a number of regional centres, concentrated facilities like schools, hospitals and shopping centres. In these areas the car is the dominant means of transport; public transport plays a small but important role. The main challenge is realising a sustainable public transport service for people who do not have their own transport. Key concepts in this context are coordination and smart contracting. Through combining or unbundling of different modalities and concessions the social objectives of public transport are met in the most efficient and therefore the cheapest possible fashion.

7.1 Efficiency in rural areas

Public transport in rural areas is continuously under pressure. Because of the lower cost-recovery ratio, relatively high subsidies are required. Providing future-proof public transport services in rural areas is therefore only possible if the services are operated as efficiently as possible. However, the continuous pressure on operational costs can also have a detrimental effect on the quality and appeal of public transport, resulting in the remaining travellers being repelled. Public transport in rural areas can therefore only be future-proof if both the efficiency and quality are good.

Rural areas do not just have connections with a limited or occasionally high transport demand. The connections between regional centres are characterised by greater passenger numbers and high-quality facilities, whereby the buses mostly run every 30 minutes. These types of bus lines are the backbone of the regional public transport system. By combining these main bus lines in a single concession with the less busy lines, a good coordination and division of tasks between both types of transport is achieved; the less busy lines serve as 'feeders' for the main connections. This structure is used in virtually all of the Netherlands.

An example of a combined concession is Zeeuwsch-Vlaanderen. In this area the main lines are the following lines: Hulst – Terneuzen – Oostburg (Main east-west connection), Terneuzen – Sas van Gent (north-south) and Breskens – Oostburg (north-south, two lines with different routes). These main lines offer a (combined) 30-minute service and provide access to bus services to the rest of Zeeland (and the Netherlands): in Hulst to the bus to Antwerp and Breda, in Terneuzen to the buses through the Westerschelde tunnel to Middelburg and Goes and in Breskens to the ferry to Vlissingen. The other bus lines connect the surrounding villages to the main cores, where there are connections to one of the main bus lines. These secondary bus lines are usually characterised by a lower frequency service and the use of smaller buses. This way the different supplying and removing modalities are optimally coordinated with the main lines and contribute to good overall utilisation.

7.2 Coordination and connection

Coordination between the different public transport services is extremely important for the quality of the public transport system. In rural areas a missed bus will usually result in a waiting time of at least one hour. The fact that a transport company provides good connections in its own network (or at least in the busiest travel direction) is only logical, because it is the transport company that benefits or suffers from the financial consequences of increases or decreases in the transport revenue.

In spite of the existence of scheduled services it is of course always possible that a bus experiences a major delay as a result of which a transfer to another service is missed. In a number of cases the transport companies offer their customers a service guarantee. This guarantee usually consists of offering alternative (taxi) transport when a transfer is missed so that the customer will still reach his destination. A very special transport guarantee is offered in Holwerd (Friesland). If travellers miss the last ferry connection to the island of Ameland because the bus was delayed, the transport company will provide them with overnight hotel accommodation. Although as far as we know this guarantee has never yet been applied, it gives passengers the certainty that they will not be left to their own devices in these kinds of situations.

In addition to the coordination within the own (bus) network, the coordination with 'higher' transport systems is also important. This coordination is often made more difficult because the train and bus are operated by different transport companies under the auspices of different authorities. As a rule the integration of bus and train services that is desirable from a traveller's point of view tends to result in (financial) advantages for the rail company and (financial) disadvantages for the bus company, although in the final balance the benefit for travellers is positive. If the disadvantages for the bus company are being compensated for from the benefits that are created for the railway, integration has shown to be feasible. This compensation may be realised through the authorities issuing the contracts, for instance by combining train and bus transport in a single integral concession. This was very successfully done in, among other areas, Gelderland, Twente and Limburg. From a transport point of view this has resulted in the development and perfecting of the so-called 'fishbone model', in which bus services are converted into 'feeders' for regional railway services. So far, this has resulted in an extremely strong transport growth for both train and bus.

Figure 7.1: parallel versus integrated bus and train services

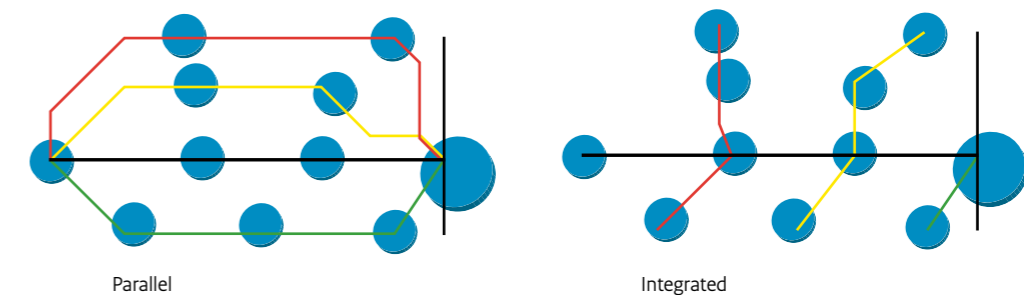


Figure 7.1 shows the parallel structure, whereby bus lines run more or less parallel to rail transport. As a result the bus and train compete with each other, which doesn't benefit either of them, certainly in rural areas. The use of the integrated model results in bus lines that quickly connect all the surrounding towns to a nearby train station, which in turn offers access to the train. The bus routes have clearly become shorter, while the number of train passengers increased. The savings realised by this system can be used to expand the scheduled services, so that further transport growth is initiated.

Coordination between public transport and flex bus

A special example of the coordination of public transport is the town of Twello (13,500 residents), where a train station funded by the Province of Gelderland was opened in 2006. The station is serviced by a local train that runs between Apeldoorn and Deventer and also stops at the Apeldoorn-Ossenveld train station that was opened on the same day. The costs of the extra train service are (largely) compensated for by the cancellation of the bus line that was covering the same route. The remaining bus lines were converted into so-called flex buses, which connect the surrounding area to the new rail station. The flex buses only have fixed departure and arrival times at the start and end points of the route, which are of course coordinated with the train service. The route between these start and end points is flexible and is determined by the transport requirement of the passengers. Passengers who want to use the flex bus have to make a Telephone reservation in advance.



7.3 Small-scale public transport systems

To be able to maintain the social function of public transport in the longer term as well, various forms of small-scale public transport have been developed since the 1970s. The use of smaller buses or taxi vans results in cost savings, especially if these buses only run on the basis of telephone reservations. By using these types of transport systems, which are also used in other countries, many small villages have been able to keep their public transport connections. This way the primary objective of public transport in rural areas - namely giving people who are dependent on public transport an opportunity to travel - is achieved.

A special and typically Dutch form of public transport is the 'neighbourhood bus'. This taxi van has a fixed schedule and route, just like a normal bus. The main difference is that the bus is driven by volunteers, which eliminates personnel costs (a large cost item in public transport). The bus is made available by the regional transport company, which is also responsible for its maintenance. The exact routes, timetable and driver rosters are coordinated between the neighbourhood bus association and the transport company. As a result the average cost of a neighbourhood bus is less than €40,000 per year.

Neighbourhood bus

The first neighbourhood bus association was established in 1997 in Berkenwoude in the Province of Zuid-Holland. The objective of the volunteers was to maintain some form of public transport for the village and its inhabitants after the planned cancellation of the 'regular' bus service. In consultation with the transport company, the municipality, the Unions, the Ministry and the Traffic Inspectorate the concept of the neighbourhood bus and the associated division of tasks was devised. On September 27th 1997 the neighbourhood bus made its first run from Lekkerkerk, via Bergambacht, to Stolwijk. The commitment of a fixed group of volunteer drivers from the local village, and the regular group of customers, make the neighbourhood bus a social focal point in the rural area. In 2010 the oldest neighbourhood bus in the Netherlands is still going strong, but by now the total number of neighbourhood bus lines has increased to 155.

7.4 Bundling of transport systems

In addition to public transport there are a number of other transport systems in the Netherlands that were called into life to serve specific target groups such as school children in special education, the sick, or people with physical limitations. In rural areas it is quite feasible that such transport systems take on part of the public transport. This has resulted in the development of the Regional Taxi (RegioTaxi).

The Regional Taxi is a transport system with a mixed client base. The municipalities are the clients when it comes to the transport of people with (physical) limitations who need transport on medical grounds. The public transport authority is the client when it comes to other passengers. Despite the differences in transport conditions, tariffs and usage opportunities that apply to both groups, together they are able to use one and the same transport system. This saves on organisational costs and overhead in particular, without a reduction in quality. Even more, the Regional Taxi makes it possible to reach any address in a region between 7 a.m. and midnight. People with a (physical) limitation can travel from door to door; other passengers are usually taken to or collected from a public transport stop.

Work is now in progress on the further development of the Regional Taxi because the investments in the accessibility of public transport buses and bus stops is making it possible for people with (physical) limitations to use regular public transport. Although this does not apply to all disabled people, in many cases municipalities can save on the cost of the relatively expensive transport by Regional Taxi, whereas taking an additional passenger along on the regular public transport system does not usually result in extra costs. Further improvement of efficiency is possible.

Achieving such efficiencies is harder in rural areas because not everyone lives close to a bus stop. For people with physical limitations the distance between their home and the bus stop is usually an obstacle that prevents them from using regular public transport. For this reason the Regional Taxi tends to be used as a pre-public transport and after-public transport facility in rural areas, whereby the greater distances are covered by public transport. The challenge is to inform people with a physical limitation about the opportunities that public transport offers them, and encourage them to use it.

For this purpose a number of different projects have been and are being developed and implemented. The main types of projects are:

- The development of information aimed at the target group of the elderly and the disabled, whereby information is provided, among other things, about the accessibility and use of vehicles and stops.
- Support of the use of public transport whereby, among other things, courses and travel support are offered. In the courses people learn how to use public transport (reading the line network maps and timetables, finding the right stops etc.); the travel support provides assistance with the initial trips the person takes on public transport.
- Stimulation of the use of public transport. In most cases people with a referral from the municipality can use public transport completely or mostly free of charge. Because a journey by Regional Taxi will normally cost the authority up to seven times more than a comparable journey on public transport, stimulating the use of regular public transport (with tariff reduction) is often an attractive option for municipalities.

The integration of Regional Taxi and public transport is also taking place in the other direction. In Assen and Alkmaar, among others, special service bus lines have been set up that link the train station, the main (community) centres and retirement homes. These buses replace the Regional Taxi on the one hand and also fulfil a public transport function on the other hand. In the rural areas 'hybrid forms' of Regional Taxi and public transport are also emerging.



7.5 Optimising the use of transport systems

In order to realise public transport with a sustainable future perspective, more is needed than just the use of more efficient transport systems. Equally important is achieving a high-quality, customised mix of different transport systems. A good example is the opening of new train stations in the Province of Gelderland, which enabled savings in the bus network. Conversely, a very early scheduled train journey was replaced by a taxi van, whereby the (regular) passengers were taken directly to their workplace. This saved an outbound journey with an empty and a return journey with a virtually empty train. When all is said and done efficiency improvements are feasible when the use of bus, train and Regional Taxi is optimised; however, the scope of these improvements is determined mainly by regional conditions and possibilities. Customisation is therefore the determining principle.

A second development is the stimulation of chain transport. If a traveller is prepared to get to the bus stop or train station using his or her own transport, the route of a bus line can be shortened which means that in most cases an efficiency improvement will be achieved. To realise this it is necessary to make it easy for the traveller to find his own way to a public transport stop. For this purpose bicycle storage facilities (Bike and Ride) and car parks (Park and Ride) are being constructed near regional train stations and bus hubs. Needless to say, the transport service offered here must be of a high quality to avoid a situation where travellers who are taking the car to the bus stop or train station no longer want to use public transport. For this reason these types of facilities are mainly realised near stations and bus stops on the busier bus and railway lines with a higher frequency.

P+R and tourism

An example of a special and successful transferium is the one in Renesse. Renesse is a small village in the Province of Zeeland. Thanks to its location near the dunes and the beach the village is a popular tourist spot in the summer. It therefore has many hotels, bed and breakfasts and campsites. At busy times the village has insufficient parking capacity in its centre and cars constitute a real nuisance. Consequently paid parking was introduced in the village; however, in addition, the use of the 900-space car park at the Transferium is free. In the tourist season (May through September) free transport is provided between the Transferium and various hotels, campsites and beach access points. An open-top bus and a covered wagon are sometimes used to transport people from the Transferium. An electric bus is used on certain sections. The costs of the Transferium and the free transport are funded in part by the parking revenue.





8 Routes to the future

Mobility will continue to grow in the coming decades. In urbanised areas in particular this may lead to problems in the area of accessibility, which may be harmful to economic development. This can create opportunities for public transport as an attractive addition to car and bicycle use.

8.1 Future developments in urban and regional transport

Regional Public Transport Vision

Regional public transport must be of the highest quality in 2028. The Ministry of Transport, Public Works and Water Management is working with provinces, urban regions, municipalities, transport companies and consumer organisations on a common plan to bring about this increase in quality. This Regional Public Transport Vision is an example of the cooperation between different levels of government previously described.

Regional Public Transport Action Programme

Central government and local authorities are investing more than €1 billion in 48 different projects for better urban and regional transport. The aim of these investments is the short-term resolution of capacity problems in regional public transport, the increasing of journey speeds and the construction of missing links. This investment is called the Regional Public Transport Action Programme. The investments are mainly being put into links where the opportunities to achieve transport growth are greatest. All the projects will be under way by 2013 and are designed to lead to a minimum of 100,000 new public transport passengers.

Better travel information

In 2015 public transport passengers must have access to up-to-date travel information, not just before but also during their journey. Currently, this kind of information, although much improved, is not yet sufficiently available. The information that passengers receive at the moment is in most cases timetable based instead of real time. Passengers are therefore unable to see whether everything will go according to plan just before their departure or during their journey. This information is already available in rail transport and in some regions this is also true for the buses.

Work is being done on further expansion of the information currently only available at journey level to information at travel level. To this end the national and local authorities are setting up a National Public Transport Database, containing routes, stops and timetables, for example. From 2011 the transport companies are also going to supply data on delays and scheduled and unscheduled disruptions. This way a basis will be laid for the provision of national dynamic travel information for all public transport.

In a second phase systems will be developed for up-to-date multimodal travel information. These systems will contain travel information on travel options by car and public transport. Passengers will thus possess real time travel information about their car journey and public transport and choose the best mode of transport for them at that moment. During the journey as well the system will be able to provide information and advice: in the event of approaching a congestion it will be able to suggest an alternative by public transport, including up-to-date departure and arrival times. Data from the National Road Traffic Database will be used to make this possible; this database contains detailed road network data, such as number of lanes, maximum speeds, road works, diversions and congestion. This system will cover 5,500 kilometres of roads in 2012. The combination of data from the two systems is expected to make an important contribution to both the reliability of journey times and the accessibility of major economic centres, for example.

Stedenbaan

A metropolitan railway system by the name of 'Stedenbaan' (City Rail) is being developed in the Randstad conurbation in the style of the S-Bahn/RER. This system is designed to be the backbone of a public transport system at Randstad conurbation level. The upgrading of existing local train services, integration with local and regional public transport, the opening of new stations and the development of housing, shops and businesses around existing and new stations are designed to increase significantly the attractiveness of public transport for middle-distance journeys.

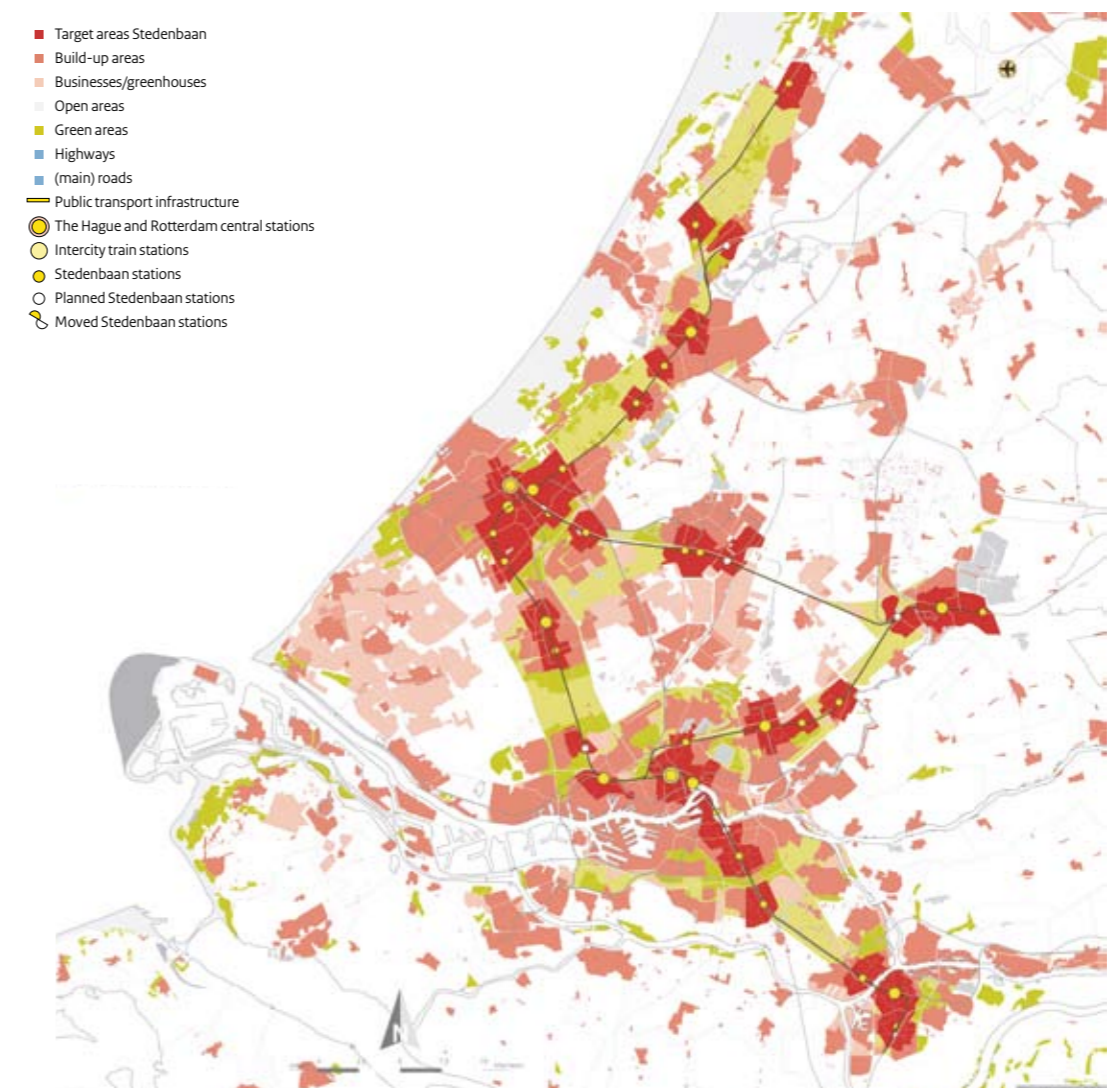


Figure 8.1:
Stedenbaan
metropolitan
Railway
system.
Source:
Stedenbaan,
Cartography
Province of
Zuid-Holland

8.2 Social trends

Future mobility will have to meet different requirements compared to today. Society is in a constant state of flux; people and structures are changing. Public transport will have to respond to a number of these developments if it is to play an important role in the future too.

Demographic changes

The most important development of the coming decades is 'double ageing'. A large group of people are retiring; these people are also living to an ever greater age. Older people are forming an increasingly large part of the population and are increasingly being discovered by the business community as a promising target group for the sale of new products, specifically developed for this group. Double ageing is also presenting public transport with opportunities, although older people currently only use public transport to a limited degree. The challenge in this regard is that the older people of the future increasingly belong to the 'car generation', with little or no experience of the workings and the use of public transport.

A consequence of double ageing is that a larger part of the population has to contend with the physical limitations that come with age. The improvement of accessibility for elderly and disabled people is an important basic condition in enabling older people to use public transport. A second, social objective is that this allows them to continue taking an active part in social life. Although all public transport must be accessible in 2030, a lot is already happening in anticipation of this. Initiatives are being developed in different regions to encourage older people to use public transport, ranging from the improvement of waiting facilities to public transport courses and guides for older people.

Not only is the Netherlands ageing, the demographic breakdown in the Netherlands is also changing. Rural areas are having to contend with a declining population. Creative, flexible and small-scale transport systems are being developed in different regions to keep the rural areas accessible. Examples include the aforementioned flex buses as feeders for the train and the use of the Regional Taxi as a train taxi and transport provided by volunteers, such as the neighbourhood bus and the Shopping Plus Bus.

In the big cities (especially the Randstad conurbation) there is going to be a further growth of the population and a further concentration of activities, and therefore an increase in the demand for transport. The challenge in these areas is to prevent the rising demand for transport to adversely affecting the accessibility of these areas. The use of public transport is being encouraged, in part through coordination with land-use developments and car parking policy. Various new housing developments are being and will be built along existing public transport axes, enabling new residents to make direct use of public transport and in this way encouraging them to leave their car at home.

Flexibilisation and individualisation of society

The last trend is the flexibilisation and individualisation of society, which are closely connected. The classic pattern, with identical working hours for (nearly) everyone, is increasingly being abandoned. At the same time people increasingly often want to be in several places each day. People are travelling more and further, not just for work, but also for leisure. Time is therefore becoming an increasingly scarce commodity. The speed of travel by public transport is not usually competitive with the car for a journey from door to door (especially late in the evening), which may be a barrier to the use of public transport. However, public transport can offer opportunities to spend the travel time usefully (eating, making phone calls, emailing, working or sleeping on the train), opening up new opportunities. The development of internet and laptop connections on train and bus and a broader range of shops and catering facilities at public transport interchanges in any event show that public transport is ready to take its chances.

8.3 Financial and economic trends

The main threat from the financial and economic perspective is the fact that public transport is financially dependent on the government. That is certainly true for the construction of infrastructure, but also often for operation. Possible future savings by the government will almost certainly affect public transport too. Further effort will then be required to maintain the quality and the supply of public transport despite the loss of resources.

The costs of car use will probably continue to rise in the coming years. This is true not only of fuel prices, which will increase because of the global growth in demand. The costs arising from the negative impacts of car traffic, such as the use of (parking) space, congestion on the roads and environmental damage, may be charged to the polluter to a greater degree. These expected cost increases will probably encourage motorists to consider the use of alternative forms of transport, including public transport. To take advantage of this opportunity, the quality of public transport will be (further) increased; important first steps towards this are included in the Regional Public Transport Vision and the Regional Public Transport Action Programme. In addition to this, Dutch public transport will have to bring its quality and potential to the attention of potential customers.

8.4 Ecological trends and innovation

Consumer and government are increasingly often taking account of the consequences for the environment of their choices. This has for instance taken shape in the air quality standards adopted by EU Directive 2008/50/EC. For many governments this is the basis for taking measures to prevent these standards being exceeded.

(Road) traffic is one of the main sources of environmental impact, especially in towns and cities. The measures initiated by governments focus both on the encouragement of clean(er) vehicles and – when this is necessary – the imposition of restrictions on less clean vehicles such as instituting environmental zones for freight traffic and buses in the larger towns and cities. Public transport can be a credible alternative in these areas when its environmental impact is subject to maximum limitation. Since public transport has for years led the way in the area of new, environmentally friendly technologies, this seems to be more of an opportunity than a threat. Nearly all the new clean technologies, such as hybrid drive and new fuels such as biogas or hydrogen, were pioneered in public transport. The fact that public transport is a trendsetter in the area of the development of (more) environmentally friendly technologies is a unique selling point from a marketing perspective.

The 'Whisper'

The Dutch company E-Traction has for years been a pioneer in the area of, for instance, hybrid drives for buses and trucks. The main innovative development is a wheel with a built-in electric motor that can be used in different vehicles. The buses not only save fuel, but also generate less noise because of their electric drive. Hence the name 'Whisper'. The experience gained with the first trial has been incorporated into the second generation of Whispers. The first has been running – after extensive testing – on the Apeldoorn urban bus service since February 2010, with four more to follow soon.

The second generation of Whispers is driven by a diesel generator of just 45 kW in combination with battery packs. The batteries are charged overnight and are also used for the storage of reclaimed brake energy, as a result of which both energy use and emissions have been cut by at least 50%. The new buses are no less than 90% quieter; since pedestrians and cyclists cannot hear the buses coming, they are fitted with a tram bell.

Energy transition

The use of natural gas buses was a deliberate choice in the development of the multimodal public transport line 'the Valleilijn', consisting of the Amersfoort – Ede-Wageningen train service and the connecting bus service from Ede-Wageningen Station to Wageningen Centre. A new natural gas filling station has been built for these buses in Ede. Now, not only buses use the filling station. The municipality of Ede's fleet also largely consists of vehicles with a gas engine. In the more distant future consideration will be given to the use of biogas, which can for instance be obtained from fertilisers and agricultural waste. Since the raw materials are obtained in the immediate vicinity, the amount of energy needed for the production of the biogas is also cut (cradle-to-cradle principle).

Apart from the emissions caused by road traffic, the exhaustibility of fossil fuel stocks is also a reason for governments to encourage the transition to other fuels. The use of natural gas and biogas and – in the longer term – hydrogen and electricity will not only reduce our dependence on oil, but will also cut the emission of greenhouse gases. The realisation of such a transition however often faces a predicament: cars that are suitable for a new, environmentally friendly fuel will not be sold as long as that fuel is difficult to obtain. Conversely, filling stations will not invest in facilities for the supply of new fuels as long as the number of cars using this new fuel is too small to generate sufficient turnover. Public transport can help break this circle through the use of natural gas or biogas buses for example, generating a need for suitable filling stations. This strategy is already being adopted in a number of regions.

Travelling on time, by clean, accessible bus or train equipped, with dynamic travel information working correctly alone, is not enough to attract new passengers. The (creation of) amenity value in a car is vitally important for the car industry. To increase its contribution to mobility, public transport will have to offer its customers a similar amenity value as the car possesses. The public transport passenger must feel that his choice is environmentally friendly, space and time-saving, efficient, intelligent and trendy. The contrast that sometimes exists between the above picture and people's experience clearly shows that a lot of effort is required. This will also involve time. The challenge the coming years is to maintain the positive developments. The picture that the average Dutchman has of travelling by train has become considerably more positive in the last ten years. A cautious change is also beginning to emerge with bus, tram and metro services.

The Superbus

The development of new high-speed railway lines usually involves a long lead time and high costs. This is due in part to the limited space available; a new railway line or motorway by definition causes nuisance to local residents, which makes obtaining support difficult. The Superbus, developed by a team at the Technical University of Delft under the direction of the first Dutch astronaut, Prof Dr Wubbo Ockels, is intended to reduce problems of this kind. The superbus vehicle is made of lightweight materials, which are used in aerospace for instance. The electric drive makes a top speed of 250 km/h possible; the energy is obtained from batteries. This top speed can of course only be reached on freestanding bus lanes equipped with a guidance system. In urban areas the buses can use the public highway, making a fine-meshed operation possible. The superbus prototype is currently under construction; the first trials are expected to take place in 2010.

The Superbus



Colofon

Public transport in the Netherlands

This brochure has been produced for the special occasion of 'The Netherlands, guest of honour at the Salon de Mobilité 2010 in Paris'. The aim of the brochure is to provide a broad range of information on policies, the organisation and the operations of the Public Transport System in the Netherlands. The brochure has been compiled based on existing information and knowledge about the Public Transport System in the Netherlands. With special thanks to all the professionals working on the system as it is today, striving for improvements for tomorrow. This brochure will also contribute to the UN/WHO programme Transport, Health and Environment, exchanging knowledge on sustainable mobility systems.

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