



## Bike Sharing Systems

Worldwide numerous cities/towns have created bike rental systems as a sign of bicycle friendly transport policy. Sometimes rental bikes were used as a starting point for radical change in urban and transport planning, and were observed with interest by the media and the population. In Paris, the bike rental system Vélib', for example, has a fleet of 20,000 bikes and 1,800 stations. This has changed the Picture of streets and led to many additional (private) bicycles on the streets of Paris where only very few were seen in the past. The system is targeted mainly at residents that have difficulties storing a bicycle at home as well as commuters travelling into Paris using public transport. This accounts for the high ratio of 100-200 residents per rental bike. Similar effects have been achieved by systems in Barcelona (introduced in 2007), London (2010) and Hamburg – all of which are known internationally today.

### The emergence of modern bike rental systems

Be it in Hamburg, Berlin, Kassel or Nuremberg, rental bikes are now part and parcel of the picture of streets in many cities and regions in Germany and have often contributed to a broader acceptance of cycling. The popularity of rental bikes may seem surprising at first given that, according to statistics, bicycle ownership in Germany is just under 70 million. This figure suggests that there are enough bicycles around. What accounts for the demand for rental bikes?

Bike rental systems offer benefits in various situations, because a person's own bike may not always be available where it is needed. Rental bikes can be used for commutes just as well as for spontaneous trips. They ensure a minimum of public mobility services beyond the operating hours of local public transport. In addition, bike rentals at bicycle retailers and hotels have long been popular also among holidaymakers. First attempts to introduce freely accessible public bicycles without access limitations in cities go back to the 1970s. Many of the standard bicycles (e.g. refurbished lost bicycles in the city of Bremen) were, however, stolen, damaged, or 'privatised' by people using their own locks. Subsequently, in Scandinavian

Cover images:

Left: Barclays Cycle Hire, London. © Tilman Bracher

Right: Citybike, Vienna. © Tilman Bracher

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countries rental bikes were equipped with simple deposit systems similar to those on shopping carts in the supermarket.

In recent years more and more cities have implemented modern and comprehensive rental systems, which generated remarkable user response. The process of renting a bicycle is largely automated, with central user registration and cashless payment. Nowadays bikes can also be accessed using electronic key cards or mobile phones. After the key card has been activated, the readers at the rental stations recognise the user and the bike can be rented without using the card.

There are plans to further incorporate the bike-rental services into local public transport, in particular when it comes to rates and billing as well as marketing, corporate design and customer information provided at public transport and rental stations. In recent years, innovative approaches were promoted nationwide through a competition organised by the German Federal Ministry of Transport, Building and Urban Development.



*Nextbike, Offenburg. © Tilman Bracher*

## Arrange of locations for different uses

In cities with a broad-based cycling culture, bike rental systems are used for tourism as well as for covering the 'last mile' in the transport chain; examples for this are Berlin and the German Baltic Sea island of Usedom. Bike rental systems are usually set up in city centres; but with regard to the location and availability of rental sta-

tions where bikes are picked up and returned, there may also be further, differentiated offers. Making rental bikes accessible also in residential areas is useful for households without bikes, for visitors, and where no cycle-parking facilities are available.

The Netherlands has a long tradition of providing offers in the city centre for commuters travelling into the city, and offers in the outskirts for commuters and day-trippers. For decades bike stations located at more than 100 railway stations have been offering bike-rental services along with staffed cycle parking and repair services. The Dutch association of bike station operators has optimised the technical possibilities of chip cards and payments via automatic debit transfer with the national 'OV-Fiets' (public transport bicycle) service. With this system the process of renting a bike is reduced to a few seconds; the minimal operating costs allow for charges (EUR 3,00 for up to 24 hours, maximum) that are attractive also to commuters for their regular trip to work.

This rental offer basically provides a second private bicycle for commuters to cover the 'last mile' of the trip to work; the service complements staffed cycle parking at their arrival station overnight. On the other hand, taking bikes on trains is restricted due to increasing passenger density during rush hour.

It is remarkable how the 'public transport bike' scheme has expanded and is now also accessible at suburban railway stations especially in extensive business parks that are much harder to reach by bus or walking than by car. Here rental bikes are mostly stored in bicycle lockers (Fahrradboxen) or automatic bicycle parking houses that can be accessed using a chip card. In addition, important bus/coach transport hubs outside the rail network are now also being incorporated into the public transport bike system. Bike rental is now possible at a total of 150 staffed and about 50 automated bike stations covering all major employment centres in the conurbations.

The use of bike rental systems is not limited to large cities; numerous medium-sized cities offer manageable rental systems with a limited number of stations. In some regions in Austria (e.g. Vorarlberg, Lower Austria, Burgenland) public bike rental systems are created for shared use among several municipalities, but also as part of an integrated mobility strategy to overcome accessibility problems specific to rural areas. The national railway company and regional transport companies are involved in creating the network design and pricing system. In tourist areas, for example in Switzerland, rental networks have been introduced along specific routes; or

### Further Reading

von Sassen, W. (2009): Öffentliche Fahrradverleihsysteme im Vergleich – Analyse, Bewertung und Entwicklungsperspektiven, Trier (German)

[www.nationaler-radverkehrsplan.de/fahrradverleihsysteme/](http://www.nationaler-radverkehrsplan.de/fahrradverleihsysteme/) (German)

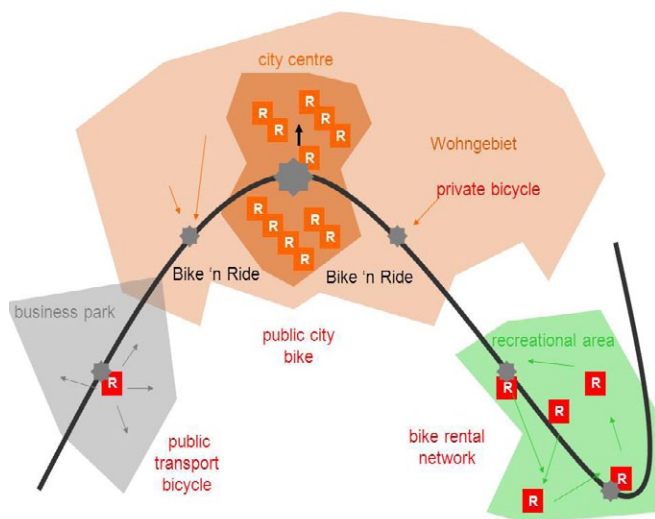
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[www.ov-fiets.nl](http://www.ov-fiets.nl) (Dutch)





Examples of locations and uses of bike rental systems showing bike rental stations (R) along a railway line. Source & Figure: Difu

they cover an extended area, such as on the Baltic Sea island of Usedom.

## Characteristics of bike rental systems

Depending on the trip purpose and user group, today's bike rental systems differ in numerous aspects, such as fleet size, pricing system and user registration. Systems may use both standard bicycles as well as electric bikes (Pedelects). There are also different modes of renting and returning bicycles. These include systems with fixed stations and terminals that accommodate a limited number of bikes and parking spaces. These systems are used, for example, in Vienna, London, and Paris. Alternatively, bikes and spaces per fixed station are not limited in other projects such as in Kassel. On the other hand, there are systems that allow for the bikes to be picked up and returned anywhere within the service area.

The systems also differ greatly with respect to the operating model. In Germany, there are two providers with larger station networks. Under the label 'Call a Bike', the German railway Deutsche Bahn AG has developed different, technically sophisticated solutions provided at almost all long-distance railway stations as well as in several city centres, including fixed stations (e.g. Berlin and Stuttgart) and a fixed service area (e.g. Frankfurt and Munich). The Leipzig-based company 'nextbike' provides easy-to-handle rental bikes in numerous cities and regions (e.g. Nuremberg). Both

systems allow users to book a bicycle in advance via telephone call or smartphone app.

Call a Bike and nextbike are both run in collaboration with the respective cities and LPT operators, partly under different labels in different regions; the systems are further developed according to the needs of the cities and receive financial support. Deutsche Bahn AG can also provide start-up funding through cross-financing between individual divisions of the group. The London bike rental system 'Barclays Cycle Hire' was launched in 2010 and has a fleet of 8,000 bicycles, which are rented over one million times per month. The system is run by the municipality and offered along with public and road transport. Large sponsoring funds are acquired through collaborating with a bank as advertising partner. In many cases, such as for example in Vienna, Barcelona and Paris, the cities collaborate with outdoor advertising companies that receive bicycle and bike station advertising concessions for setting up and running the system.

In Hamburg an exemplary solution was found to create and run a bike rental system. A tender was organized and Deutsche Bahn AG was awarded the contract for the public co-financing of the operation of the system; the infrastructure (terminals and lines) was provided by the city.

The city of Mainz is an exception where the local transport company Mainzer Verkehrsgesellschaft (MVG) is running the bike rental system. In the French metropolitan area of Bordeaux bike renting was closely incorporated into public transport through the regional association CUB. Along with tram and bus services, its rental bike system 'VCub' (Vélo Communauté Urbaine de Bordeaux) is the third pillar of local public transport. Apart from the city of Bordeaux, the system is also opening up tram and rail corridors into neighbouring municipalities to cyclists; such offers are also advertised on trams and buses as well as at stops/ stations.



Vélo Communauté Urbaine de Bordeaux (VCub), Bordeaux.  
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More information can be found in

CyE A-2/2011: Pedelects

CyE I-6/2011: Bicycle Parking at Trainstations

CyE S-4/2012: Accompanied Bicycle on Public Transportation

In order to create and run bike rental systems, there are further options available to collaborate with stakeholders from within and outside the field of cycling promotion. The example of the Baltic Sea island of Usedom shows how various existing providers can be united to work together on such a project. For the rental system 'Konrad' in the city of Kassel, local companies were encouraged to provide part of the funding for erecting stations in the vicinity of the company location. Some projects, such as 'Chemnitzer Stadtfahrrad' ('Chemnitz city bike') in the city of Chemnitz include working together with local vocational training providers for the unemployed or asylum seekers who are responsible for fitting and maintaining the rental bikes and maintaining the rental stations.

## Success factors

The German cities competition 'Innovative öffentliche Fahrradverleihsysteme' ('Innovative public bike rental systems'), initiated and funded by the German Federal Ministry of Transport, Building and Urban Development, was used to assess the success factors of six projects in particular with respect to their incorporation into local public transport. First results show that the successful introduction of bike rental systems is dependent on local political and media support. It is crucial for rental systems to have a dense network of easy-to-reach rental stations, an attractive pricing system (e.g. inclusive free minutes), and a booking system and bicycles that are easy to use, robust and convenient.

Hurdles to success that need special attention include factors such as the compatibility of rental stations with the cityscape and urban heritage protection as well as limited street space and, as a consequence, also the competition for space.

Further success factors include information on the availability and returning of bicycles that is easily accessible also with mobile gadgets, for example by

using a smartphone app to locate available bikes. In order to make sure there are always bicycles available also for users who turn up spontaneously, fixed stations should have a steady rental capacity, and enough bicycles and free parking spaces also during peak and off-peak hours.

The popularity of the rental systems and the availability of bikes are to a significant extent affected by pricing. Often the first 30 minutes of each trip are free with prices increasing significantly when renting a bike for several hours. In particular in areas with considerable altitude differences where downhill cycling is especially attractive, enough bicycles have to be returned to stations located at higher elevation. Extra credit for users returning the bike to such a higher located station can also provide an incentive to achieve an equal distribution of bicycles.

Finally, it is important that the often varying operating structures in the different cities do not lead to confusion for users when using and interacting with the system (costs, operating hours, access, etc.). It is, hence, desirable to standardise certain characteristics of the rental systems.

## Conclusion

Bike rental systems offer new mobility options for spontaneous day-to-day travel, for commuters in city centres and peripheral employment centres, and for leisure cycling in the city and the region. An increased integration of bike rental services into local public transport will provide the 'missing link' in transport networks and ease the burden on LPT at peak times (e.g. with respect to the carriage of bicycles). This is part of the trend in society placing greater emphasis on 'using' instead of 'owning' means of transport to ensure a free, spontaneous choice of transport mode from a pool of efficient EcoMobility options, reflected also, for example, in the use of car sharing.



Funded by



Federal Ministry  
of Transport, Building  
and Urban Development

"Cycling Expertise" is available online:  
[www.nrvp.de/en/cye](http://www.nrvp.de/en/cye)

## Imprint

Publisher: German Institute of Urban Affairs (Difu) gGmbH  
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