



# STARS

Shared mobility opportunities And  
challenges for European cities

## Learning from the stars

The future of  
Car sharing in Europe



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*Dr. Maike Schäfer,  
Minister for Climate Protection,  
Environment, Mobility, Urban &  
Housing Development*

**„We hope that the idea of car sharing will be spread to many other cities through this event. We see the enormous parking pressure on the streets and in cities all over the world.“**



As a port city, we in Bremen know that seafarers used to navigate by the stars. The STARS project also seems to give us a good orientation with regard to car sharing. We are pleased to see that your research results – what is written in the STARS – confirm Bremen's approach: Car sharing offers considerable added value to sustainable modes of walking, cycling and public transport. All this contributes to reducing car use.


One of the reasons why we have such broad political support for car sharing in Bremen is that we all understand that car sharing is an important part of solving the problem of too many cars parked in our neighbourhoods. Although it is a bicycle city, Bremen, like many other European cities, suffers from the endless demand for parking spaces. Since 1998, Bremen has been working on the implementation of sustainable mobility offers, e.g. through combined offers of public transport and car sharing. „Use it - don't own it“, „mobility as a service“ or simply „sharing economy“ are some of the current buzzwords around future mobility in Bremen.



# STARS explores new paths for car sharing in Europe



Marco Diana,  
Politecnico di Torino / STARS Project Coordinator

„Our hope is to share the good knowledge we have in the STARS project and to share it with all the audience. And to learn from them. We have people from all around the world and expect to have a good exchange.“ 

The **STARS** project, which is funded by the European Union under the „Horizon 2020“ research programme, was launched in October 2017 and stands for „Shared Mobility Opportunities And Challenges for European Cities“. The European research project has analysed the potential of car sharing for sustainable mobility in different countries of the European Union. The aim of **STARS** is to examine the diffusion of car sharing in Europe, its links with technological and social innovation and its relationship with other modes of transport (private car, bicycle, walking, taxi, public transport, etc.).

## A European Car Sharing Community

At the final event in Bremen on the 13th and 14th of February 2020, which was fully booked with over 100 participants, the project partners presented their findings in an exchange with other international car sharing experts. The **STARS** final event showed worldwide

examples of integration and the effects of car sharing. Speakers came from Asia, North America, Australia and Central Europe including Switzerland, the birthplace of car sharing. Networking and the creation of a strong car sharing community in Europe was one of the goals of the project and the conference. Worldwide examples showed how sustainable mobility and car sharing are practised in other countries and continents. From North America, to Asia and Europe, car sharing is gaining in importance everywhere. On February 13th, the international project participants presented their results. The conference day and all presentations were held in English. On the second – German-speaking – day of the event (14.2.2020), mobility providers and housing industry representatives discussed how car sharing can be integrated into the housing industry in order to help change mobility behaviour and reduce costs in housing construction.



STARS Projektkonsortium



# STARS in Germany and Bremen

*Presentation by Gunnar Nehrke,  
Managing Director German Car sharing Association*



Car sharing is not a universal concept; there are various forms and interpretations of the term. Basically, one can distinguish four types of car sharing in the sense of shared use of the car (unlike carpooling):

- **Station-based:** The vehicle is picked up at a designated station near the customer and returned there at the end of its use. The possibility of prior reservation ensures a high degree of availability reliability.
- **Free-floating:** The vehicle is parked in a defined area, is located via app and must be parked in this area („operating area“) again after the end of its use. Only relatively spontaneous use is possible, which reduces availability reliability.
- **Combined Systems:** A provider combines both station-based and free-floating offers in one tariff.
- **Peer-2-peer Car sharing:** Private car owners make their vehicles available to other people via a platform for defined periods of time. Collection and return is usually the same as in station-based car sharing.

Station-based and combined car sharing is particularly suitable for longer and planned journeys, e.g. for an excursion or bulk shopping. It corresponds to the classic car use and is a viable alternative to the private car. In contrast, free-floating is more suitable for spontaneous and short trips within an operational area. It then also serves as a substitute for taxi and public transport. It appeals to other target groups and can also make car sharing interesting for new user groups.

In 2009, Bremen was the first city to adopt a car sharing action plan. By the end of 2020, Bremen will have achieved its goal of reaching 20,000 car sharing members in the City and replacing more than 6,000 privately owned vehicles. A study showed that each car sharing car in Bremen replaces about 16 private cars. It also became clear that car sharing users prefer to shop locally and use the bicycle or public transport more often than the average citizen and car owner. „Carsharing rocks“ says Rebecca Karbaumer, project coordinator at the Ministry for Climate Protection, the Environment, Mobility, Urban and Housing Development.



*Rebekka Karbaumer,  
Transportation officer at the Ministry  
for Climate Protection, Environment, Mobility,  
Urban & Housing Development*

# Worldwide Carsharing: Australia and South America

## SHORT-FACTS

- Car sharing was first established in Melbourne, Australia in 2003
- There will be seven operators, over 5,000 vehicles and approximately 96,600 members in Australia by 2020
- Chile and Brazil are the countries in South America where car sharing is most widespread.



Luisiana Paganelli Silva,  
RMIT University



Car sharing is a service that supports sustainable urban mobility when well embedded. The type and intensity of car sharing varies worldwide. The research question presented by Luisiana Paganelli Silva, RMIT University, at the **STARS** conference deals with the question of how car sharing can be embedded as sustainably as possible in the urban mobility offer. It aims to show the factors that enable decision makers in administration and politics to better deal with the planning issues surrounding car sharing.

The preliminary results show that there is primarily a lack of experience, justified frameworks and instructions for action. A comprehensive and strategic understanding of the potential of car sharing can lead to effective and rapid integration.

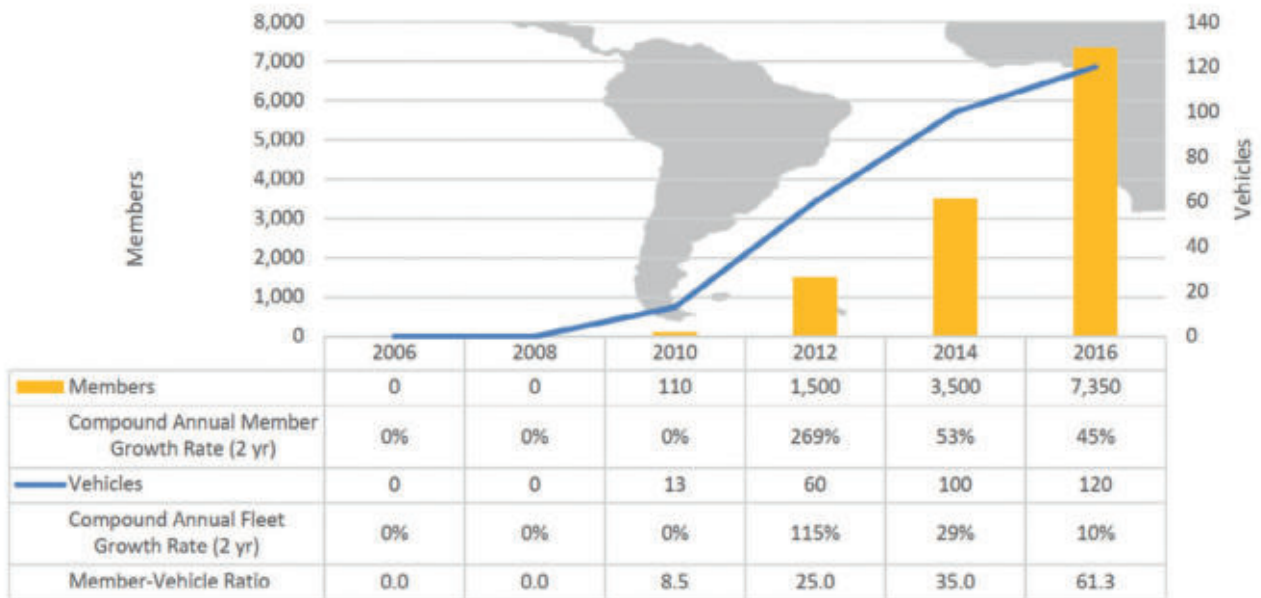
The study also focuses on the situations for car sharing in Australia, New Zealand and parts of South America.

### Australia and New Zealand

In Australia, the private car still plays an important role: everyday mobility is dominated by the car. As in many other cities worldwide, this leads to high parking pressure in Australian cities. Parking directly in front of one's own front door, in public spaces, is considered by many as a personal right. The motto is „I park, therefore I am“. Meanwhile, in many cities, there are parking spaces reserved for car sharing vehicles.

In New Zealand, car sharing has been available in Christchurch, Wellington and Auckland since 2007. The market is dominated by five providers offering station-based, peer-2-peer and free-floating car sharing.

## South American Trends (n=2)



Data depict of each even numbered year. Numbers do not include P2P carsharing.. Proxies from reports and media sources were used for two out of three nations surveyed in North America and one out of two nations South America. „n“ denotes the number of countries in each respective region.

Source: Shaheen, S., Cohen, A., Jaffee, M., 2018a. *Innovative Mobility: Carsharing Outlook - Spring 2018*.-p.3

### South America

In many South American countries, the private car also plays a central role. Many cultures live highly motorised lives and, as in many countries of the world, the car is still considered a status symbol. In addition, social and subjective feelings of safety also lead to different mobility habits. Often the private car is considered safer than, for example, public transport. Switching to a shared car and giving up the perceived safe space of the private car thus often makes the spread of car sharing more difficult. This also leads to a very different spread of car sharing in the countries of South America. In principle, however, it can be said that the number of members and car sharing vehicles has increased significantly in recent years. From 2017 to 2018, the number of car sharing members in South America increased by almost 42 percent.

Especially in Chile and Brazil, car sharing is more widespread than in the rest of South America. Many cities have a well-developed public transport network, but also have a major problem with motorised private transport. The integration of the car sharing concept into public transport can help to reduce traffic problems.

The biggest challenge in South America is a lack of awareness. There is often a lack of awareness about the advantages of car sharing, both among potential users and in politics, planning and administration.

# Worldwide Carsharing: North America

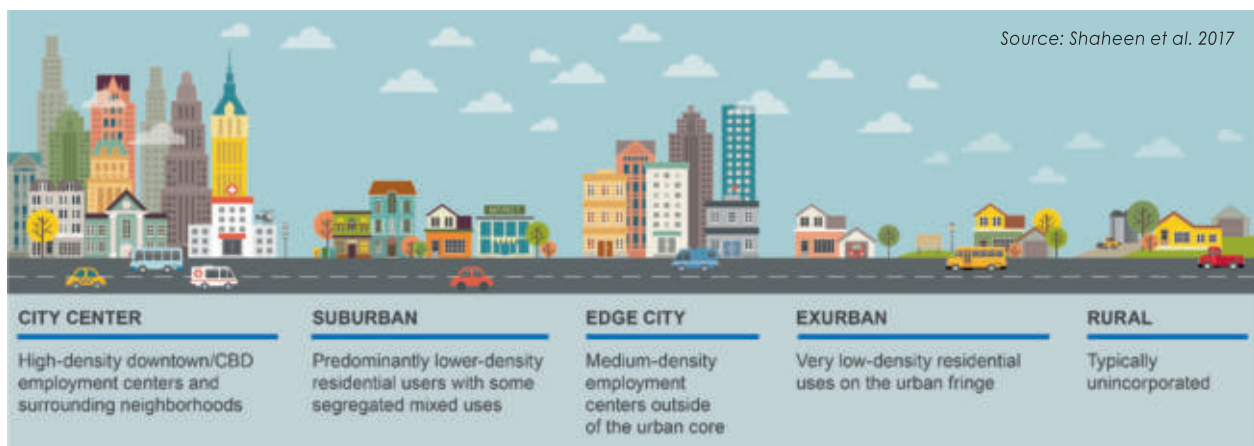
## SHORT-FACTS

- In the USA, 1.4 million car sharing users shared over 15,000 vehicles (2018).
- Shared Mobility (especially ride hailing, UBER, etc.) often leads to reduced use of public transportation in the USA.

Sharing offers can look very different in the mobility sector. In addition to free-floating and station-based car sharing, there is also bicycle and/or cargo bike sharing; also included are classic carpooling and ride sharing, „carpooling“ and „ride hailing“. Classic newspaper advertisements are now put side-to-side with a steadily growing number of apps. More and more people are supplementing their travel plans with digital offers. Innovative partnerships and emerging technologies are changing the mobility behaviour of consumers. More and more apps are offering the option of multimodal integration, i.e. with an app, consumers have more possibilities to organise their own mobility.

A basic distinction is made between **Mobility on Demand (MoD)** and **Mobility as a Service (Maas)**. The former is primarily used for flexible passenger or freight transport directly from A to B, whereas **Mobility as a Service** takes on the function of a less car-dependent, multimodal mobility structure. In the USA, **Mobility on Demand** is increasingly being promoted, whereas Europe (especially Finland, Sweden and the Netherlands) is increasingly focusing on **Mobility as a Service**.

An important factor in establishing the various car sharing systems and sustainable mobility is spatial classification. Customers' requirements and needs of mobility service providers vary greatly depending on whether they live and operate in the city centre, suburbs or more rural areas, for example.





The possible business models are also very different. Key factors are the usability of the city for walking and cycling as well as the public transport network with connecting possibilities for intermodal mobility chains.

### Challenges for Car Sharing in North America

Parking fees in public spaces pose a noticeable challenge to the business model of car sharing providers, whereas minute-based billing systems are seen as a problem for users in case of traffic jams.

In this rapidly changing and highly competitive market, several high-profile providers have recently reduced their offerings or even left the North American market altogether, leading to a major loss of consumer confidence.

Further research is needed to understand the impact of growing **Mobility on Demand** and **micro-mobility** offerings on car sharing.

The car sharing industry needs to emphasise the environmental and social potential of car sharing more clearly. For example, to negotiate free or discounted parking in public spaces.

### Changing Consumer Expectations

Consumers place a high value on convenient chains of routes, where shared mobility offers an effective improvement in terms of accessibility and reliability. With technological developments, people today expect increasingly dynamic information that can be tracked in real-time before and during their journey.

The car sharing market must be oriented towards the different needs of its customers; one solution is not enough for a lifetime. The technologically savvy business traveller has different demands and needs than, for example, seniors, employees or families. For the former, car sharing offers an alternative to the own car. For families who need to own a car, it can replace the second or third car.



### Concluding Thoughts

The market share of car sharing depends on the costs for consumers, price structures and supply structures compared to other modes of transport.

It requires constant development in order to be able to compete in the market with new mobility services and technologies.

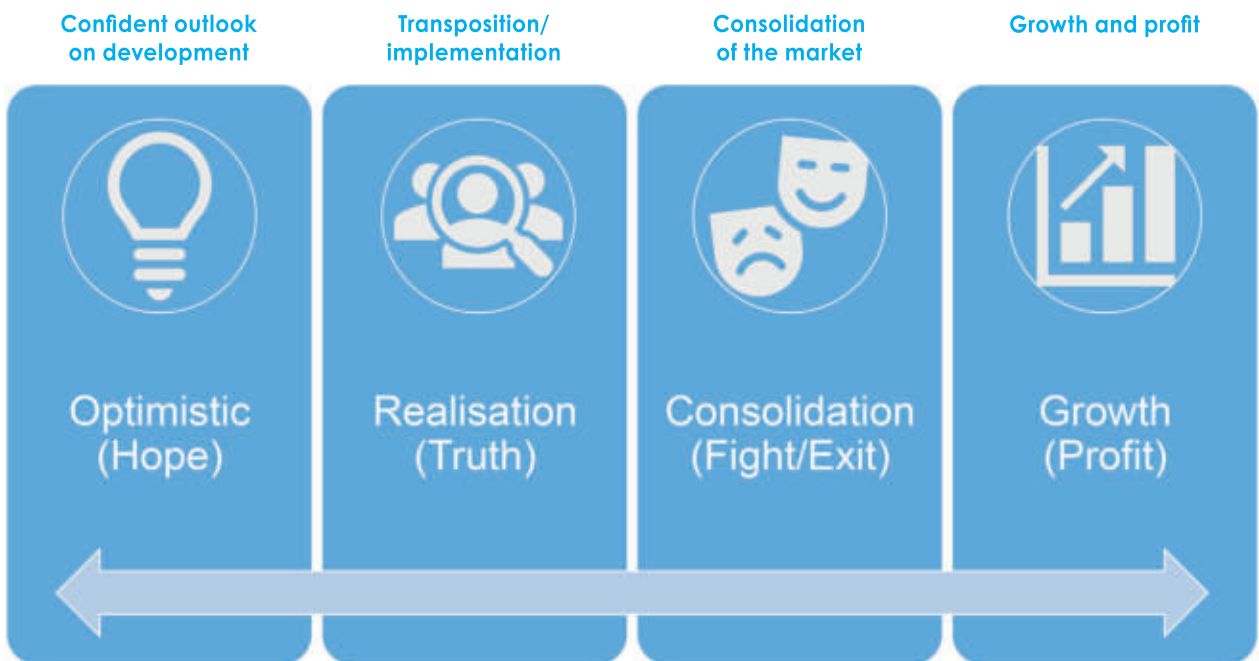


*Adam Cohen, Researcher  
University of California,  
Berkeley*



# Worldwide Carsharing: Asia

Asia comprises 47 internationally recognised states and with over four billion people, it represents more than half of the world's population. Car sharing has been in existence in Asia since 1997, but the situation in the countries today differs greatly. In general, one can distinguish four different stages of development of car sharing in Asia, with transitions flowing in both directions.



Source: Lewis Chen



Lewis Chen,  
 Founder & First President of the  
 Car Sharing Association of Singapore

## SHORT-FACTS

- More than 20 million Car sharing users in 9 countries
- In 1997 first car sharing provider was established in Singapore
- More than 200,000 car sharing vehicles in China
- Singapore has managed to meet its target of 0% growth in registered cars in 2019

### Singapore

Singapore is the third smallest country in Asia with its surface of 719 km<sup>2</sup>. With 7,842 inhabitants per km<sup>2</sup>, it is also the third most densely populated country in the world after Macau and Monaco. 12% of its area is devoted to roads and 14% to housing. Building new roads to relieve existing ones is no longer possible. There is simply a lack of space. The future, therefore, lies in sustainable mobility and alternative means of transport to the private car. Singapore's first car sharing station was opened in 1997, and today there are seven providers with a total of more than 2,000 vehicles. The car sharing market is consolidating here, established providers are expanding and generating profits.



### Japan

In Japan, car sharing was established in 2002, today (2020) there are 31 providers with over 29,000 vehicles. The market is dominated by three major providers. As in Singapore, the market has consolidated and profits are usually made. One of the challenges in Japan is the high cost of parking space.

### Korea

Car sharing has been available in Korea since 2009. With four providers and more than 23,000 vehicles, it is the fastest growing market in Asia.

### China

Car sharing in China was established, among other things, as a result of the Expo in Shanghai. In 2010, representatives of the City of Bremen presented the idea there; today there are seven providers with more than 200,000 vehicles. The Chinese market is growing very quickly and is currently between implementation or execution and consolidation.



### Malaysia and Taiwan

In Malaysia and Taiwan, both markets are currently in the process of establishing themselves and are confident about the future of car sharing. In Malaysia, one of more than 3,000 vehicles from four providers has been available for use since 2016. Taiwan established car sharing in 2017 with four providers and more than 2,500 vehicles.

### Challenges and Tasks

The task of political decision makers is to facilitate the implementation of car sharing. Their focus should, therefore, be less on the political aspect of car sharing and more on the way it is used. This requires changes in the law to make car sharing part of the future mobility ecosystem.

The aim is to reduce the ownership of private cars. Car sharing is one of many elements in this process. Car sharing must not compete with public transport, but should be a sensible supplement to existing sustainable mobility offers.

# Worldwide Carsharing: Italy

As part of the **STARS** project, field studies on the effects of car sharing were carried out in Milan and Turin. With telephone and online-based interviews, questions were asked about mobility habits and car ownership, among other things. Based on the feedback (Milan: 2% from station-based car sharing members and 91% from free-floating providers; Turin 0% station-based and 83% free-floating), the Italian study focuses exclusively on free-floating offers. Overall, the surveys showed a representative sample of the Milan and Turin populations in terms of gender and age.

## Results

The results show that car sharing users in Milan have below average numbers of cars per household. On average, a car sharing household has 1.22 cars, whereas non-car sharing households own 1.43 cars. The situation was similar in Turin, where the ratio was 12.9 to 1.40. In both cities, there was no significant change in the total number of cars in the cities, but new car purchases decreased.

Station-based car sharing seems to have a stronger impact on car ownership than free-floating offers, but in Milan and Turin station-based providers have a significantly lower number of users.



„It is important that with Carsharing offers we build a reliable transport service.“



Andrea Chicco,  
Politecnico di Torino

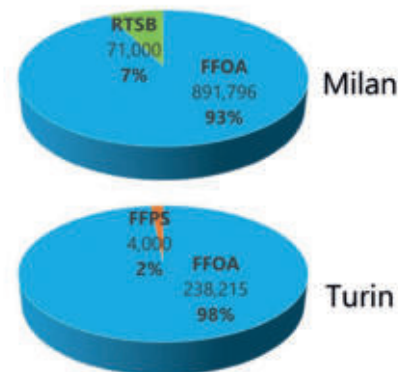
## SHORT-FACTS

- Car sharing users in Milan and Turin own fewer cars than the average citizen
- Free-floating car sharing has not reduced the number of cars in Milan and Turin, but it has reduced new car purchases.

## Car sharing members breakdown

City	Car sharing variant	Members interviewed (%)
Milan	Roundtrip station-based (RTSB)	9 (2%)
	Free-floating with an operational area (FFOA)	439 (91%)
	Free-floating with pool stations (FFPS)	0 (0%)
	Multi-subscribers	37 (8%)
	<b>Total</b>	<b>485 (100%)</b>
Turin	Roundtrip station-based (RTSB)	0 (0%)
	Free-floating with an operational area (FFOA)	151 (83%)
	Free-floating with pool stations (FFPS)	14 (8%)
	Multi-subscribers	16 (9%)
	<b>Total</b>	<b>181 (100%)</b>

Members of different CS variants from operators' feedback



Source: „Italian case study results“ · Präsentiert bei: STARS final event, Bremen 13 February 2020, Andrea Chicco (POLITO)

The study revealed that car sharing users in the northern Italian cities tend to use sustainable mobility offers more than the average citizen. For example, about 65% of car sharing users in Milan and about 58% in Turin have an annual public transport pass. In the control group, the figures were around 52% (Milan) and just over 45% (Turin). An even clearer difference can be seen in the use of bicycle rental systems. For example, just under 50% of Milan's car sharing users said they used bike-sharing, but only just over 10% of the control group used bike-sharing. In Turin, the ratio is similar: just under 45% of car sharing members compared to 10% of non-members used bike-sharing. These figures show that car sharing users in Milan and Turin travel more multimodally than the average population.

The impact of car sharing on the current parking situation was also studied. Here, the individual parking manoeuvres of private cars were assessed, not the number of parking spaces. Several parking manoeuvres were possible on one single

parking spot. Quantitatively, the number of reduced parking manoeuvres were also calculated in. As a result, parking spaces were included that were no longer occupied by a private car as a result of a shift to using car sharing. It became visible that car sharing can have a positive impact on public space. Private parking manoeuvres in central areas are reduced in particular through car sharing.

In order to achieve the maximum benefit of car sharing, a complementary offer of station-based and free-floating car sharing offers makes sense in order to exploit the advantages that the different systems can provide.





# Worldwide Carsharing: Switzerland

The first car sharing in Europe was established in Zurich. A so-called „Selbstfahrgenossenschaft“ (self-drive cooperative) was founded here in 1948. By the end of 2020, every city with more than 10,000 inhabitants will have at least one car sharing station and 140,000 car sharing users throughout Switzerland will be using the national car sharing provider ‚mobility‘. In total, there are about 3,000 vehicles, of which 1,150 are located at transfer points. The stations comprise between one and 50 vehicles, with a special feature being that a quarter of all stations do not cover their costs – but are deliberately kept in operation. Car sharing is seen as a service to the public.

In Switzerland, there is a nationwide station-based car sharing system as well as one-way offers where you pick up your car at station A and drop it off at station B. In addition, there are local free-floating offers in Basel and Geneva, among others. Car sharing is fully integrated into the public transport system, including marketing, locations and pricing models.

## Success Factors

The core component of the Swiss success model is its simplicity and user-friendliness. There is one ticket and one network - nationwide! The idea is to make alternative and sustainable mobility as simple as possible. This includes the complete integration of all forms of mobility, so that inter- or multimodality is ensured. The figures speak for themselves: Switzerland has 8 million inhabitants, of which 480,000 inhabitants had an annual ticket for local and long-distance transport in 2016, i.e. 1 in 17 citizens.

There is still room for improvement in the field of taxi services. On the one hand, taxi companies lack quality and coordination, on the other hand they are perceived as too expensive. They are the only means of transport which are not perceived as part of public transport, i.e. they are not integrated into the overall concept.

## SHORT-FACTS

- The first car sharing services were offered in Zurich in 1948
- One car sharing vehicle replaces up to 18 private cars in Switzerland
- 25% of the stations do not cover costs
- Car sharing is perceived and accepted in Switzerland as part of the „transport ecosystem“

Arnd Bätzner,  
Member of the Board of Directors,  
Mobility Car Sharing Suisse





# STAR

## Move – a Walkshop

### Tour of the Bremen Car sharing Infrastructure

Visibility, accessibility and clear marking of the car sharing spaces are important. In Bremen, a distinction is made between **mobil.punkte** and **mobil.punktchen**. They all have the clearly visible style in common – and bicycle racks.

#### The mobil.punkt

is a large station, often with direct access to public transport and bicycle parking facilities.



#### The mobil.punktchen

are smaller stations in residential areas.





# STARS

Future – a Simulation Game

## Decision Making and Implementation of Car Sharing in Practice

For the planning game, the participants were divided into four interest groups:

- Group 1:** City politicians
- Group 2:** Fleet management
- Group 3:** Public transport companies
- Group 4:** Housing development companies

The participants came from different areas of practice and science.

The planning game comprised three steps:

- Step I:** What is the position of each group in the Transport Development Plan Bremen 2025?
- Step II:** Creation of a project plan
- Step III:** Prove the knowledge-Quiz





# STARDUST: The Vision of Car Sharing

A Discussion with five experts and project partners from Singapur, Spain, Belgium, Bremen and Sweden



„5 Panellists discussed:  
which policy implements can help? Can we imagine a world without car ownership?“ ★

Esti Sanvcente,  
LGI consulting

The individual elements of sustainable mobility must interlock, like a puzzle. This requires a comprehensive mobility policy that defines the framework. So-called push & pull factors can help. It is particularly important to clearly define and quantify the goal right from the start.

Car sharing is an alternative to private car ownership, especially when there are other types of mobility offers, such as good public transport. People want their lives to run smoothly, while sustainability is playing an increasingly important role. The task of politics and car sharing is to make the switch from private to shared cars as easy as possible.

**www.stars-h2020.eu**

STARS is a 30-month Horizon 2020 project that aims to explore the diffusion of car sharing in Europe, its connections with technological and social innovations, as well as its impact on other transport modes.

STARS looks at how innovation can boost mobility as a service, while taking into consideration energy savings (electric mobility), costs, and environmental and social factors.

**STARS main expected impacts**

- Increased environmental and social benefits for citizens, car sharing customers and other travellers.
- Growth in the transport sector: for car sharing providers, public transport and taxi operators, the automotive sector.
- Providing tools and recommendations to policymakers (at local, national and European level) that will help them implement the best car sharing strategies in their cities.

STARS will provide policymakers with guidelines and recommendations to help them implement environment-friendly and cost-effective car sharing services in European cities.

Coordinator: Marco Diana, Associate Professor at Politecnico di Torino (Italy) [h2020stars@gmail.com](mailto:h2020stars@gmail.com)

**A consortium of 9 partners**

AUTO DELEN .NET, bcs, CARDIFF UNIVERSITY, Freie Hansestadt Bremen, GM, I.C.L.E.I. Local Governments for Sustainability, LGi, POLITECNICO DI TORINO, UNIVERSITY OF GOTHENBURG

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Source: <http://stars-h2020.eu/>

## STARS Results

The concept of car sharing is spreading all over the world and the growth potential is good. However, in order to achieve broader use, the mobility as well as the social and political framework conditions need to be improved. The event showed the differences of car sharing in various countries and cities. The Italian study, for example, has shown that car sharing is an incentive for the increased use of local public transport, especially where there is excellent public transport infrastructure in place. At the same time, local differences in the legal, regulatory and socio-economic framework became clear.

Car sharing is versatile. Different offers and programs can be attractive for different user groups.



In Italy or North America, for example, you will find a majority of free-floating providers (best suited for one-way trips), while other solutions such as station-based car sharing are more widespread in Northern Europe. The study carried out as part of the **STARS** project by German Car Sharing Association (Bundesverband CarSharing e. V. or BCS) clearly shows that the free-floating system alone has little impact on reducing urban parking pressure. However, free-floating car sharing can attract new users and act as a catalyst to more extensive car sharing use when part of a combined offer with station-based car sharing. The station-based car sharing is more suitable for reducing parking pressure.



The **STARS** results are intended to stimulate thinking about which operating and business models are to be applied (and promoted) in which areas.

They also showed how car sharing can have a positive impact on reducing traffic volume and the ecological footprints.



# Integration of Car sharing in residential areas

.....

Bicycle  
Accessibility  
financing  
Cargo bike Service  
Parking space minimization  
Sharing  
Climate protection  
Acceptance  
Mobility  
Together

Future

Fees

Idea

Parking spaces

Housing Industry

Quality of Life

Rural area

Car

Verkehrswende

Cooperation

Continuity

Redemption

Flexibility

Co-living

Sustainability

Community

Mobility Management

Climate protection

Parking cards

e-bikes

Cityscape

Concept

Real Estate

Quarter

Location  
legal framework

space gain

Service

Traffic Avoidance

## A German Perspective: New Mobility is Entering Housing



„New mobility is defined as an interplay of different types of transport. This event focusses on the question of how mobility can look, particularly in inner city housing developments.“



Gabriele Nießen,  
Deputy Minister for Urban Development

We are in a phase of change: between the blunders of the Reichsgaragenverordnung (Reich Garage Regulation) of 1939 and a need to rethink in terms of new and sustainable mobility. Sustainable mobility also plays an increasingly important role for the housing industry. The installation of underground parking spaces can easily account for ten to fifteen percent of the construction costs in residential construction. Parking spaces cost money, consume space and generate traffic. Is there no alternative? What effects does the integration of car sharing have in residential construction? What experiences were made with the first model projects? What is the potential for lowering costs in residential construction, for more quality outdoors – without neglecting mobility needs? Which innovative mobility offers also meet the needs of (future) residents?

### Cooperation Between Housing Industry and Mobility Providers

Mobility is an important issue for the housing industry, both in new buildings and in existing ones. On the one hand, mobility needs and behaviour are changing: the privately owned car is losing its importance in some demographic circles and environments and mobility is becoming increasingly individualised and multimodal. On the other hand, calls for increased housing construction are getting louder and public space is in short supply. The housing industry sees itself



Source: VCD/Sinnwerkstatt

Jan Lange,  
Verkehrsclub Germany

as an important player in the provision of mobility in its existing and new buildings, but the main financial responsibility lies with the municipality. This includes, in particular, the provision of good transport infrastructure. Integrated concepts are important. Housing companies must be involved from the start of the planning process, however, a mobility offer that is specific to the district must be meaningfully integrated into the public transport network and city-wide car sharing concepts. For existing buildings, the general conditions are significantly more difficult, there are fewer implementation options in terms of construction. Existing contracts and existing parking spaces make matters worse. A flexible parking space regulation is desired which allows to dispense with parking spaces and to implement alternative concepts instead.

### Best Practise: Housing Leads Mobility – a project by VCD

The aim of this project of the Verkehrsclub Deutschland (German Transport Club, VCD) was to facilitate access to climate-friendly means of transport at the place of residence as an alternative to owning a car and thereby to reduce mobility-related CO<sub>2</sub> emissions. In order to be successful in the long term, the initiation and continuation of networking and dialogue was an essential part of the project. "Housing leads mobility" has shown how important it is to think about mobility



offers in construction projects right from the beginning. In the case of new buildings in particular, strong mobility axis often have to be formed first. The dialogue and cooperation between actors in the housing industry, mobility service providers and the community is of vital importance. At the same time, legal and regulatory instruments must be fully exploited.

80 percent of all mobility related decisions are made on the doorstep; so ideally, offers have to be developed together with the residents. This also includes ensuring the transparency and predictability of mobility concepts. These need to be planned and created not only for the individual residential area, but for the whole of the city.





# Car Sharing in Germany

## Car Sharing Today – Recent Developments in the Car Sharing Market

On January 1st, 2020 there were 25,400 car sharing vehicles and 2,290,000 customers registered across Germany. Car sharing is not limited to the big cities. Car sharing services are available in 46.8% of all municipalities with a population of between 20,000 and 50,000. Also in 445 locations with fewer than 20,000 inhabitants, there are now station-based car sharing offers. These figures show that car sharing is also possible in rural areas. Unlike in cities, however, car sharing in rural areas is generally not a viable business model in itself. Often the services are organised by voluntary associations or co-financed by local authorities. In urban areas, a car sharing vehicle can replace up to 20 private cars. At the same time, the mobility behaviour of users is changing: 32% stated that they now cycle more often and that their car usage dropped by 70%. 40% of car sharing members now use local public transport more often.



„Car sharing is the ecological alternative to private cars. The federal state and local governments should systematically promote car sharing as the fourth pillar of the sustainable transport (next to walking, cycling and public transport). The aim must be that no resident of a residential area close to the city centre lives more than 400 metres from a car sharing station.“

Andrea Chicco,  
Politecnico di Torino

Gunnar Nehrke,  
Managing Director,  
German Car sharing Association

Source: bcs 2016





## Does Car Sharing Decrease Parking Pressure?

There are different studies and results on the relief effects of car sharing. An analysis by team red Deutschland GmbH of station-based car sharing in Bremen has shown that one car sharing vehicle replaces up to 16 private cars. On the one hand, the study showed that private cars are actively being gotten rid of, on the other hand, it also showed that users not buying new or additional vehicles as a result of car sharing being available. In the Bremen study, the providers Cambio and Move About were examined, both of which offer station-based car sharing.

As part of the **STARS** project, the study of the German Car Sharing Association (BCS) investigated the traffic-relieving effects of available car sharing models (station-based, free-floating, combined) in selected inner-city residential areas of Frankfurt am Main, Cologne and Stuttgart. In these 3 cities, the different car sharing models are available and public transport coverage is very good. Therefore, the conditions to get rid of one's own car are also good. Nevertheless, the effects of the different car sharing models on car ownership are very different: in car sharing households for users of station-based car sharing, car ownership is only 108 cars per 1,000 people, 81 % of households do not have their own car. On the other hand, 485 cars per 1,000 persons were found for free-floating car sharing customers, where only 32 % of households are car-free. Whereas the number of cars in the households of free-floating customers has decreased by only 5 percent in the period 12 months prior to registration, users of station-based car sharing generated two-thirds, or rather 66 % of the original car stock.

New combined car sharing services that offer station-based and free-floating car sharing from a single source seem to be able to take advantage of the reliability of station-based car sharing combined with the attractiveness of free-floating car sharing. Similar to station-based car sharing, the level of motorisation of users with 104 cars per

1,000 people is very low, the proportion of car-free households is similarly high at 78 %.

These figures show that station-based car sharing is the basis of the traffic-relieving effect. Customers of station-based and combined car sharing services are already below the target of 150 cars per 1,000 inhabitants, which the Environmental Protection Agency recommends for sustainable, space-saving car traffic in the future.

Further research showed that users of station-based providers are generally more satisfied with vehicle availability and the cost of use than users of free-floating providers.

In order to further unlock the potential of car sharing, it is necessary to further expand car sharing stations in public spaces and in new housing development projects in order to better link them with other transport services and to integrate them into the mobility management of companies.

### SHORT-FACTS

- The most traffic reduction is realised by station based car sharing as well as with combined station-based/free-floating offers.
- Important aspects from customer point of view are reliability of the offer, visibility and accessibility of car sharing stations.

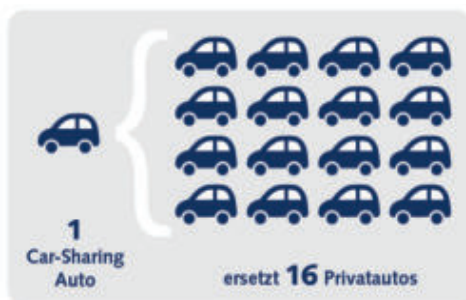
# Car Sharing and Urban Mobility Strategies

## Car Sharing in Bremen: An Alternative to Car Ownership

The Ministry department for the environment and transportation in Bremen has been very supportive of car sharing since the beginning. As early as 1995, the joint action „Minus100“ implemented a strategy in a densely built-up area with high parking pressure, with a joint provision of public transport and car sharing to explicitly offer an alternative to owning car. For the City, parking pressure in many inner-city districts has been and still is an essential driver for supporting car sharing. In 1998, the „Bremen Card plus AutoCard“ was the permanent cooperation with public transport and since 2003 with the ‚mobil.points‘, car sharing stations in public street space. The City's Car Sharing Action Plan, which was politically adopted in 2009, aimed to quadruple the number of car sharing users from just over 5,000 to 20,000 by 2020, thereby reducing the private car fleet by 6,000 cars and subsequently, the parking spaces they require.

### Effects of Car Sharing in Bremen in Detail

In order to obtain reliable data on the effects of car sharing in Bremen, car sharing users in Bremen were surveyed in 2017 by the providers Cambio and Move About (all station-linked offers). The results show that around 80 % of households with car sharing do not own their own car and that each car sharing vehicles replaces a total of 16 private cars – out of the sum of sold and unpurchased cars. The survey also clearly shows the wishes and preferences of the users: In addition to the simple procedure (99 %), reliability (98 %) and proximity to the station (96 %) are important. This shows the value of the station-bound offer, which also



Source: Team Red, 2017

### SHORT-FACTS

- Car sharing in Bremen since 1990
- Car Sharing Action Plan in 2009: first politically agreed strategy for Car Sharing Integration
- In Bremen mobility management as alternative to parking provision in new housing developments are legally possible since 2013



allows prior reservations and is, therefore, reliable from the customer's point of view. The degree of satisfaction of Bremen users here is over 80 %. In contrast, the desire for "trendy" vehicles is secondary, with only 9 % of those surveyed seeing this as an important aspect. For the expansion of car sharing, this means that reliable station-based car sharing has great potential to reduce the need for vehicles in the housing sector as well – and thus to reduce the number of parking spaces required.

### Fewer Parking Spaces – Contribution to Low-cost Housing Development

With a new local law on parking spaces in 2013, the City of Bremen has already created the possibility to implement mobility management in new buildings instead of building parking spaces. Car sharing is one of the options to reduce the number of parking spaces required. Particularly in inner-city locations with underground car parks, the contributions to low-cost housing construction are extreme - after all, underground parking spaces easily account for 10 -15% of the construction costs of a residential unit. Despite the obvious financial savings, demand from the housing developers was initially rather restrained.

With the discussion about family-friendly housing in the city, climate protection and a changed perception of mobility issues, on the one hand, and the qualitative and quantitative improvement of 'alternative' mobility offers on the other hand, a new dynamic has emerged here.



*Michael Glotz-Richter,  
Sustainable Mobility Officer at  
the Ministry for Climate Protection,  
Environment, Mobility, Urban &  
Housing Development*





# Car Sharing and Urban Mobility Strategies

## SHORT-FACTS

- STATTAUTO has been a operator of station-based car sharing since 1992
- The mobility center in the DomagkPark residential project was opened in 2016, since then constantly expanded
- The parking space key at the DomagkPark was reduced to 0.5 spaces per flat
- Pitch key DomagkPark reduced to 0.5

## STATTAUTO Munich: Car Sharing and the Housing Industry

STATTAUTO Munich has been operating station-based car sharing since 1992, with more than 16,000 customers using over 450 vehicles at 130 stations in Munich and the surrounding area. Bookings are made via app, website or telephone. Since 2013, STATTAUTO München has been a non-profit business unit of the non-profit Spectrum Mobil GmbH.

### STATTAUTO and the Housing Industry

The City of Munich offers the possibility of reducing the parking space key if a mobility concept is submitted by the building owner with the building application. STATTAUTO currently operates nine stations with multi-modal mobility concepts. In addition to car sharing vehicles, 34 additional booking objects, such as cargo bikes, e-bikes or public transport season tickets are provided at these stations.

### Mobility Centre at The DomagkPark

A new mobility offer was created in DomagkPark. The mobility centre was opened on the 31st May 2016 by Lord Mayor Dieter Reiter. The residents have various mobility options at their disposal that can be used flexibly according to their needs. Currently, seven cars, three of them electric, four pedelecs, three e-cargo bikes, one e-scooter and three transferable monthly tickets for public transport are available at the station. They are rented via the STATTAUTO Munich booking platform. The mobility station can be used by all residents of the quarter. There are currently over 240 users from the immediate vicinity.



*Praxis report from Munich  
Markus Lange-Stuntebeck,  
StattAuto Munich*





Markus Lange-Stuntebeck,  
StattAuto Munich

The special feature of DomagkPark is that, for the first time in Munich, a consortium of building owners and building associations has come together during the planning phase to jointly implement a multimodal mobility concept in the quarter.

The mobility concept is designed for 74 residential units, which meant that the number of parking spaces was reduced to 0.5 required parking spaces per unit, meaning that only 39 car parking spaces were built. Accordingly, the offer has steadily expanded since 2016.

The Mobility Centre is a close cooperation between STATTAUTO and WOGENO, the local housing association. The contract can be concluded with either of these organisations, however, the booking, lending and invoicing is done solely by STATTAUTO, the company also owns the shared cars. All two- and three-wheelers are the property of WOGENO.

### Lessons Learned and Outlook

The most important aspect of cooperation between car sharing providers and the housing industry is the early joint planning of new mobility services. If possible, the dimensions and requirements for the operation of a mobility station should be taken into account in the construction planning from the very beginning. Early neighbourhood management by the public sector is necessary in new development areas in order to involve the various stakeholders (building owner, mobility providers, etc.) before the building applications enter the approval phase. The early coordination of city administration and housing industry is also of particular importance in order to integrate a planned car sharing concept into the city-wide mobility concept from the very beginning. If this does not happen, „car sharing island solutions“ often emerge that have no connection to the other car sharing offers in the city and do not complement this in a meaningful way.

STATTAUTO Munich recently won the first tender for a concession with a large housing company from Munich. The aim is to build around 15 new mobility stations with approximately 89 vehicles by 2025.

# Car Sharing and Urban Mobility Strategies

## Stellwerk 60 – Car.free in Köln-Nippes

Stellwerk 60 is the first car-free housing estate in Cologne. It is located about 2.5 kilometres north of the city centre in the district of Nippes. Built in 2006 on a former railway site, the quarter comprises 440 apartments and single-family houses. It is one of the first long-term car-free residential projects in Germany.

### Hey man, where's my car?

80 private parking spaces, 30 guest parking spaces and 10 car sharing spaces are bundled in a collective garage at the edge of the settlement. A strict driving and parking ban applies in signal box 60 itself, which is legally designated as a pedestrian area. The legal framework is laid out in a notarial deed. Part of the notarial deed is, among other things, an urban development contract in which the essential features of the car-free neighbourhood are specified. This also includes that the owners are not entitled to drive motorised vehicles of any kind in the residential area, they are also not allowed to build parking spaces and garages in the residential area.



**„We have shown that it is possible to reduce car ownership. The prerequisite is that the framework conditions are right. The offer of an alternative must be there from the outset so that it reaches the new residents directly.“** ★

*Jans-Georg Kleinman,  
Neighbourhood Association Stellwerk 60, Cologne*

**car-free residential area**



**Bicycle parking facilities**



## Use it, don't own it

### Car and bike Sharing and Bicycle Infrastructure

In addition to the station-based car sharing offers (including nine-seaters and vans) on the edge of the settlement, there are also two free-floating providers in Cologne. Furthermore, some households also practice private car sharing among neighbours (aka peer-2-peer car sharing).

Instead of car parking, there are several underground garages for bicycles in the area, with two to five bicycle parking spaces per housing unit. In addition, there are freely accessible, above-ground bicycle parking facilities and bicycle garages for up to six bicycles. For larger transports, several electric cargo bikes can be rented.

### Mobility Station

The mobility station is freely accessible to all residents. Here they can rent handcarts, parcel trolleys, bicycle trailers, bicycle pumps and much more around the clock. Besides transport and driving facilities, there are also tents, toys and benches and tables for outdoor gatherings. The lending and the return are documented by the independent entry in a lending book.

## SHORT-FACTS

- Initiated by citizens and realised by private project developers
- Around 1,500 residents in 440 apartments and houses on 4.2 hectares of land
- 80 % of the inhabitants live car-free

### Bicycle ports for family houses





# Car Sharing and Urban Mobility Strategies

## Mobility and Housing – Examples from the Netherlands

Public space must be valued and reassessed. Instead of the current division between slow and fast traffic, a reorganisation is needed with regard to space consumption. Taking the human being as a starting point, one can distinguish between space-poor and space-consuming means of transport. An important step in this direction is to no longer apply car-centric design when building new homes and infrastructure. For example, if one starts with the needs of pedestrians and cyclists, a completely new street scene emerges. In the current way, cities and developers are giving disproportionate space to stationary and moving car traffic.

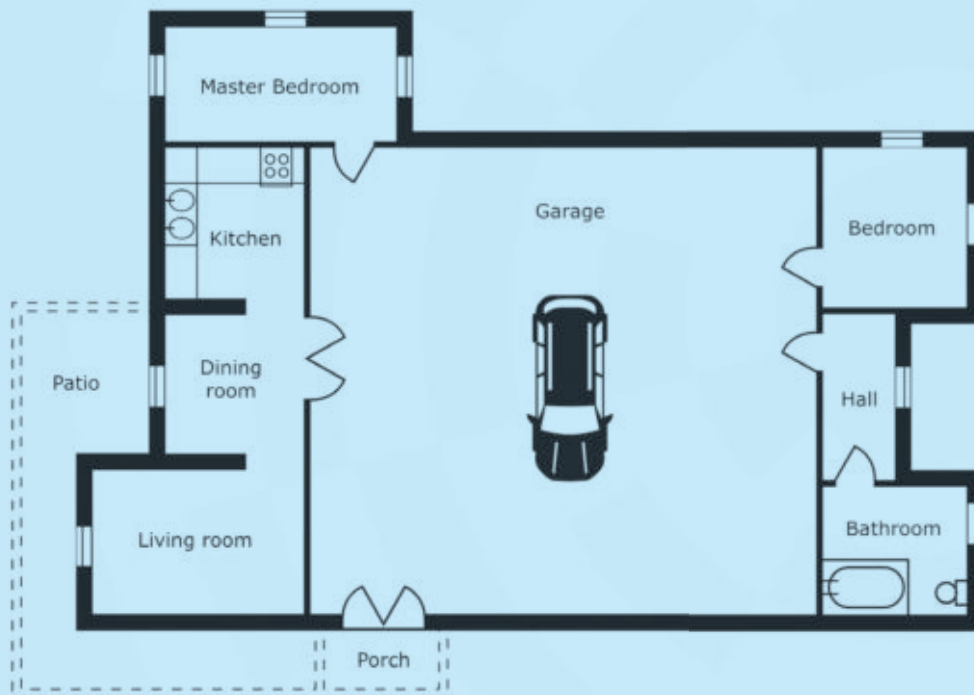
If the design of public space is changed, the mobility behaviour and attitudes of people also change. The existing infrastructure has a decisive influence on how

### SHORT-FACTS

- Public space must be valued
- The target is a parking space index of 0.3 - 0.5 spaces per flat in current projects

people move around. If, for example, a car park is built into a new building, it is also used. In contrast, a lack of parking space is more likely to motivate people to switch to sustainable forms of mobility. It is particularly important to think about the future in new buildings. The focus should therefore be on Mobility as a (real-estate) Service.

### Design your home like an average city and watch the proportions:





## Slaughterhouse Haarlem

The aim is to make mobility an integral part of real estate development. The consulting company **Advier** offers advice on how to make mobility a real-estate service for the housing industry and demonstrates the business case of shared mobility and the space that is possible to use for other purposes as a result. This approach involves mobility offers that are jointly acquired and managed by the owners and users, tailored to their specific and individual needs. This flexible and future-oriented concept is intended to replace the permanent private parking spaces. The bundling of the offers in such mobility packages allows for an individual composition. With such a concept, it is possible to achieve 0.3 to 0.5 parking spaces per residential unit.

The mobility package can include: car/ bike/scooter sharing, high-quality bicycle parking facilities, parking management, etc. The Slaughterhouse Haarlem is one of the areas where a sustainable mobility package will be implemented.



Minze Walvius,  
Advier (Delft)

„The Situation in the Netherlands is promising for carsharing. When it is part of a concept of complete mobility offer.“



# Car Sharing and Urban Mobility Strategies

## SHORT-FACTS

- GEWOBA manages the largest housing stock in Bremen, but also operates new developments
- Cooperation of GEWOBA with car sharing, bike sharing and public transport

## Bremen – Projects by GEWOBA

The housing company GEWOBA has a share of approx. 17.4 percent of the Bremen housing stock. Whereas in the 50s and 60s terraced houses accounted for approx. 80 percent of the housing stock, today half of the housing stock is designed to consist of 3-room apartments. Many things changed in urban development in recent years. The city of the future can have many faces. Where until recently the model of the car-centered city still prevailed, the mobile city is now in the foreground.



Jörn Ehmke,  
GEWOBA

Source: Trends & Themen der Stadtentwicklung, GEWOBA





Source: Potenzial Großsiedlung – Leitbildprozess Vahr, GEWOBA

#### WOHNEN 4.0: Sharing Concepts for Neighbourhoods

Mobility solutions close to home are a current and future topics for the housing industry that have a significant impact on the development of residential areas. The aim is to develop environmentally and socially compatible mobility concepts. GEWOBA has introduced alternative mobility concepts in its neighbourhoods, initially as pilot projects, for example through cooperations for electric mobility in car sharing or for rental bicycles. In the meantime, mobility concepts are part of almost all new building projects and have established themselves in Bremen as an alternative to the required proof of parking space. These include car sharing stations on private property as well as the promotion of public stations or the provision of season tickets for public transport.

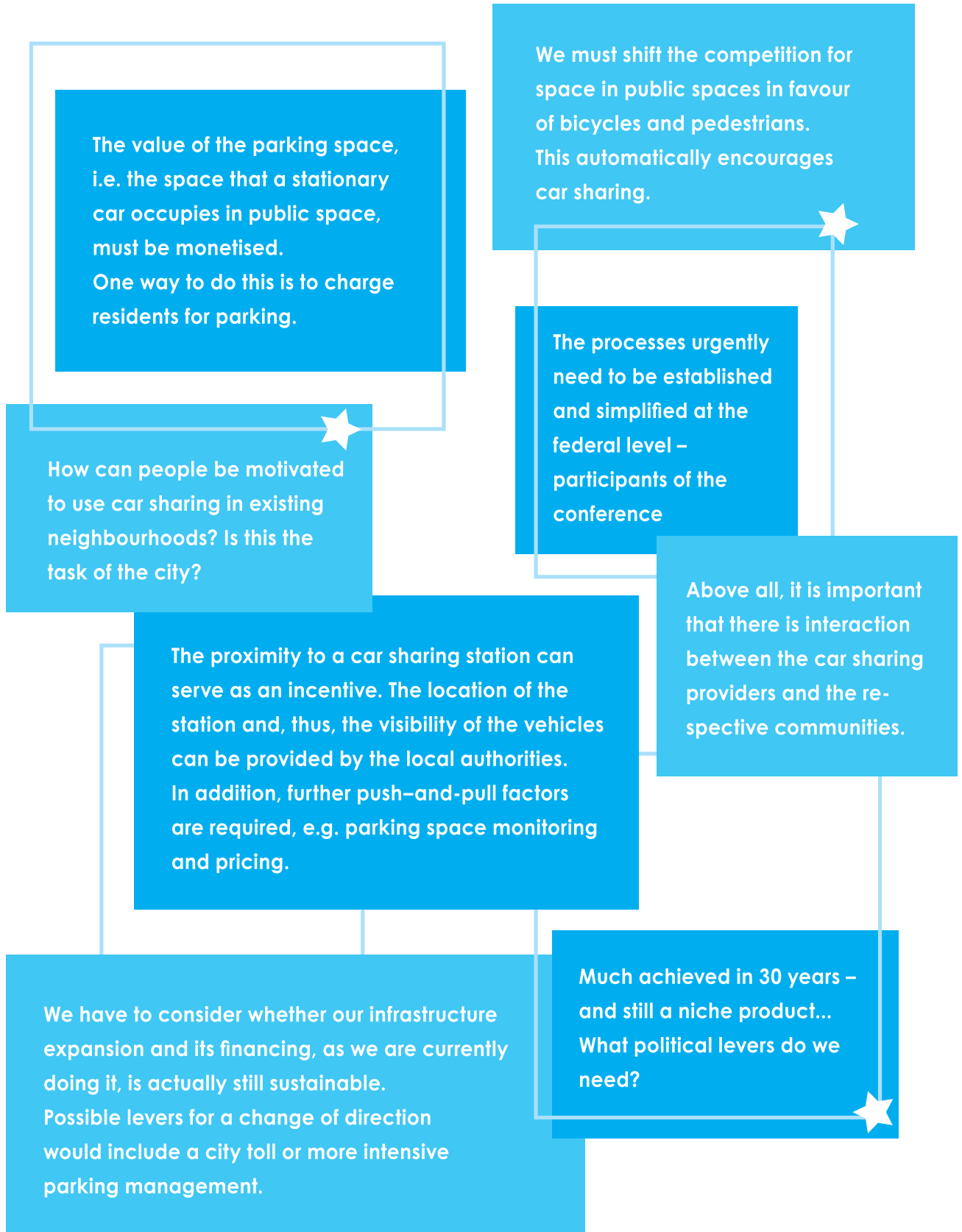
#### Living plus Mobility – Vahr

The Neue Vahr is a district in the eastern part of Bremen and was completed in 1961 as the largest construction project in Europe with 9,200 rental apartments

and almost 800 owner-occupied homes. Designed as the „city of the future“ according to the urban planning principles of the „Charter of Athens“ and the ideas of the garden city, the Neue Vahr was considered a nationwide model project for modern large housing construction at the time of its creation. Since the time of its construction, the quarter has been continuously developed through structural, social and urban planning measures. In 2017, GEWOBA was breaking new ground with the initiation of the „Vahr 2035“ mission statement. The goal of the process was to set a thought process in motion on the future development of the Neue Vahr with regard to the changing social, societal, economic and cultural conditions.

The demand for car sharing services is growing continuously, even in large housing estates. For both existing and new buildings, the question arises as to how a building and its surroundings should be designed if the prevailing principle is „sharing instead of owning“. What accompanying infrastructure do people and households need in the context of new forms of mobility?

# Questions from the Audience – Car Sharing and The Housing Development Industry





## Closing Remarks, Outlook and Thanks



The challenges of the future  
will be e-commerce und logistics!

There is a large overlap between the interests of  
car sharing providers and housing associations.

**Car sharing alone is not the solution –**  
it must be embedded in housing, in the overall ecosystem.

The abolition of the municipal parking  
regulation in Berlin was a mistake

**Thanks**  
to Bremen  
for the great  
hospitality :-)

This was a  
**REALLY** good event.  
Many thanks to all  
people involved!

Exchange of  
experience is  
extremely important  
and we have to change  
our parking space  
statutes!

Taking  
**Bremen**  
as a role  
model!

# Imprint

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