A PLANNER'S GUIDE TO THE SHARED MOBILITY GALAXY

SHARED MOBILITY R/CKS

Also available in: DE, NL and SE

Interreg
North Sea Region
SHARE-North
European Regional Development Fund

EUROPEAN UNION

SHARE-North Academy

Imprint

Coordinating authors: Rebecca Karbaumer & Friso Metz
Design: Maren Rache / Atelier Krake
Front and back cover pictures: Michael Glotz-Richter, Lars-Ove Kvalbein and Advier

This publication was created during the "SHARE-North" project. The project is supported and funded by the European Union as part of the Interreg North Sea Region Programme.
More information is available here: **www.share-north.eu.**

The brilliant Shared Mobility Rocks brand was created by the Flemish NGOs Autodelen.net and Mpact for their annual unconventional shared mobility symposium Shared Mobility Rocks.

A PLANNER'S GUIDE TO THE SHARED MOBILITY GALAXY

Table of Contents

Imagine no possessions
I wonder if you can
No need for greed or hunger
A brotherhood of man.

John Lennon

10 Golden Rules of Shared Mobility

1. Shared mobility is a means to decrease car dependency, to reduce greenhouse gas emissions and to increase the quality of life.
› **Chapter 2**

2. Shared mobility fosters a shift away from car use and car ownership to multimodality. It enhances the use of zero emission transport modes like walking, cycling and public transport.
› **Chapter 3**

3. Shared mobility allows for densification of urban areas, while liberating urban space from parked cars and strengthening value of urban green areas, thus increasing the resilience and biodiversity of cities.
› **Chapter 4.2**

4. Some shared mobility modes develop slowly and have a strong positive impact on reducing car ownership and greenhouse gas emissions. Other modes develop rapidly, fostered by multinational corporations with investment power and have a more doubtful impact on reducing car ownership and greenhouse gas emissions. The latter modes have a strong appeal to people and get many people on board of shared mobility.
› **Chapter 8**

5. The more modes of shared mobility that come to exist in an area, the bigger the synergy effects and the highest chance that it provides a more attractive transport alternative to people than the privately-owned car.
› **Chapter 6.2**

6. Shared mobility works best in dense areas with governmental support and policies that support the various modes.
› **Chapters 8 & 9**

7. In less dense areas, more guidance is needed to make shared mobility blossom. Multinational corporations are not interested in these areas. The main drivers are local cooperation and synergies with the local business sector.
› **Chapters 8 & 9**

8. Without proper policy frameworks, shared mobility cannot rock. Local governments have to create the essential conditions, while tackling negative aspects in a proactive way.
› **Chapter 9**

9. Physical integration with mobihubs is essential to make shared mobility visible. Digital integration with MaaS helps to make shared mobility connective and gives it a strong appeal.
› **Chapter 6.3 & 6.4**

10. Car ownership is rooted deep in our society. It takes time and effort to raise awareness about new forms of transport. Shared mobility needs clever, consistent communication and marketing over a long period of time.
› **Chapter 7**

Shared Mobility Definitions

Bikesharing
A system in which bicycles are made available for shared use to individuals on a short-term basis.

Carsharing
A system that allows people to use locally available cars at any time and for any duration, reducing reliance on private ownership.

Car replacement factor
The number of private cars per shared car, that are sold or not purchased, because of the uptake of shared mobility services.

Communities
Closed user groups, e.g. neighbours or apartment owners.

Ecosystem services
The ecosystem in and around a city. From meadowland, woods and wilderness to wasteland, gardens and parks. Ecosystem services are the many and varied benefits to humans gifted by the natural environment and from healthy ecosystems, i.e. the free benefits people obtain from ecosystems.

Free-floating Service
Service where vehicles don't have to be returned to the place where they were picked up.

Homezone-based
Residential zone within which shared vehicles can be picked up or dropped off.

Mobihubs
A transport hub on neighbourhood level, where different sustainable and shared transport modes are linked with each other. Preferably, a mobihub includes carsharing.

Mobility as a Service (MaaS)
A system in which a comprehensive range of mobility services is provided to customers by mobility service providers.

On-demand ride service
A spontaneous, commercial ride service where the driver does not share a destination with the passenger(s), but serves only as a chauffeur.

Operational area
Predefined zone in which shared vehicles can be dropped off.

Peer-to-Peer
The sharing of private vehicles that are temporarily made available via web-based communities.

Public transport
A system of vehicles such as buses, trams and trains that operate at regular times on fixed routes and are used by the public.

Real-time ridesharing
Service that use GPS-enabled cars and smartphone apps to match users in real-time at the moment of demand with nearby commuters and share the cost of driving to a shared destination. Rides are one-time transactions with network services that handle payments to the driver.

Ride-splitting
A form of ridesourcing where different riders with similar origins and destinations are matched to the same driver and vehicle in real time. The ride and costs are split among users.

Ridesharing
The sharing of car rides by persons to reduce costs and environmental impact.

Ridesourcing
A transport service managed by an online platform that connects passengers with drivers who use personal, non-commercial vehicles.

Roundtrip
A service where shared vehicles have to be returned to the same parking spot or zone from which they were picked up.

Shared micromobility
A system for the shared use of small vehicles that are human or electrically powered, like e-scooters, mopeds, e-skateboards and Segways.
(Electric) bikesharing is often included in micromobility. For practical reasons, bikesharing is excluded from this definition in this guide.

Shared mobility
A strategy to make better use of vehicles and space. Shared mobility also is seen as a transport mode in itself. Shared mobility is the conversion of private modes or trips to shared use for more sustainable and convenient outcomes.

Share Mobility Action Plan (SMAP)
A plan that defines goals, strategies and measures for shared mobility.

Sustainable Urban Mobility Plan (SUMP)
A strategic plan designed to assess transport issues for the movement of people and goods in cities and urban regions.

Shared space
An urban design approach that minimises the segregation between modes and road users. By creating a greater sense of uncertainty and making it unclear who has priority, car drivers will reduce their speed, in turn reducing the dominance of vehicles, reducing road casualty rates, and improving safety for other road users. In this guide, the focus is not on urban design but on a more equitable use of street space by people.

Station-based
Service where shared vehicles must be picked up and dropped off at fixed locations.

Vanpooling
Transport in groups of around seven persons commuting together in one van.

1

DON'T PANIC

We Will, We Will Rock You

Queen

1. Don’t Panic

Are you struggling to make heads or tails of the complex galaxy of shared mobility? Still questioning what all the talk of shared mobility is all about? Or are you already at rocking pace with shared mobility and see opportunities to support the shift from ownership to use in your community? Is your city growing and do you lack space for any more cars? Or are you struggling to make your small town more accessible, while public transport is declining? Perhaps you are facing challenges with shared e-scooters and bikes.

If you have answered YES to just one of these questions, this guide is for you. We’ll answer the following questions for you and help you make shared mobility rock in order to create a more sustainable community:

- What is shared mobility?
- What are shared mobility options and how do they differ from each other?
- What are the impacts and how do shared mobility options interact with each other?
- What should you do as a public authority, no matter if you are a big city or a small town?
- How does shared mobility fit into an integrated transport plan?

Working on shared mobility is still new and challenging for many municipalities. This guide provides supporting arguments for municipalities and regions seeking to implement shared mobility.

The document is a result of the SHARE-North project, which is funded by the European Union through the Interreg North Sea Region. In this project, a thrilling vibe popped up. Working on shared mobility is fun and exciting, the main driver of the team being to give access to vehicles a higher value than vehicle ownership. The title of this guide reflects the exchanges during the project: rockin’!

For many years, the City of Bremen, Germany has been a lighthouse for shared mobility development. Our strategies with regards to carsharing and mobihub development (in German, we call them mobil.punkte) have inspired many cities around the world already. Our Sustainable Urban Mobility Plan – which of course includes shared mobility – was honoured with the European SUMP Award in 2015 and our policies for free-floating bike-sharing and e-scooter sharing have set a precedent for micromobility policies throughout Germany. This guide helps to spread this light even further.

Working in the frontline of shared mobility, the project partners are constantly keen on gathering state-of-the-art knowledge from leading research. The guide provides detailed insights on the world of shared mobility, inspiring case studies not only from the City of Bremen but from across the North Sea Region and recommendations for policy making.

In many of the project’s living labs, this knowledge and experience has been brought into practice. From policy making and creating new mobility options to the marketing and promotion of shared mobility. This is reflected in the selection of case studies, which are organised by topic. When videos are available, they may be found in the SHARE-North channel on YouTube.

If you lack time, please start with the golden rules and follow the references if you need more information.

Dr. Maike Schaefer,
Minister for Climate Protection, the Environment, Mobility, Urban and Housing Development
Free Hanseatic City of Bremen

2

WE NEED TO ROCK

Cars are cars
All over the world
Cars are cars
All over the world
Similarly made
Similarly sold
In a motorcade
Abandoned when they're old

Santana

2. We Need to Rock

GOLDEN RULE 1

Shared mobility is a means to decrease car dependency, to reduce greenhouse gas emissions and to increase the quality of life.

2.1 Introduction

Rocking is fun and sharing is caring. Shared mobility is about new ways of travelling. It is all about using all kinds of mobility without the need to own vehicles. This results in more freedom of choice for users, makes cities nicer places to be and live and makes the countryside more accessible for everyone. Our planet and our transport systems benefit hugely from this transformation.

The fun part about shared mobility is something you should discover yourself. Besides this, there is also a more urgent part. Therefore, it is not only fun to rock, it's also necessary. Basically, three levels of needs can be distinguished:

1. Global: the climate threat and pollution;
2. Regional: accessibility and congestion;
3. Local: scarcity of space in cities and social inclusion in rural areas.

This chapter dives into these needs. Next, an underlying issue is described that impacts all three levels. We'll conclude with an explanation why shared mobility provides smart and sustainable solutions. In other words: we need to rock and sharing mobility is the way.

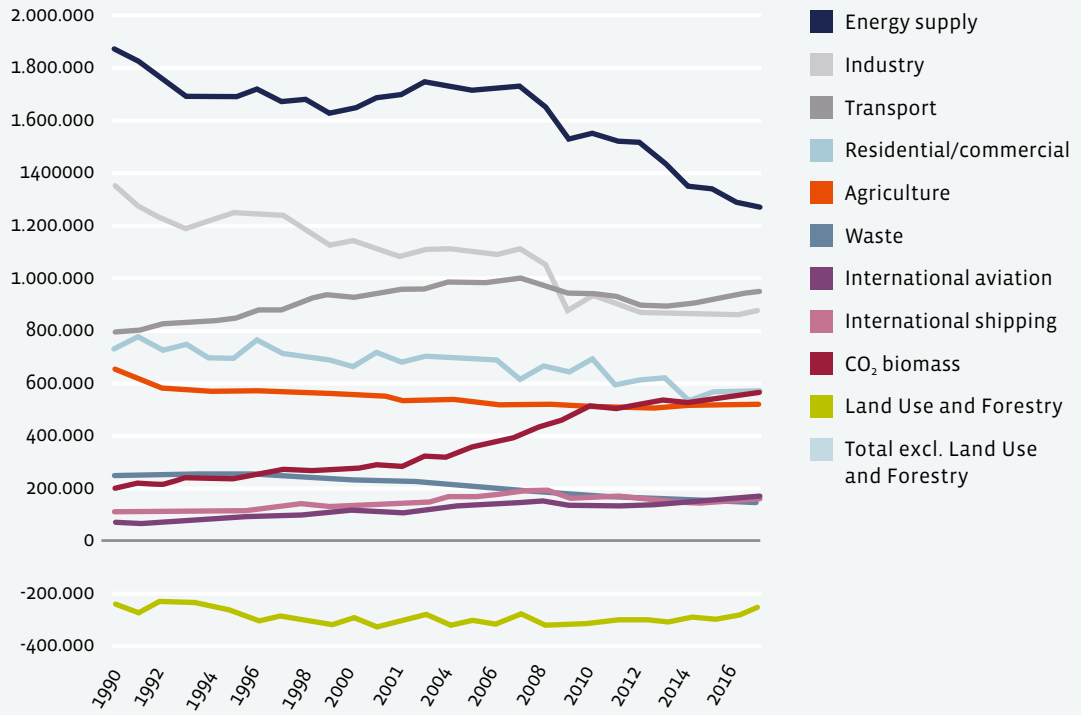
2.2 Global Needs: Climate Threats and Emissions

Climate Threats

The 'urban environmental ethics and policy paradox' states that we are aware of environmental problems and suitable solutions. However, we fail to act on this knowledge [1]. Throughout human evolution, humans have been faced with immediate threats like attacks from bears, raiding clans, running out of food and water rather than face starvation. For the first time in human development, a threat has been discovered that is not felt with an 12 immediate cause. Verified by scientific research, we know climate change will gradually impact us over the next 20, 50, 100 years. We as human beings can also have a positive impact and can prevent this development, but this level of abstraction is difficult for our minds to deal with. Therefore, it is easily put off in light of other priorities.

The effects and threats of climate change are indisputable and the transportation sector contributes significantly. Therefore, there is a need for changing the political framework towards post-fossil fuel mobility. In 2011, the European Union published Roadmap 2050 [2] for transitioning to a low-carbon economy, establishing the target of reducing CO_2 emissions, a major contributor to climate change, by 80% by 2050 (against the 1990 level). In this target complex, transport-related CO_2 emissions must decrease by 60%. As of 2016, transport-related CO_2 emissions within the EU28 were still about 20% above the reference level, with transport achieving worse than other sectors.

Evolution of Greenhouse Gas Emissions by Sector



Evolution of greenhouse gas emissions by sector (1990=100), EU28. Source: EEA [3].

Pollution

Somewhat less abstract are the risks that transport-related emissions and noise pose to public health, especially in urban areas. According to the World Health Organisation (WHO), on average, 3.7 million people die per year worldwide due to the negative impacts of transportation.

Air pollution-related deaths and illness are closely related to exposures to small particulate matter (PM_{10}). According to WHO [4], road transport is responsible for up to 30% of particulate matter in European cities.

In addition to this, dependence on (imported) oil, traffic congestion, the cluttering of cities with parked vehicles, and an unfair distribution of urban space leading to negative impacts on quality of life are common challenges for urban areas. Questions of demographic trends and maintenance of accessibility independent of age, gender and income are common aspects as well. The overall trends of increasingly overweight and obese children and adults are also related to the quality (or lack thereof) of urban transport systems.

2.3 Regional Needs: Accessibility

Most urban regions in Europe are facing problems with accessibility and congestion. Time spent in single occupancy vehicles by commuters is not only detrimental to the environment, it is also detrimental to human health, physical and mental well-being but also costly in an economic sense. According to data from the 'External Costs of transport update study', congestion of road traffic in only 17 of the European Union States adds up to 268 billion Euros (per year) simply due to lost time [5].

Time spent in congestion limits the accessibility of a city or region and its attractiveness as a place of employment and business. However, road congestion is also a product of a

dense urban environment and can serve as a deterrent for car use and can encourage public transport, ridesharing and cycling instead. Finding more efficient ways of using existing infrastructure and moving people and goods is essential for ensuring the economic resilience of a city in a regional context.

2.4 Local Needs in Urban and Rural Areas

Urban areas

A growing number of European citizens are living in cities. Forecasts by the United Nations show that in 2050, the level of urbanisation in Europe is 84% [6]. Many cities are not designed for the current level of car use that is common in European cities, nor should they be. Both car ownership and use create a huge pressure on the urban space and the liveability and sustainability of cities.

Rural areas

In rural areas, threats are rather different. They may include population decline, a pressure on the livelihood of people and a vital economy. When public transport facilities disappear, dependency on cars becomes even stronger. This form of mobility is not affordable for everyone, which has an immediate impact on the accessibility of jobs and the ability of rural residents to earn an income.

2.5 Underlying Problem: Car Dependency

Behind these needs there is a large underlying issue: in order to live their lives, many households depend on car mobility. The stronger this dependency is, the stronger the need to own one or more cars.

Car dependency exists on three levels [7]:

1. Macro: cities, places and even societies being dependent on cars;
2. Meso: trips, activities or circumstances that require a car;
3. Micro: individuals that depend on cars or are attached to car use.

When people are offered a means of becoming less dependent on car use, the need to own one or more vehicles will reduce. Shared mobility is a crucial element in this transition. Transport and mobility are areas of high political sensitivity. There is no silver bullet for solving these problems. However, some radical changes in daily transport modes and strategies are required. A re-thinking is needed of what 'transport' entails. A shift from thinking of transport planning as building more road transport infrastructure to a broader notion of providing 'accessibility'. This requires a huge behaviour change from the side of populations who are raised with strong notions about car ownership.

Accessibility means that citizens are able to meet their daily social, health, personal and economic needs safely, comfortably and

© Bremen

Too many parked cars in public street space impede pedestrians and municipal services.

conveniently. A combination of technical measures like alternatively fuelled vehicles and measures that incite a change in behaviour are required. Technical solutions alone will not be sufficient.

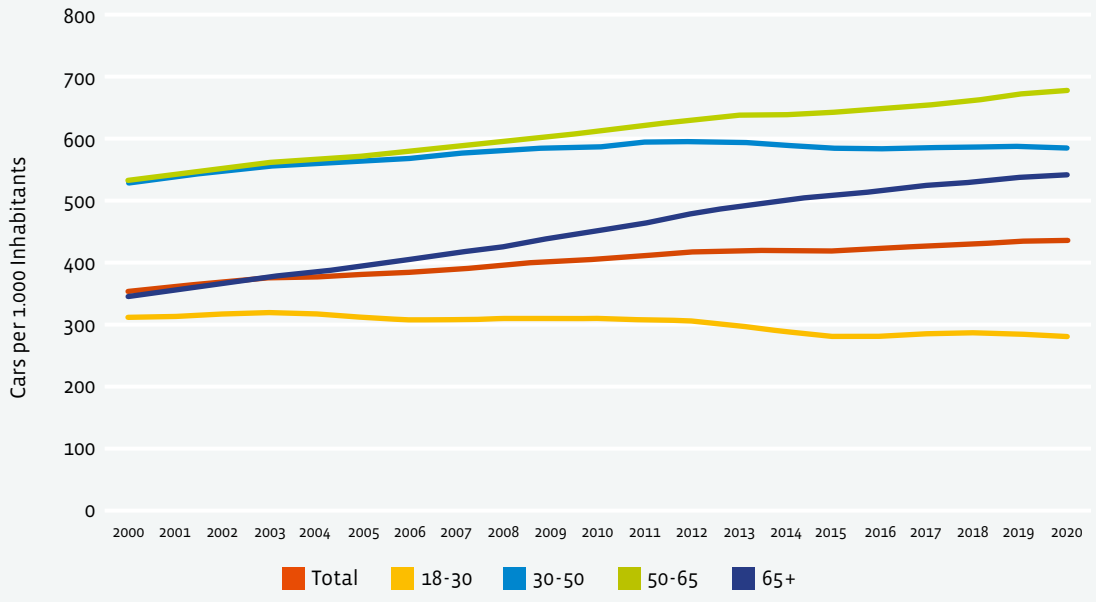
2.6 Use It, Don't Own It – The Transition from Ownership to Use

In many sectors, a shift can be seen from ownership to access and use. The music industry, for example, has seen a shift from owning CDs to digital music with access from platforms like Spotify. To many consumers, having access to all music is more valuable than owning a couple of CDs. Access to music sharing platforms also frees up space at home, as there is no longer a need to own and store bulky CDs when music can be accessed digitally. This digital access also allows use anytime, anywhere, giving a whole new sense of freedom to the music lover. This explains the popularity of Spotify and other music platforms.

This trend is also occurring in the area of mobility, though the pace may be somewhat slower. In several Western European countries, car ownership is no longer growing. This development could be observed even before the economic crisis of 2007 began [8]. Young people tend to forgo the purchase of a car or postpone this decision until a later stage when a car becomes necessary. At the same time, a cycling revolution is taking place in many cities in Europe and around the world.

The concept of sharing offers new opportunities to increase the efficiency of the transport system and significantly improve accessibility. By combining new technological options with new societal trends of sharing, the need for low-carbon accessibility strategies at the local and regional level can be better met. Shared transport modes have a high potential to supplement the traditional sustainable urban transport modes like walking, cycling and public transport. In that way, shared mobility increases the efficiency of the overall transport system. Local governments have enormous potential for innovative transport strategies. Effort is needed to fully exploit this potential.

Cars per 1.000 Inhabitants Accorting to Age Group, The Netherlands



Cars per 1,000 inhabitants by age group, The Netherlands. Source: CBS [9].

3

DEFINING SHARED MOBILITY

Lucky me swimmin' in my ability
Dancin' down on life with agility
Come and drink it up from my fertility
Blessed with a bucket of lucky mobility

Red Hot Chili Peppers

3. Defining Shared Mobility

GOLDEN RULE 2

Shared mobility fosters a shift away from car use and car ownership to multimodality. It enhances the use of zero emission transport modes like walking, cycling and public transport.

3.1 Introduction

Shared mobility is an umbrella for a myriad of transport options. This chapter defines this umbrella, explains how shared mobility affects its users in their daily mobility decisions and demonstrates how this results in a shift towards a more sustainable mobility mix. The chapter ends with an exploration of the sheer endless list of shared mobility applications.

3.2 Definition

Shared mobility is a strategy to make better use of vehicles and space. Shared mobility is also seen as a transport mode in itself. Shared mobility gives users the opportunity to have access to cars and bicycles and other vehicles at the moment when they want to use them. It is the alternative to ownership, converting private modes or trips to shared use for more sustainable outcomes. It is similar to renting, but the user experience and patterns of usage are different: short-term usage and seamless transactions.

Shared mobility includes carsharing, bikesharing, shared micromobility, ridesharing and on-demand ride services. Traditional transport modes like public transport and taxi services are also ways to share the use of vehicles. In this guide, however, we have not included them in the in-depth exploration of shared mobility.

Shared mobility has a key focus on the underuse of vehicle and available seats in them. It is about the unused potential of assets when they are not in use. Cars are not in use 95% of the time [10]. During this idle time, they are consuming street space or require expensive indoor garages, in both cases space that could be used for other purposes. Car occupancy, mainly for commuting and business trips is rather low: on average, fewer than two persons per car and trip. Filling empty seats in cars already on the road is a cost-efficient strategy to reduce congestion.

3.3 How Shared Mobility Affects Our Behaviour

In order to understand how shared mobility works, one has to understand how ownership works first.

Cars

Ownership results in usage. This statement is the most fitting when applied to the privately owned car. If a person owns a car which is parked in front of his/her residence, it will be used very readily and easily. It is accessible 24 hours a day and the cost of using it, in particular the cost of each individual trip, is virtually invisible (sunk costs). For new car owners, the car quickly becomes the default transport option.

With carsharing, things are quite different. Carsharers pay per trip and receive a regular invoice listing the real cost of each trip. They are fully aware of the operating costs for driving a car. They discover that in comparison to other transport modes, the cost of driving a car is quite expensive, while saving money with low usage and not having the fixed costs of ownership (such as depreciation costs, taxes, insurances and unforeseen repair costs).

Moreover, carsharing requires more active steps: the car has to be booked and picked up. Carsharing, therefore, fundamentally transforms driving from a fixed-cost activity into a variable-cost option [11]. As a result, carsharers use a car as little as possible, leading to an increase in walking and cycling and the use of public transport, ridesharing and taxi services [12].

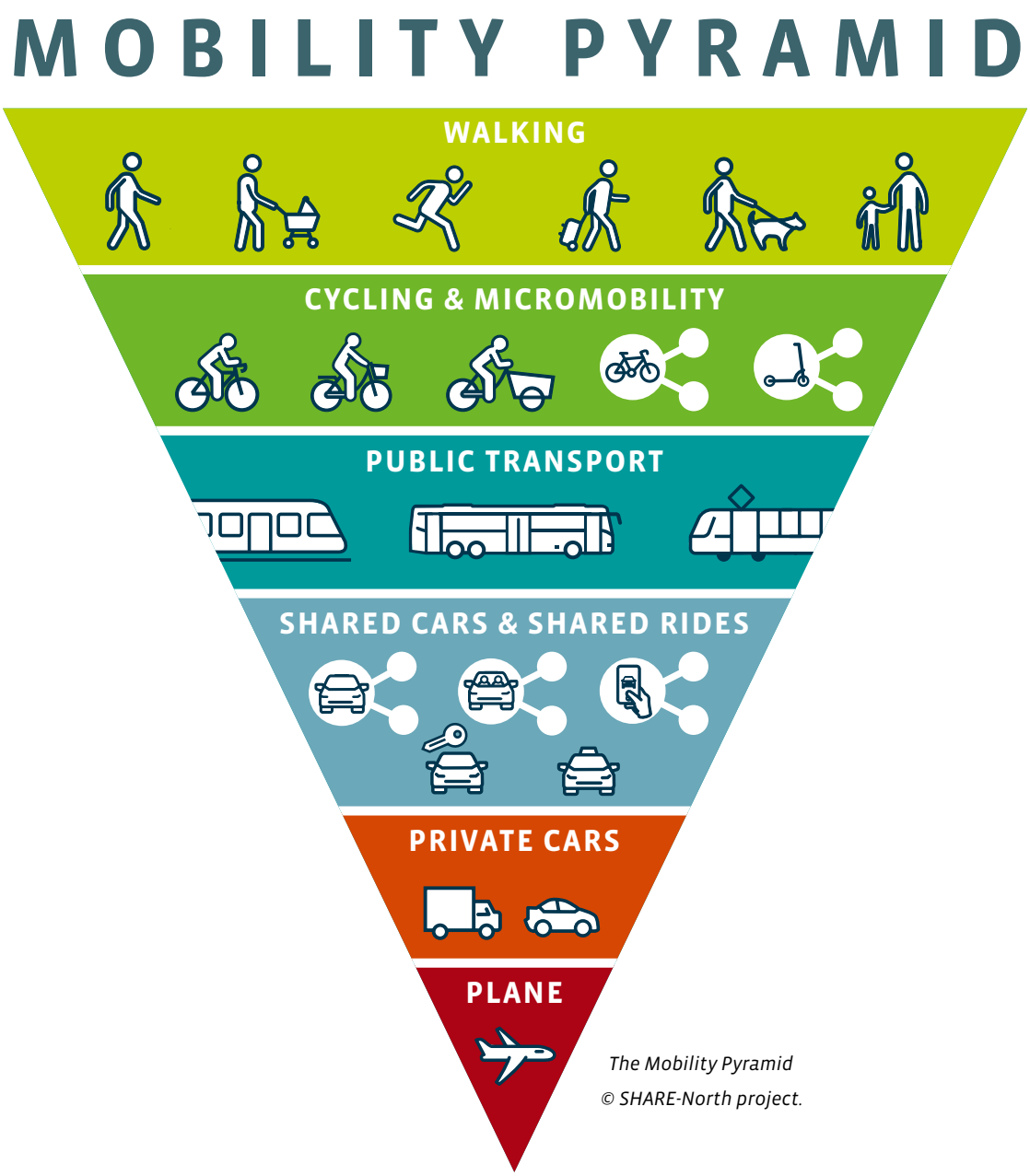
Bikes

For bikesharing, the same rule about ownership applies in reverse: if one does not own a bike, one does not cycle. And if one doesn't cycle, why purchase a bike? Many cities that want to increase cycling are struggling with this dilemma. With bikesharing, it's possible to discover the benefits of cycling without having to invest in a bike of one's own. If convinced that cycling is a nice way to travel, the step to purchase a bike and to cycle even more is only a small one. Bikesharing serves as a 'gateway drug' to cycling for people who may never have tried it before. Bikesharing also broadens the palette of sustainable transport options. For example, if a city has a bikesharing system, it's more attractive to travel to or in this city using public transport because bikesharing can help to solve 'last mile' transport issues. For example, OV-fiets, the bikeshare scheme run by the Dutch national railway company, is used mainly for the last portion of the trip to reach the final destination [13]. Bikesharing supports the integration of cycling into transportation systems and promotes the daily use of cycling [11].

3.4 Shifting towards a Sustainable Transport Mix

Shared mobility users travel with cars less frequently than average car owners. Instead, they walk more, cycle more and use public transport more frequently. This stimulates a large-scale shift away from car-dependent lifestyles. Carsharing is the missing link that can make car-free living as convenient as car ownership. This results in less space consumption of cars that move around or are parked in the streets, and therefore, adds to more liveable places.

Traditional transport planning emphasises car traffic as the main mode of transport, while walking, cycling and public transport are seen as 'travel alternatives'. Integrated, sustainable transport planning turns it around. Walking and cycling may be seen as the main transport modes. In most European cities, most trips are shorter than 5 kilometres and active transport modes are very suitable for this distance. Electric bikes even have a larger range, making cycling a sustainable transport option for longer trips, together with public transportation. Since our current society is strongly car dependent, however, a car may be necessary for some journeys if the other modes don't work.



The Mobility Pyramid
© SHARE-North project.

One of the biggest powers of shared mobility that it fosters the shift from car dependency towards sustainable transport. Therefore, shared mobility can be regarded as an equal pillar to the other sustainable transport modes of walking, cycling and public transport.

It makes sense to put shared mobility on the political agenda which seeks to increase the sustainability of communities. Without any governmental support, however, a sound development of shared mobility is rather unlikely. Therefore, municipalities and regions need to take action and integrate shared mobility into their policies, such as in Sustainable Urban Mobility Plans. A Shared Mobility Action Plan is also a proven strategy to reduce congestion and increase the use of shared sustainable modes. Chapter 9 explores how to develop policies for shared mobility.

3.5 The World of Shared Mobility

The shift from ownership to use is a gradual one and impacts the way we are dealing with vehicles and trips. Everything that can be owned can also be shared in many ways. This implies that there is a rather endless list of shared mobility modes. The best way to understand these modes is to put them in a spectrum from ownership to use. A distinction can be made between cars, bikes, public transport, micromobility and rides. Last but not least, there are a lot of vehicle types that may be shared too, from planes to prams and from campers to mobility scooters.

Many models can be distinguished, for example, roundtrip carsharing and bikesharing versus free-floating services and vehicles owned by a provider versus Peer-to-Peer platforms that connect owners with users.

© Bremen

In many cases, boundaries between these modes are blurring: traditional car and bike rental services are introducing technology to make vehicles accessible 24 hours a day. Shared mobility modes are also being mixed in order to create dedicated services for specific target groups: for example, riding together (ridesharing) in a taxi or an on-demand ride service.

Some shared mobility modes have large societal benefits. For other modes, these benefits are more controversial. All modes, however, contribute to a shift from ownership to access. This influences people's mobility behaviour. Owning cars results in reflexive car usage. People who do not own a car make more conscious decisions when selecting a transport mode for each specific journey. With a shift from car ownership to car use (though carsharing, for example), the decision to use a car for a specific journey becomes rational rather than automatic. There is evidence from all over the world that carsharers start to cycle more and make more use of collective transport more than the average car owner. Sharing systems even reinforce other modes of sharing. A bikesharing system makes people aware of shared mobility and makes them less car dependent. This can benefit the market introduction of carsharing [14]. With the co-existence of different types of carsharing in a city, the same spill-over effects are visible.

A set of shared mobility icons has been developed in the SHARE-North project. These icons help to increase the recognition of shared mobility and its main forms. They may be used in signage, at mobihubs, on websites and in information packages. The icons are free for sharing and have been made available in Noun Project, a free icon gallery (www.thenounproject.com). The icons are on their way to becoming the European standard for shared mobility.

CARSHARING

BIKESHARING

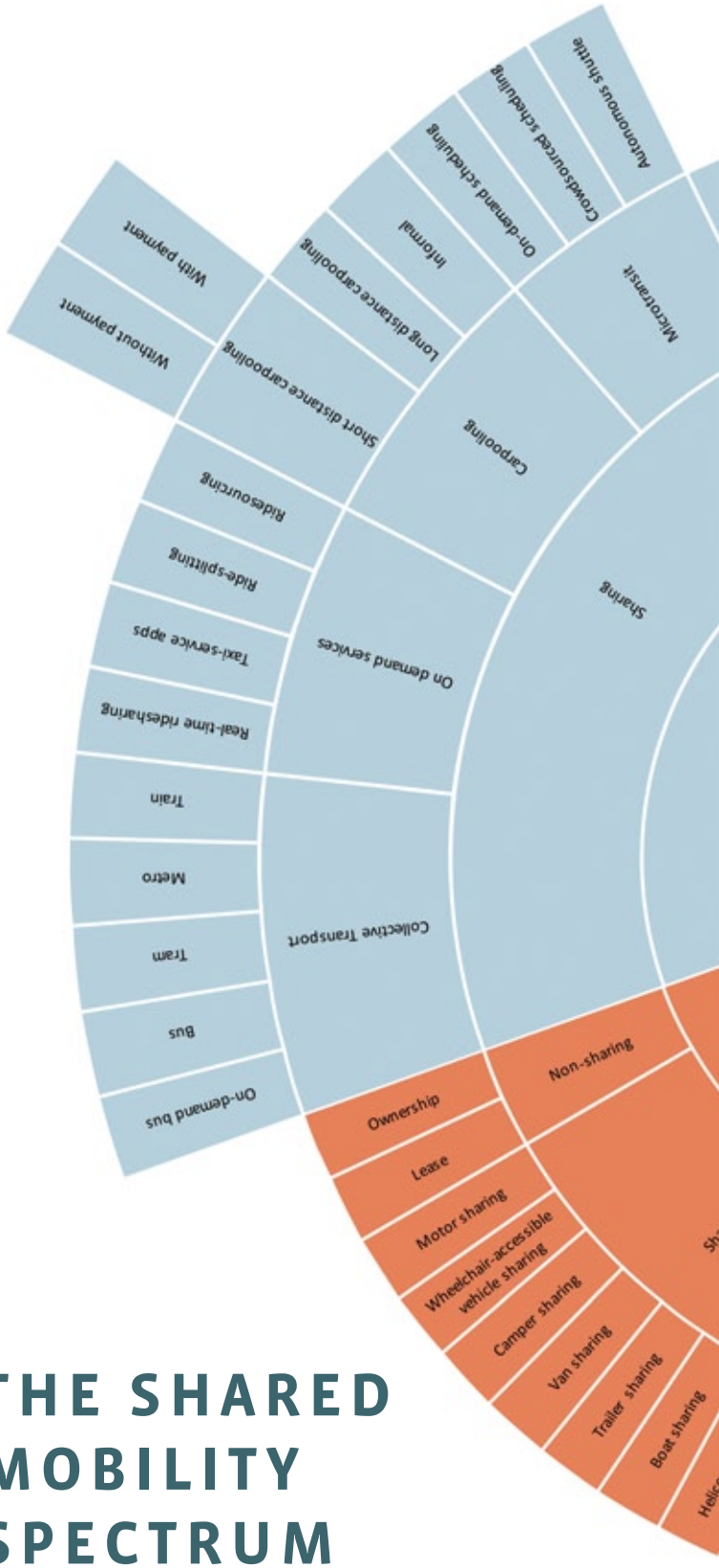
SHARED MICROMOBILITY

RIDESHARING

RIDESOURCING

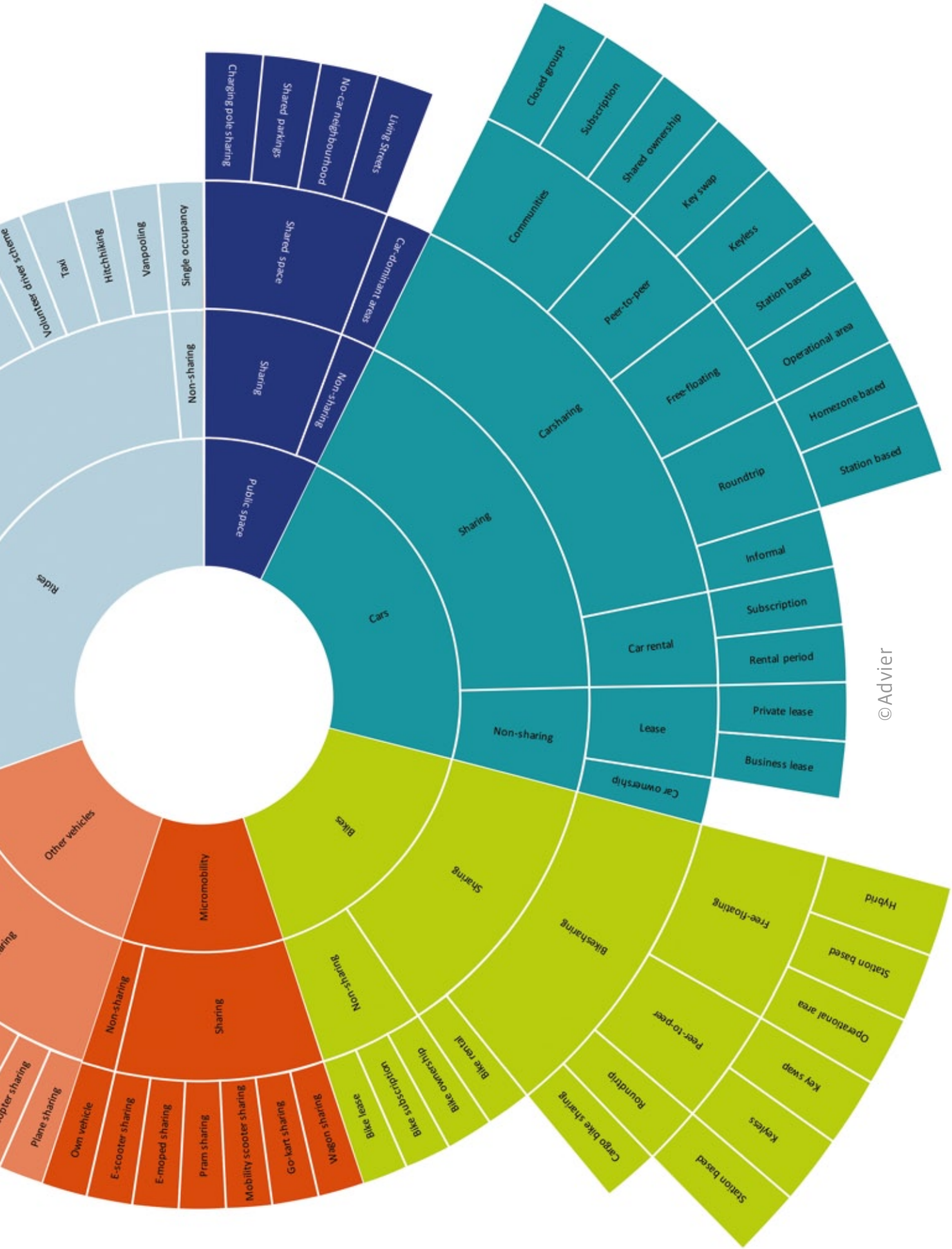
SHARED SPACE

The SHARE-North icon gallery of shared mobility is open source and free to use.



THE SHARED MOBILITY SPECTRUM

From Ownership to Access


Rides
Public space
Shared space
Charging pole sharing
Shared parkings
No-car neighbourhood
Living streets
Non-sharing
Sharing
Non-sharing
Car-dominant areas
Single occupancy
Vanpooling
Hitchhiking
Taxi
Volunteer driver scheme
Cars
Sharing
Carsharing
Communities
Peer-to-peer
Free-floating
Roundtrip
Closed groups
Subscription
Shared ownership
Key swap
Keyless
Station based
Operational area
Homezone based
Station based
Informal
Subscription
Rental period
Private lease
Business lease
Car rental
Lease
Non-sharing
Car ownership
Micromobility
Other vehicles
Bikes
Sharing
Non-sharing
Bikesharing
Free-floating
Peer-to-peer
Station based
Keyless
Hybrid
Operational area
Key swap
Roundtrip
Cargo bike sharing
Bike rental
Bike subscription
Bike ownership
Bike lease
Wagon sharing
Go-kart sharing
Mobility scooter sharing
Pram sharing
E-moped sharing
E-scooter sharing
Own vehicle
Plane sharing
Non-sharing
Sharing

© Advier

4

SHARED MOBILITY MODES

I want to ride my bicycle
I want to ride my bike
I want to ride my bicycle
I want to ride it where I like.

Queen

4. Shared Mobility Modes

4.1 Introduction

As mentioned in chapter 3, the following types of shared mobility can be distinguished from one another:

Sharing vehicles:
- Carsharing;
- Bikesharing;
- Shared micromobility;
- Sharing of other vehicles.

Sharing rides:
- Ridesharing;
- On-demand ride services;
- Public transport.

Sharing space:
- Shared use of street space.

For every shared mobility type, several categories exist. Within the category of shared vehicles, the following distinctions can be made:

Vehicle e.g. Car, bike, micromobility, other	**Type of Trip** e.g. roundtrip or free-floating
	Parking station-based vs. operational area
	Fleet/Business Model e.g. operator-owned, Peer-to-Peer, community-owned

As the market for shared mobility is developing rapidly, new forms pop up continuously and existing modes blur into new ones. The distinctions made in this guide are mainly meant to give an increased understanding about the way in which shared mobility works.

This chapter explores the several modes of shared mobility deeper. In Annex 1, more detailed descriptions may be found about the most relevant types.

4.2 Sharing Space

GOLDEN RULE 3

Shared mobility allows for densification of urban areas, while liberating urban space from parked cars and strengthening value of urban green areas, thus increasing the resilience and biodiversity of cities.

Streets are meant for the transportation of goods and people. They keep cities and regions connected. Streets and squares have also been the places where people meet. This has always been the case. Since the rise of car ownership and use in the Sixties of the past century, however, things changed. Older generations of people often remember that they just could play on the streets as children and that a car passed by on occasion.

Cars consume a lot of space, whether they are in motion or stationery. The significant growth of car use and ownership in the last six decades has put things out of balance, creating many negative side effects. Car dominance results in an unfair use of limited urban space [15] and in an increase of car dependency. The effect is further growing car use.

Neither fair nor smart use of space

More fair and shared use of space

A quick glance at the TomTom Traffic Index [16] gives the impression that car orientated cities have much congestion, while cycling cities are dealing far better. This might sound illogical, since cars are meant for long distances and bikes are just for short distances. The point is that in car-oriented cities, cars are used for short distances. In people-oriented cities, many of these trips are carried out by walking, cycling or public transport. This allows for a more efficient use of space.

Shared mobility modes help to lower car dependency. This results in less car use and lower ownership rates. 90% of road vehicles in cities can be replaced, if collective modes have high capacity and on-demand shared modes are widely available [17]. Shared mobility supports the urgent needs to distribute public space in a more even way. By doing so, more scarce space can be returned to people. These cities will become more liveable, more attractive and even better accessible. Shared mobility creates win-win situations for everyone.

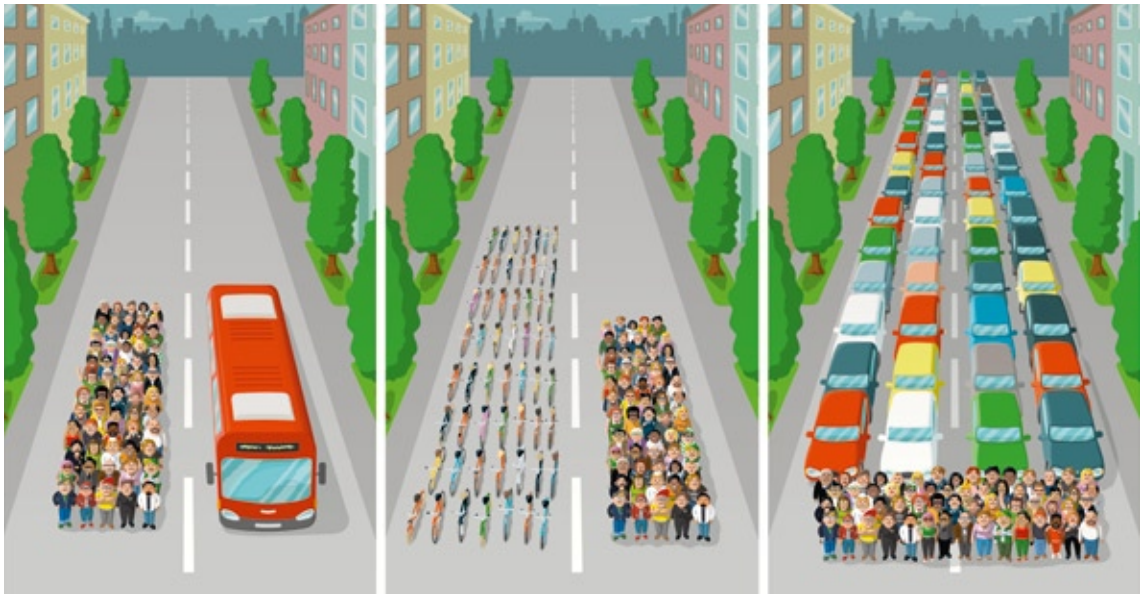
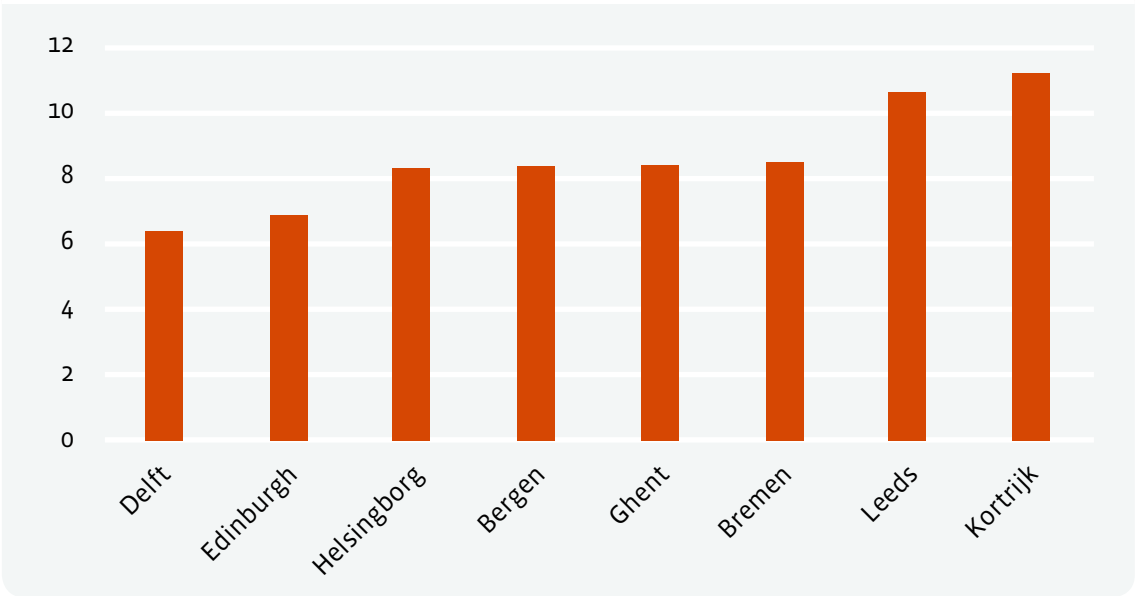


Illustration: Maura Kalusky Inspired by: Cycling promotion foundation

Space consumption of travel modes.

Demand for Parking Space (m²/inhabitant)



Demand for parking space in SHARE-North cities. A parked car uses 20 m² of space.

Due to urbanisation, many European cities will see an increase in population. This will result in more dense use of space with more inhabitants per square kilometre. In dense cities, car dependency is lower, resulting in lower transport emissions and less required space for parking. Green areas around cities may remain open, which absorbs emissions from e.g. transportation. In cities, more space for ecosystem services and urban green space can be created [18].

Streets and parking can take up a third of urban land use. The figure below shows that huge differences exist between European cities. If they are designed for car traffic during peak hours, this has a significant impact for the liveability and the economy.

Urbanisation and densification provide opportunities to decrease car ownership and to protect the urban ecosystem services. But still, car ownership is an issue and parking places require lots of space. It is possible to calculate this space requirement in terms of the number of football stadiums or the length in kilometres if all these cars are placed in one line. Electric cars have many environmental benefits over conventionally fuelled vehicles. However, they take a lot of urban space too. The figure below illustrates the increasing demand for the City of Helsingborg.

It's also possible to predict the future space required, based on population forecasts and to calculate the impact of shared mobility strategies. The City of Helsingborg is predicted to grow by 40,000 inhabitants until 2040 (see case study). An additional parking area of 36 hectares would be required for parking facilities to correlate with the resulting growth of parking demand. When implementing carsharing and reducing the parking area for private cars, 24 hectares can be saved. This equals

Helsingborg, Sweden	2002	2019	Growth
Passenger cars	50,900	64,557	3,640 (+ 13%)
Parking space required, measured in the number of football fields	142	180	38
Length of queue (km)			
- Volvo V70	240	304	64
- Nissan Leaf	228	298	61

Source: Lund University [18].

33 football stadiums of saved urban space. Urban vegetation has an absorption capacity in this case of 18 tonnes of CO_2 per hectare (data for Lund municipality, Sweden). One hectare of spruce forest has, for example an absorption capacity of 30-45 tonnes of particulate matter (PM_{10}) per year. For the City of Helsingborg, the carsharing strategy would result in 185 tonnes of CO_2 absorption of urban green areas due to reduced car-ownership.

Public parks are more than just expensive lawns and gardens to maintain. They are the important grounds for neighbourhoods, as the places where people come together and provide a quality of life of which the value is difficult to quantify. When public space not only incorporates green infrastructure, but also becomes well used and attractive, people can live happier and more sustainable life-styles , and by that, take better care of their environment. As a result, these places gain added value.

10 bicycle parking spots fit in the same area as 1 car parking spot

Living Streets

LOCATION

Ghent, Belgium (260,000 inhabitants)

IMPLEMENTING BODIES

Initially Lab van Troje of Ghent
City of Ghent

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Network of citizens, entrepreneurs and supporting companies

DESCRIPTION

In a Living Street, neighbours test a different way of 'organising' their street, by temporarily removing all of the cars. The starting point is a conversation between neighbours about the future of their street, under the guidance of Trojan Lab and the City of Ghent. They talk about visions and concerns with the residents and then plot them on a map. Next, they try to find solutions for every challenge. If solutions have been found for every challenge, the 'building' of the Living Street can begin. The street decor is tested for two or three months. At the end, it is removed again.

A Living Street creates new meeting places on the street and gives a stronger sense of belonging within the neighbourhood. A lot can be learned about how citizens see the future of their street and their city and about how sustainable mobility can be part of the Living Streets.

CRITICAL SUCCESS FACTORS

1. A designated person is needed to lead the process. The importance of this role varies from street to street.
2. It's necessary to create a good cooperation between citizens, the city and organisations. The process is neither top-down nor bottom-up.
3. The city and organisers must make time to listen to the residents and not judge them for their fears and or crazy/creative ideas.
4. The challenge is to involve all residents, also those who can't identify themselves with the development.
5. Without a solution for car parking during the trial period, there can't be a Living Street.

IMPACT

A Living Street strengthens the contact between neighbours. In 2012, the initiative started with two streets in Ghent. Within 5 years, 51 experiments took place in 30 streets in the city centre and in 19th and 20th century districts. The process results in a rethinking of what streets should be. Residents are asking for permanent street design and new neighbourhoods are inspired by the concept.

TYPE OF LOCATION
Urban

LOCATION SCALE
Medium

INVESTMENT SCALE
Medium

COST-BENEFIT-RATIO
High

TARGET GROUP
Residents

Families with children

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
No

MORE INFORMATION
www.livingstreet.org https://tinyurl.com/SHARE-North-Videos

‘Formerly, I felt like coming home when crossing my doorstep. Since the Living Streets project, I experience this feeling already when I enter the street’.

Resident of Ghent

Ecological Impacts of Carsharing

LOCATION

Helsingborg, Sweden (148,000 inhabitants)

IMPLEMENTING BODY

Lund University Campus Helsingborg, Environmental Strategy Department

SUPPORTING ORGANISATIONS & STAKEHOLDERS

City of Helsingborg

DESCRIPTION

Lund University investigated the public value of carsharing in order to clarify the effects of urbanisation in a typical Swedish city [18]. The study reveals how strategic density planning affects the use of different transport modes, and the shift from private car ownership to shared car use. The study makes clear how sustainable mobility can be used as a useful strategy to reduce the negative effects of future car traffic in Helsingborg.

Just like most European cities, streets in Helsingborg are dominated by vehicles and have lost their primary purpose to attract people and make liveable city centres. Helsingborg's population is increasing. Within 20 years, the city will have 40,000 additional inhabitants.

Implementing shared mobility in especially new housing development areas, makes perfect sense for future spatial urban land use and for reducing negative environmental and climate impacts. This frees up valuable space for urban natural ecosystem services like vegetation as a filter for water and air pollution, recreational and tourism values, local carbon storage and carbon sinks, biodiversity and evaporation of rainwater.

Parking standard	Required surface for parking	Number of football stadiums	CO_2 absorption of urban green
1,0	36 ha	50	
0,3 + carsharing	12 ha	17	
Difference = urban green space maintained	**24 ha**	**33**	**475 tonnes**

Source: Lund University [18].
Assumptions: 1 parking space = 20 m²; 1 football stadium field = 7140 m2; 1 shared car replaces 5 private cars in a Swedish context and occupies 1 parking space; car ownership of Helsingborg = 354 cars/1000 inhabitants.

The table below indicates both uptake and loss of organic carbon in urban land use in Helsingborg.

Accessible urban land infrastructure	Carbon sequestration uptake/ton (+)	Carbon sequestration loss/ton (-)
Green urban areas	34,600	0
Streets and roads	0	34,300
Parking	0	2,280

Uptake and loss of organic carbon in urban land use, Helsingborg, 2019. Source: Lund University [18].

Mobility management strategies can reduce the need for private vehicles. Working with local parking standards has shown to have a positive effect on future demand for parking space. The lower parking standard, the higher the need for carsharing, especially in new housing areas.

CRITICAL SUCCESS FACTORS

The study reveals that:

1. Ambitious environmental policies must be taken into consideration early in the planning process to reduce negative impact and loss of land and to affect the transportation system.
2. Sustainable mobility should include a local strategy for making space efficient landuse in cities. Sustainable mobility can be used as a catalyst for making places attractive and accessible. This requires an interdisciplinary approach to sustainable mobility.
3. A policy shift is required in which the car is seen as a service instead of a product.
4. It's necessary to develop valuation methods for urban ecosystem services that help to understand the relevance of shared mobility in new housing development areas.

IMPACT

The following measures support the development of carsharing and sustainable mobility:

- Introduce a legal definition for carsharing, with which municipalities can make parking spaces accessible for carsharing vehicles.
- Reduce VAT for carsharing operations to give carsharing a competitive advantage.
- Integrate sustainable mobility services in urban planning, and especially in new housing developments. This saves space that can be used for meeting places or parks and serve as urban ecosystem services.
- Adapt flexible parking regulations that favour carsharing in new housing areas.
- Continue prioritising renewable fuels in sustainable mobility to stimulate local production (for example, biogas).
- Develop test-labs and local good examples to test, learn, adapt and inspire.

TYPE OF LOCATION
Urban

COST-BENEFIT-RATIO
High

LOCATION SCALE
Medium

TARGET GROUP
Policy makers

INVESTMENT SCALE
Medium

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
No

4.3 Carsharing

»» Chapter 5.2 -> Impacts of Carsharing
Annex 1 -> Factsheets on Shared Mobility Typology

Definition

Carsharing is a system that allows people to use locally available cars at any time and for any duration, reducing reliance on private ownership [19].

Different Models

There are different models of carsharing, each with its own characteristics:
- Roundtrip
- Free-floating
- Peer-to-Peer
- Community-based carsharing.

The various models differ in ways and purpose of use, business model, parking methods, vehicle and membership access, target groups and, of course, impact.

Variations on these four models can include:
- Company carsharing;
- Wheelchair accessible vehicle sharing;
- Van sharing;
- Motor sharing.

Also Called

- Car clubs (UK);
- Roundtrip carsharing: station-based or traditional carsharing;
- Free-floating: one-way carsharing;
- Peer-to-Peer: carsharing platform;
- Shared ownership: cost-based carsharing or fractional ownership.

Main Characteristics

Carsharing may look like a modest solution with a limited impact on urban mobility, however, the opposite is true: carsharing leads to more walking and cycling as well as higher usage of public transport, taxis and rental cars. Carsharing facilitates a shift from ownership to usage, resulting in a wide range of positive societal impacts (see also Chapter 5.2).

Carsharing, therefore, is a game changer. Carsharing works best in cities with dense, mixed use neighbourhoods and good availability of public transport and cycling, and lots of nearby facilities. In the countryside, carsharing may be a solution for the lack of public transport. Different formulas are required for successful carsharing services in rural areas than in cities, since the market is smaller. The focus should be on community-based solutions [14], with residents helping their neighbours. For companies, carsharing contributes to a more efficient use of fleets and helps to reduce carbon emissions.

Roundtrip Carsharing

Roundtrip carsharing has the longest history of all models of carsharing. With roundtrip carsharing, the car has to be picked up and returned to the same parking place, similar to the use of privately owned vehicles. Vehicles

may be reserved via an app, a website or by a phone call in advance and used for an hour to weeks at a time. Users generally pay per hour of usage and mileage. An alternative to this station-based model is the homezone-based model, where cars do not have fixed parking places. Instead, they can be picked up and parked in a dedicated zone within a residential area. This type of model is most often operated by small and medium sized companies. Roundtrip carsharing has a strong impact on reducing car ownership, but sometimes lacks appeal with non-carsharing users because the cars have to be returned to the same place of pickup. Examples include Cambio (BE and DE), Greenwheels (NL) and SunFleet (SE).

Free-floating Carsharing

Free-floating carsharing is a newer sub-type of carsharing that came alive in the early 2010s. Shared cars can be returned at a different place to where it is picked up. The return place has to be within an operational area that comprises of (parts of) cities or a group of cities. Vehicles may be reserved on short notice via an App. Users generally pay per minute of usage. This type of service is most often operated by large multinational corporations such as ShareNow (formerly Car2Go and DriveNow). Other examples include Book 'n' Drive (DE) and Communauto (FR). With station-based variants, the vehicle has to be delivered to a dedicated parking place but not necessarily the same pick-up location. Free-floating carsharing has a strong appeal to non-users because of the perceived flexibility of dropping a car anywhere, however, drop-off sites are limited to specific operation areas and vehicles cannot be booked well in advance, which limits reliability of access to a vehicle. The impacts on sustainable travel behaviour are generally low.

Combined Carsharing

In a combined model, providers offer different forms of carsharing via the same platform. For example, Book 'n' Drive (DE) and Cambio Bremen (DE) offer a combination of roundtrip and free-floating carsharing and Mywheels (NL) offers roundtrip carsharing with both stationbased and homezone-based variants. This model combines the reliability of station-based, roundtrip carsharing and the flexibility of non-station-based forms, adding to the appeal of carsharing as an alternative to private car ownership. The impact of combined carsharing systems on car ownership and mobility behaviour is similar to that of roundtrip station-based carsharing.

Peer-to-Peer Carsharing

In this model, private persons share their cars when they do not need them themselves. This is a clear distinction from roundtrip and free-floating models, where the carsharing providers own the vehicles. With Peer-to-Peer carsharing, the providers may own the booking platform but not the vehicles. Impacts per user are similar to roundtrip carsharing, however, the number of users is far smaller than with roundtrip carsharing. An example is Snappcar (NL, DE, DK and SE).

Peer-to-Peer carsharing resembles car rental. Rentals are often per day and a manual key swap between the vehicle owner and renter is common practice. More recently, it has become possible to build technology into the vehicles with which a key swap is made unnecessary.

With this access technology, vehicles become accessible 24 hours a day. This model, like the more commercial varieties above, also ensures that available vehicles are used more efficiently.

Community-Based Carsharing

In this model of carsharing, closed user groups like neighbours or apartment owners share a car that they own together. They share all the costs together. This is the cheapest form of carsharing. All the impacts of community-based carsharing are not yet clear, however there is a strong impact on social and neighbourhood inclusion, since participants become members of a social group. Examples include CozyCar (BE) and OnzeAuto (NL).

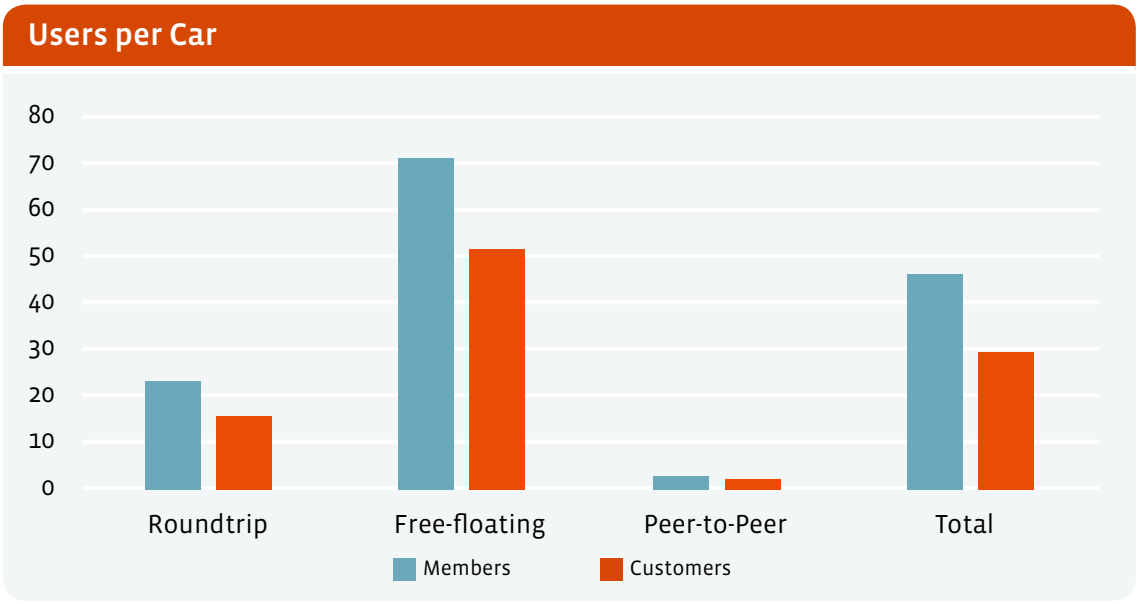
	Roundtrip	Free-floating	Combined Carsharing	Peer-to-Peer	Community-based
Main Trip Types/User behaviour	Planned	Spontaneous	Planned and Spontaneous	Planned	Planned
Average Trip Length and Duration [20]	Medium distance; 58 km (6.5 hours)	Short distance; max. 10km (0.5 hours)	Short and medium distances; 28 km (3.3 hours)	Medium/ long distance	Medium/ long distance; (>24 hours)
Typical Trip Purpose [21]	Non-commuting trips, Shopping, Leisure, Business trips	Non-commuting trips, Mostly Leisure	Non-commuting trips, Shopping, Leisure	Longdistance leisure trips, Shopping	All kind of trips
Entrance barrier for users	Medium (monthly membership fees, often personal registration required)	Low (no monthly membership fees, online registration only)	Medium (monthly membership fees, often personal registration required)	Low (no monthly membership fees, online registration only)	High (establishing a private community is required)
Business model	Revenue from users	Revenue from users	Revenue from users	Revenue from users	Cooperative

Main characteristics of carsharing models

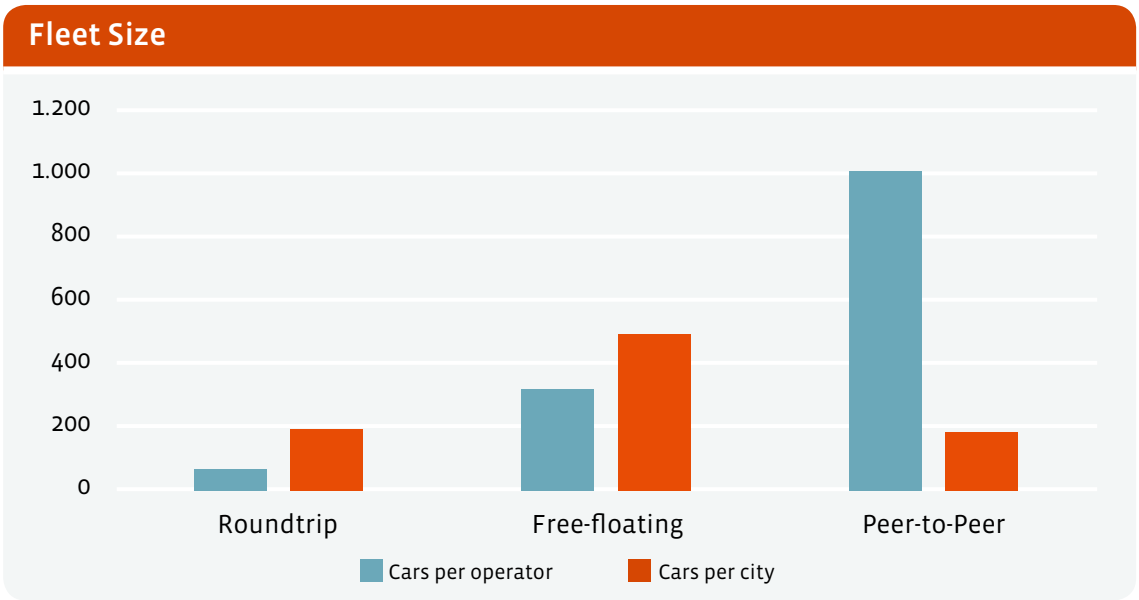
Details

Huge differences

The differences between the various types of carsharing are huge: from the booking and business models, the fleet sizes, operating areas, number of users per vehicle and the impacts each model has on private car ownership. We will explore these differences in further detail in the following segments of this chapter, but here are just a few impressions:

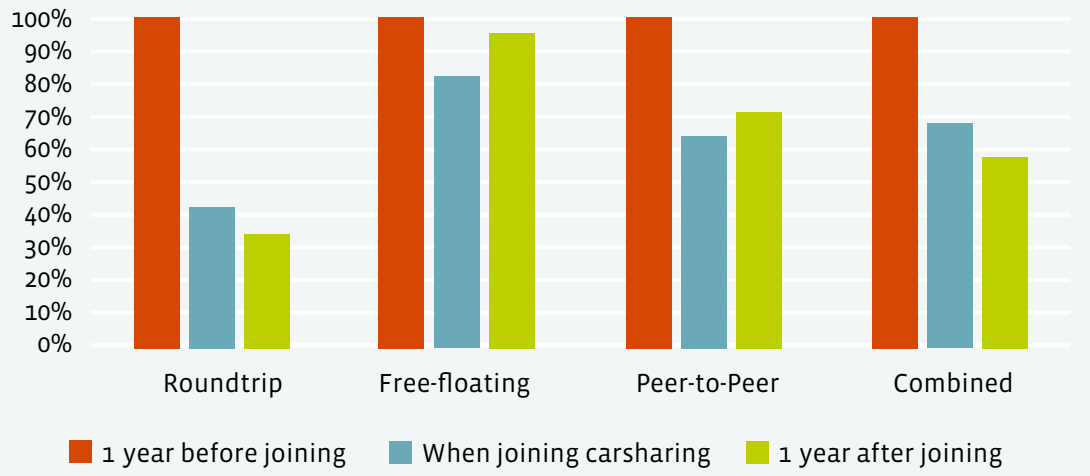


Number of users per car and customers per car (customers are members that have used the service more than once) of different carsharing models [22].



Fleet size of different carsharing models in Europe [22].

Car Ownership in 3 German Cities – Before, During and After Joining Carsharing



Development of car ownership in three German cities with four types of carsharing models. The percentage is the number of cars in a household [23].

Market Distribution of Carsharing Models	
Roundtrip station-based	46.5%
Roundtrip homezone-based	8.6%
Free-floating operational area	23.8%
Free-floating station-based	7.0%
Peer-to-Peer / communities	14.1%

Types of carsharing offered by operators in Europe [22].

When several types of carsharing are available in a certain area, one third of the carsharing users is a member of more than one carsharing service. For example, they use both roundtrip and free-floating carsharing [23].

Relation To Other Shared Modes

Carsharing differs from other concepts [12]. From what and how?:

- Car rental: in most cases the car has to be fetched from the rental company during opening hours. Cars can only be rented by the day.
- Carpooling/Ridesharing: with carpooling people travel together in the same vehicle. With carsharing, different people use the same car at different times.
- Taxis: in a shared car, the user is the driver. Ridesharing could be seen as a taxi service without a paid driver.
- Ridesourcing: services like Uber use apps for booking taxi trips rather than only vehicles.
- Car lease: a leased car is not shared on a daily basis and typically only has one driver.

Enterprise Car Club

LOCATION

Edinburgh, United Kingdom (520,000 inhabitants)

IMPLEMENTING BODIES

Enterprise Car Club

DESCRIPTION

Enterprise Car Club is a roundtrip carsharing provider in the UK. Enterprise Car Club provides short-term, self-service rental of cars and vans to members for time periods from half an hour to several days, 24 hours per day, 7 days a week. Vehicles are located close to members' homes and workplaces, so there is no need to pick up the car at a central rental location.

Employers and private individuals join Enterprise Car Club as a cost-effective and environmentally friendly alternative to car ownership, without the hassle of owning a car. The carsharing service supports the shift from car trips to active modes of transport.

All the vehicles in Edinburgh Enterprise Car Club fleet are less than 3 years old. The fleet is constantly being updated with the newest and cleanest technologies. All the vehicles have the latest Euro 5 or 6 compliant engines, delivering the lowest particulate and NO_x emissions. In addition, fully electric vehicles were introduced in 2016.

On average Enterprise Car Club vehicles emit 32% less CO_2 than those they replace. The Edinburgh fleet emissions are already under 100 g CO_2 /km.

CRITICAL SUCCESS FACTORS

The support of the local authority has been critical for the success of Enterprise Car Club. This support comprises the five 'Ps':

1. Parking: providing prominent at on-street parking locations.
2. Participation: supporting the car club by using the service for its business travel.
3. Publicity: promoting the car club to the general public.
4. Policing: ensuring that the parking bays are kept clear of illegally parked vehicles.
5. Planning: obliging developers to incorporate carsharing spaces into new developments and provide funding for free memberships.

Additionally, a mixed fleet with large, medium, small vehicles and vans supports the success. These vehicles can be petrol-fuelled, hybrid and electric vehicles. They can be manual or automatic transmission. This variety of vehicles ensures that the user can always choose the appropriate vehicle for the purpose of their trip and adds to making the service more attractive than individual car ownership.

IMPACT

Within 18 years of operation of the Enterprise Car Club in Edinburgh, the following results have been booked as of February 2020 [24]:

- 206 vehicles;
- Over 10,000 members;
- Over 68,000 separate trips;
- Over 4.5 million kilometres;
- Every carsharing vehicle replaces 12 private cars;
- 2,472 cars taken off the road.

TYPE OF LOCATION

Urban

Trip generators (companies, business parks, universities and events)

LOCATION SCALE

Large

INVESTMENT SCALE

Medium

COST-BENEFIT-RATIO

High

TARGET GROUP

Residents

Employees/Commuters

Policy makers

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?

Not applicable

MORE INFORMATION

https://www.edinburgh.gov.uk/carclub

Advier Company Car

LOCATION

Delft, The Netherlands (103,000 inhabitants)

IMPLEMENTING BODIES

Advier Mobiliseert

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

MyWheels
WeGo

DESCRIPTION

As a consultancy company in the field of accessibility, sustainability is one of the core values of Advier. This has been operationalised in a simple and pragmatic way. Firstly, all employees have a public transport pass, in which the shared bike system OV-fiets is also included. However, clients may sometimes be located on sites that have poor access to public transportation. For certain tasks a car is needed, e.g. for the transportation of campaign materials, so therefore, Advier leases a few vehicles. However, to optimise the use of the company cars:

- All personal lease cars and company cars are shared.
- The cars are used for business trips and may be used for private trips as well.
- Advier also allowed the surrounding community to use its vehicles by sharing them via a Peer-to-Peer booking platform. Employees and residents from surrounding student housing buildings use the shared cars frequently.

In the first phase, all employees could book a car via Advier's internal chat box. If more than one employee needed the car, they had to negotiate. After a year, there was a test with opening one of the cars by the use of an app. This also includes the booking system for that car. All vehicles are second-hand cars. Therefore, the costs for the company are low. In addition, it's not a big issue if the cars get damaged slightly, e.g. through awkward parking manoeuvres. This strategy allowed for piloting new soft- and hardware in older vehicles. One major challenge was that insurance companies were limiting options for sharing cars and the initial Peer-to-Peer booking platform cancelled its service. However, a new solution was found that makes use of software from a different provider.

CRITICAL SUCCESS FACTORS

1. Advier works as a cooperation. As such, sharing is in the heart of Advier's philosophy of working. Employees themselves are responsible for the results of the company and for the operation of practical work. Everything is shared, from assets like the company car, but also the profit that is made. The result is that everyone feels responsible for taking care of the assets and no one wants to misuse the car.
2. For small firms, no high-tech systems are required in order to make sharing cars possible. Sharing the vehicles with the surrounding community helped Advier cut the costs of their own vehicles and make use of the idle capacity.

IMPACT

By using shared mobility, Advier staff gets used to the daily practicalities of sharing instead of owning vehicles. This means that the staff are better equipped for recommending shared mobility solutions to others because they have personal experience.
Advier was also able to cover all of its fixed costs such as insurance and maintenance for its company cars through the external rentals.

TYPE OF LOCATION
Trip generators (companies, business parks, universities and events)

LOCATION SCALE
Small

INVESTMENT SCALE
Low

COST-BENEFIT-RATIO
High

TARGET GROUP
Employees/Commuters

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
No

MORE INFORMATION
www.advier.nl

'Sharing becomes nice when the cars are nice!'

Elke Kroft, shared mobility manager at Advier Mobiliseert

Introducing Carsharing in Small and Medium-Sized Municipalities

LOCATION

Belgium

IMPLEMENTING BODIES

Local governments

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Autodelen.net
Carsharing providers

DESCRIPTION

In 2020, around 14% of Belgian cities had a 24/7 commercial carsharing scheme from a variety of providers. However, many more municipalities are now willing to start offering a carsharing scheme. To begin, a municipality gauges the interest of citizens in carsharing. If there is enough interest, a carsharing group can be formed bottom-up. A city can also tender for a carsharing provider with a support model where the municipality covers the financially risky period. This period takes 2 to 4 years on average. When the service becomes financially viable, the economic support through the municipality can be stopped or the service can be expanded. When more shared cars are available, the system becomes more attractive for users. The introduction of carsharing in rural municipalities is subsidised most of the time.

Different solutions are used in Belgium to introduce carsharing in small and medium-sized municipalities:

1. Sharing the municipal fleet: one or more cars owned by the municipality are shared with inhabitants outside office hours. This can be done by physical key swap or built-in technology in the car. Sometimes this offer is complemented with 24/7 cars owned by a carsharing company. Examples include the towns of Peer, Rijkevorsel, Brasschaat and Schoten.
2. Dismantling the fleet of a local government and using a carsharing fleet. The city becomes a member of carsharing for their own business trips and save the cost and maintenance of an own fleet in return. The cars can be blocked during office hours and made available for citizens outside of office hours. The vehicles are owned and insured by the carsharing organisation. Examples of municipalities doing this include: Lummen, Bonheiden and the Solva Region in East Flanders (21 municipalities).
3. No usage by the municipality: for some local governments it is not possible to use shared cars themselves or share one or more of their own cars due to the nature of their operations and vehicle use. However, via tendering, a subsidised 24/7 carsharing scheme can be launched or expanded for its citizens nonetheless. Examples of cities subsidising carsharing for its citizens are Aalst and Mechelen.
4. Bottom-up: quite often citizens organise community-based carsharing. Costs are shared among the members, like in municipalities of Herentals and Halle. Bottom-up initiatives are also possible via commercial organisations or cooperatives, like in Beersel and Arendonk.

CRITICAL SUCCESS FACTORS

1. Communication and promotion have a high return on investment. This results in a higher use and by this a lower financial commitment for the municipality.
2. When municipalities only share their fleets in the evenings and the weekends, there is a risk that it is not interesting for other businesses to join the service. 24-hour availability of vehicles is more interesting for a broader range of user groups. This may be challenging for some municipalities with regards to financing and attractiveness for its own operations.

IMPACT

Small and medium-sized municipalities may not attract traditional carsharing providers to their region because of the challenges that the market poses there. The various forms in municipalities mentioned above used to introduce carsharing in their area help to make carsharing available for citizens and provide an alternative to the ownership of a private car; in the case of small and medium-sized cities, this may be an alternative to the second and third family car rather than the first. However, this also has a positive environmental, social and economic impact, when citizens are able to forego owning two or three vehicles per household.

TYPE OF LOCATION
Urban

Rural

LOCATION SCALE
Medium

INVESTMENT SCALE
Medium

COST-BENEFIT-RATIO
High

TARGET GROUP
Residents

Employees/Commuters

Other: People in need of car

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
Yes

MORE INFORMATION
https://tinyurl.com/SHARE-North-Videos

‘Many people in the countryside need a car. By promoting electric carsharing in our city, we believe that people can replace their second car by a shared car’

Steven Matheï, Major of Peer

Carsharing Amongst Neighbours

LOCATION

Herent, Belgium (21,000 inhabitants)

IMPLEMENTING BODIES

Residents of the Town of Herent

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Autodelen.net

DESCRIPTION

Early 2014, Tim and his family decided to share their second car with some neighbours. Three years later, they are in a carsharing group with 47 neighbours, sharing 6 cars.

Tim and his family with three kids found it reasonable to own two cars. However, the second car wasn't used that much and the costs were high. Soon after he decided to share it, he found some interested neighbours, mainly young families with the same mobility issues. The group received support from Autodelen.net for the organisation of a local carsharing group.

In a private carsharing group, users share all the costs. They pay the real cost price per kilometre. Cost-based carsharing is the cheapest way of car use. With one car and five users, Tim asked 0.35€ per km. Currently, the kilometre price varies between 0.29€ and 0.40€.

Every year the group assesses the agreements. Good and fair rules are needed for the location of cars, the exchange of keys, booking, insurance, etc. In addition to traditional vehicles, as a next step, the group might purchase a wheelchair accessible vehicle in order to attract new user groups.

In addition to just using the shared cars, the group organises carshare events at the annual fair in Herent in order to raise awareness about the benefits of sharing vehicles like this in the community.

CRITICAL SUCCESS FACTORS

1. Neighbours have to be open to the concept;
2. Word-of-mouth is the most powerful communication form and influencing factor for attracting new users to the scheme;
3. Individual dedication by the initial members is required to get the group organised.
4. Support of the city/town in promotion is very important.

© Autodelen.net

'For young families, not having to pay all the expenses of owning a car is a welcome gift.Carsharing makes using a car way cheaper, since one also shares all costs'

Tim from Herent

IMPACT

- 17 out 47 users from 37 families have gotten rid of their privately owned car.
- In this group of community-based carsharers, car ownership is 0.5 cars per household (compared to the rest of the region of Flanders: 1.3 cars per household). This frees up space in the area for other uses and makes it more enjoyable for living. It also frees the families of the financial burden of maintaining one or more cars.

TYPE OF LOCATION
Rural

INVESTMENT SCALE
Low

COST-BENEFIT-RATIO
High

TARGET GROUP
Residents

Families with children

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
No

MORE INFORMATION
https://www.herent.transitie.be/Autodelen (in Dutch)

AVIRA Wheelchair-Friendly Carsharing

LOCATION

Edegem, Belgium (25,000 inhabitants)

IMPLEMENTING BODIES

Care centre Pegode

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Autodelen.net

DESCRIPTION

Pegode is a care centre for persons with a disability. In 2013, they started to share an adapted, wheelchair-friendly vehicle with the neighbourhood. A wheelchair-friendly car is often far underused, even more so than the average private car, and mostly only a few people use a single adapted car. To optimise the level of use, these cars can be shared with other disabled persons and the neighbours. Group members are encouraged to become volunteer drivers for disabled persons. In this way, disabled persons become better integrated in their neighbourhood and the cars can be used by different people.

Board members, staff and residents at Pegode are highly involved in the AVIRA project, as it was called. Every six months they have a meeting to discuss practical matters, like pricing and cleaning the vehicle. The group members have a shared responsibility for the project.

Pegode played an important role in the communication when this concept was launched. A clear, permanent, repeating and local communication strategy was developed. The care centre played an important role in the communication during the AVIRA-project. A press conference was held at the start of the project and in the area a lot of media attention was organised. In addition to this, informational meetings were held and at the local market, the public was informed.

CRITICAL SUCCESS FACTORS

1. A strong support from management and the local community is essential to launch and make the project a success.
2. Consistent communication is essential.
3. Staff of care homes must be able to invest time in setting up and maintaining the service.
4. A democratic decision-making process in the scheme generated a high level of support among the users.

'We could use a car from Pegode so my father (who is in a wheelchair) could attend two family parties. Also, the journey to the doctor was more comfortable for us all with an adapted car'

User

IMPACT

- In 2017, the AVIRA project shared two adapted cars with 36 people, of which 18 live in the care centre. The other users live in the neighbourhood.
- Since there were quite some disabled persons living in the area, participation was high from the beginning. Staff, volunteers and family discovered the benefits of carsharing,
- Sharing encourages social inclusion of persons with reduced mobility by putting them in closer contact with other people in their neighbourhood.
- The concept can also be used to make carsharing available in areas currently without a commercial carsharing provider.

TYPE OF LOCATION
Urban

Rural

LOCATION SCALE
Small

INVESTMENT SCALE
Low

COST-BENEFIT-RATIO
High

TARGET GROUP
Residents

Other: handicapped persons

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
Not applicable

MORE INFORMATION
https://tinyurl.com/SHARE-North-Videos

4.4 Bikesharing

»» Chapter 5.3 -> Impacts of Bikesharing
Annex 1 -> Factsheets on Shared Mobility Typology

Definition

A bikesharing system is a service in which bicycles are made available for shared use to individuals on a short-term basis.

Different Models

There are different models of bikesharing, each with its own characteristics:
- Roundtrip bikesharing
- Free-floating bikesharing
- Peer-to-Peer bikesharing

Variations on these three models can include:
- E-bike sharing;
- Cargo bike sharing;
- Pool bikes for workplaces;
- Bike libraries for e-bike testing.

Also Called

- Bikesharing: public bicycle scheme, cycle hire (UK);
- Roundtrip bikesharing: last mile bikesharing, back-to-one;
- Free-floating station-based: docking stations, tech-on-dock, back-to-many;
- Free-floating operational area: dockless, tech-on-bike.

Main Characteristics

Roundtrip Bikesharing

With roundtrip bikesharing, the bicycle has to be picked up from and returned to the same location. Bikes can be accessed via an app, membership card or unlocked at a docking station (if available) via an access terminal. Users either pay for a short amount of time (e.g. per half hour), a daily rate or have a monthly or annual membership. Roundtrip bikesharing offers last-mile solutions from train stations and mobihubs and makes public transport more attractive. However, bikes often have to be returned to the pickup location. Examples include OV-fiets (NL) and Bluebike (BE).

Free-floating Bikesharing

In a free-floating bikesharing system, the shared bikes can be returned at a different place to where it is picked up. The return place has to be within an operational area that usually comprises of several parts of a city. These systems need low investments, but bike chaos forms a risk. Examples include Jump (i.e. UK) and Mobit (BE).

Similar to free-floating is the one-way bikesharing system where a network of docking stations or geo-fenced zones is provided, where users can pick up and drop a bike. However, they do not have to return them to the exact same location where they picked them up. With the docking stations, the technology is sometimes in the docking stations and not in the bikes. These systems are based on strong cooperation with local authorities, but require high upfront investments. Examples include Vélib (FR) and Bycyclen (DK).

Peer-to-Peer Bikesharing

In this model, private bicycle owners and bike shops can rent their bikes when they don't need them themselves. There are models with and without a key swap system; with the latter, bikes are provided with smart bike locks with GPS. This is the cheapest form of bikesharing, however bikes may not be available on a 24-hour base. Examples include Spinlister (worldwide) and Cycle.Land (several countries).

Relation To Other Shared Modes

Bikesharing differs from other concepts. From what and how?

- Bike rental: bikesharing is meant for regular short-term usage based on memberships and often is self-serviced, whereas bike rental is typically based on occasional transactions for longer-term usage.
- Bike leasing: with bikesharing the user doesn't have full-time access to the bike. With bike leasing, users play a regular monthly rate to have exclusive access to the bicycle (just like car leasing). The lease includes regular service guarantees. One example of bike leasing is the Dutch company Swapfiets.

	Roundtrip	Free-floating	Peer-to-Peer
Main Trip Types/ User behaviour	Planned and Spontaneous	Planned and Spontaneous	Planned
Trip length	Short/medium distance	Short distance; "last mile"	Medium/long distance
Typical Trip Purpose	All kinds of trips; commuting, leisure	All kinds of trips; "last mile"	All kinds of trips; not "last mile"
Entrance barrier for users	Low (simple pricing models – annual subscription or pay-as-you-go; online registration)	Low (simple pricing models – annual subscription or pay-as-you-go; online registration)	Medium (registration may be based on personal relationships)
Business model	Revenue from users or public transport companies	Revenue from users, public authorities or advertising	Revenue from users

Main characteristics of bikesharing models

Bergen City Bike

LOCATION

Bergen, Norway (280,000 inhabitants)

IMPLEMENTING BODIES

City of Bergen

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Miljøløftet (a collaboration between the state, the county, the municipality and the inhabitants of the City of Bergen)

DESCRIPTION

In 2018, the bikesharing system Bergen City Bike opened. The system is a station-based system using fixed docking stations. The number of bikes and stations is being expanded gradually with growing demand. In 2020, there were 1,000 bikes, 2,000 docks and 100 stations. The system operates the entire year and the bikes are equipped with studded tires in the winter to deal with the snowy seasonal environment.

The shared bikes are a quick and easy way to get from A to B. Most people use it as a supplement to their own private bike, as an alternative to public transportation or just as a fun way to experience the city. It is possible to rent bicycles from the docking stations throughout the city from 6:00 AM until midnight, but bikes can be returned at any time of day. All access is controlled through the mobile phone.

An annual pass costs 40 € and gives access to shared bikes all over Bergen. Day passes cost 5€ and provide an unlimited amount of 45-minute trips for 24 hours. The subscription starts with the first trip.

The system was selected via a Europe-wide tender procedure and is run by the private company 'Bergen City Bicycle / Urban Infrastructure Partners'. They operate also the bikesharing systems of Oslo and Trondheim.

CRITICAL SUCCESS FACTORS

1. A dense network of docks and a large number of bikes were provided. The system is attractive for users because of the high bicycle availability.
2. The best marketing is the high visibility in the cityscape and the high usage, all year round.
3. The bike stations are without electricity and require no digging in the ground. The docks are removable and not fixed to the ground. Therefore, the system is quick to roll out and to scale up.
4. The system is funded by public funds and not advertising as in other Norwegian cities. This makes placement and roll-out easier.


© Lars Ove Kvalbein

'Shared bikes are complementary to other modes of transportation around the city. Fast, fun and environmentally-friendly'

Einar Grieg, chief bicycle coordinator, City of Bergen

IMPACT

The key data from 2019 shows a significantly higher use and acceptance of the bikesharing system than initially anticipated by the city:

- There was a 451% growth in users (+36,000 users from 2018);
- An 802% increase in trips (+ 936,500 rides from 2018);
- 8.2% of the users drove their cars less than before using bikesharing.

TYPE OF LOCATION
Urban

LOCATION SCALE
Large

INVESTMENT SCALE
Medium

COST-BENEFIT-RATIO
High

TARGET GROUP
Residents

Students

Employees/Commuters

Policy makers

Other: those who need a bike for the last mile

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
No

MORE INFORMATION
https://tinyurl.com/SHARE-North-Videos

Dockless, privately led Bikeshare

LOCATION

London, United Kingdom (8.9 million inhabitants)

IMPLEMENTING BODIES

Private operators

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

London Boroughs
Transport for London (TfL)
CoMoUK

DESCRIPTION

London has had a station-based bikeshare scheme since 2010. In 2017, privately financed dockless schemes began to show interest in operating in London. The first operator didn't ask for permission. Their bikes were removed and the operator left the UK market. This move set the tone for subsequent partnership working. Since then, operators have sought permission and worked to higher operating standards. Standards were reinforced by the use of the CoMoUK accreditation scheme. This scheme checks the key criteria of each operator each year, working alongside Transport for London's Dockless Bike Share Code of conduct. Since 2020, the shift to a hub-based operating model on the street is being considered using a bylaw to ensure all bikes are parked inside designated bays.

By the beginning of 2020, there were four dockless operators working across the boroughs alongside the TfL docked scheme. In some cases, bikes have been added to areas which TfL doesn't serve.

CRITICAL SUCCESS FACTORS

1. A strong partnership between TfL, the London Boroughs, CoMoUK and bikeshare operators forms the base for success.
2. For each area, the number of operators and bikes has been limited.
3. Working with dockless bikesharing means getting access to private investor support.

'Dockless bikeshare has helped to increase cycling rates in the capital. Bikes are now available in places not served by the City's docked scheme. Coverage has expanded and convenience has improved'

Antonia Roberts, Deputy Chief Executive, CoMoUK

IMPACT

Rather than competing with the TfL docked scheme, the provision of additional services raised the profile of bikeshare and actually increased use of the docked scheme by between 50,000 and 100,000 rides each month in 2018. In 2019, overall ridership was increased by approximately 200,000 a month, split across all services as coverage expanded. Users were given extra choice of bikes including e-bikes and better density of coverage. The introduction of extra services has helped to raise the profile of bikesharing, attract new people to cycling including a higher proportion of women [25].

TYPE OF LOCATION
Urban

LOCATION SCALE
Large

INVESTMENT SCALE
Medium

COST-BENEFIT-RATIO
High

TARGET GROUP
Residents

Employees/Commuters

Policy makers

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
No

Blue-bike: Shared Bike System at Belgian Train Stations

LOCATION

Belgium

IMPLEMENTING BODIES

Blue-Mobility

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

De Lijn (Flemish public transport provider)
FietsenWerk

DESCRIPTION

Taking the train is comfortable, but sometimes the final destination lies just out of walking range. Since 2011, Blue-bike provides roundtrip bikesharing in a wide range of Belgian train stations. The bikes are used for commuting trips and business trips. Users who live somewhere else can use a bike when travelling to other places without having to take their own. Employees may use travel time for working and enjoy health benefits from cycling when on the last-mile part of their journey. This makes travelling by train and bike a perfect combination.

After signing up online or at one of the bicycle repair points, users can rent a bike for 24 hours a day. After placing the card on the card reader, the user collects the bike key. After use, they return it to the same station. Costs are a maximum of 3.15€ per rental.

The municipalities of Deinze and Ninove discovered that Blue-bike trips reduce the number of cars in the streets. Therefore, they subsidised the service to make it free for the users. Today, in more than 40 municipalities, a Blue-bike user only pays a maximum of 1.15€ per day instead of 3.15€ because the Flemish government has recognised the strategic benefits of the system and promotes this with a third-party payment scheme. For every euro that the municipality contributes per Blue-bike trip, the Flemish government make an additional contribution. User costs flow back to the local bicycle point, so Blue-bike is reinforcing their financial position.

CRITICAL SUCCESS FACTORS

1. The third-party payment schemes for municipalities and companies support the user growth and acceptance as well as the economic viability of Blue-bike.
2. The growing network of Blue-bike stations increases the added-value for users.
3. Rather than creating entirely new systems in each city, by expanding and connecting the existing system throughout Belgium, it was more beneficial for addressing new users and improving attractiveness of the service because of the added regional flexibility.
4. Visibility of the bikes is very important: with their bright blue colour, Blue-bikes makes cycling more visible in the streets. Seeing people ride their bike, encourages others to ride too.

© Lars Ove Kvalbein

IMPACT

The key data from 2019 demonstrates the success of the 65 Blue-bike stations in Belgium:

- There was a 20% growth in users (+20,000 users from 2018);
- An 24% increase in trips (+277,000 rides from 2018);
- And 28% of the users drove their cars less than before using bikesharing.

TYPE OF LOCATION
Urban

LOCATION SCALE
Large

INVESTMENT SCALE
Medium

COST-BENEFIT-RATIO
High

TARGET GROUP
Students

Employees/Commuters

Other: those who need a bike for the last mile

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
Yes

MORE INFORMATION
https://tinyurl.com/SHARE-North-Videos

'Blue-bike is freedom. No more messing around with bikes on the train, easy to use, quicker to arrive'

Blue-bike user

E-cargo Bikesharing Scheme

LOCATION

Bergen, Norway (280,000 inhabitants)

IMPLEMENTING BODIES

City of Bergen, Agency for Urban Environment

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

City of Bergen, Agency for Sports

DESCRIPTION

The City of Bergen offers an e-cargo bike renting scheme, allowing its citizens to test this mode of transport before deciding if it is worth a private investment.

The city offers three types of cargo bikes:
- Three longtails; two of them have different add-ons, being adjustable monkey bars and two child bike seats.
- One two-wheeler with a box in front for two children and smaller items.
- One three-wheeler with a box in front for two children and smaller items.

Citizens can rent the bikes for free. E-bikes are highly popular in the hilly city, while cargo bikes are making a slow but certain appearance in the city. However, the latter are an expensive investment, and there are many different types to try. For many people, the e-cargo bike has potential to replace a car. The city of Bergen aims to lower the barrier for people who are curious in investing in a bike, by letting them try one for free.

The Agency for Urban Environment owns the bikes and collaborates with the Agency for Sports to administrate half of the bikes in two of their equipment libraries. The public can find pictures and descriptions of the bikes and available slots on the municipality's website. Once decided on a model, one can make a reservation and pick it up at one of three locations depending on the model. The bikes that are administrated by the Agency for Urban Environment are being rented out for three weeks at a time, while the bike rented out through the equipment libraries are rented out for one week (having to follow the library's guidelines).

CRITICAL SUCCESS FACTORS

1. The scheme targets behavioural change. It is important that those who rent can try the bikes for different purposes over a period of time. Feedback shows that three weeks is 66 a suitable length. For future rental seasons, the Agency for Urban Environment will push for three weeks renting slots among their collaborative partners.
2. A functioning agreement with a bicycle workshop is important. If something happens to the bikes, the repair should be a quick and easy process.

IMPACT

- The expansion to a third pick-up point in the city in the second season of the project made the bikes more accessible to people living in the outskirts of city.
- The scheme drew attention to cargo bikes, through media, visibility in the city and word-of-mouth. Parents who took their children to kindergarten with the bikes get much attention. This has contributed to raising awareness about cargo bikes as an alternative to car use.

TYPE OF LOCATION
Urban

COST-BENEFIT-RATIO
Low

LOCATION SCALE
Small

TARGET GROUP
Families with children

INVESTMENT SCALE
Low

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
No

MORE INFORMATION
https://www.bergen.kommune.no/hvaskjer/tema/gronn-strategi/na-kan-du-lane-el-lastesykkel-med-deg-hjem (in Norwegian)

eCycle Scheme for Schools

LOCATION

Edinburgh, United Kingdom (520,000 inhabitants)

IMPLEMENTING BODIES

Edinburgh Further and Higher Education Transport Group (EFHETG)

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

SEStran (South East of Scotland Regional Transport Partnership)
Sustrans Scotland (National Cycling Charity)

DESCRIPTION

EFHETG works on transportation for further and higher education in and around Edinburgh. They represent a community of over 130,000 people. EFHETG has developed an innovative eCycle Scheme. The eCycles are managed locally at each institution and are available on a shared basis, with training provided when required. Users are supplied with locks, pannier bags, a high-visibility vest and a helmet. 28 e-bikes have been procured for this purpose. SEStran and Sustrans provide strategic support to the Group and has provided grants.

The main goal is to promote the e-bike as a new travel option that may replace single occupancy car journeys or public transport for personal and business trips. The scheme acts as a testbed to provide more information on cycling within the further and higher education sector. Travel surveys and discussions within the sector made clear that many people are willing to try cycling or cycle more. They only need a bit of support.

CRITICAL SUCCESS FACTORS

1. Working in partnerships saves money and resources in implementing the scheme.
2. Identifying a lead partner and considering joint procurement was crucial.
3. Ensuring that the specifications of the e-cycles will be fit for the purpose and the necessary infrastructure was in place needed to be managed before launching the scheme.
4. Resources were still needed to deliver the scheme, even after it was procured.

IMPACT

The e-bike scheme increased the accessibility of college and university sites and allowed users to travel between these sites without using a car, therefore, reducing transport-related emissions.

'Cycling should be an easy and attractive option for a wide range of people. Electric bikes will have a much bigger role in the coming years. Our universities and colleges are leading the way with this project'

Alison Johnstone, Member of Scottish Parliament for the Green Party

TYPE OF LOCATION
Trip generators (companies, business parks, universities and events)

LOCATION SCALE
Small

INVESTMENT SCALE
Low

COST-BENEFIT-RATIO
High

TARGET GROUP
Students

Employees/Commuters

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
Yes

Bikesharing at Evolis Business Park

LOCATION

Kortrijk, Belgium (77,000 inhabitants)

IMPLEMENTING BODIES

Evolis Business Park Association

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Leiedal, intermunicipal association for regional development

DESCRIPTION

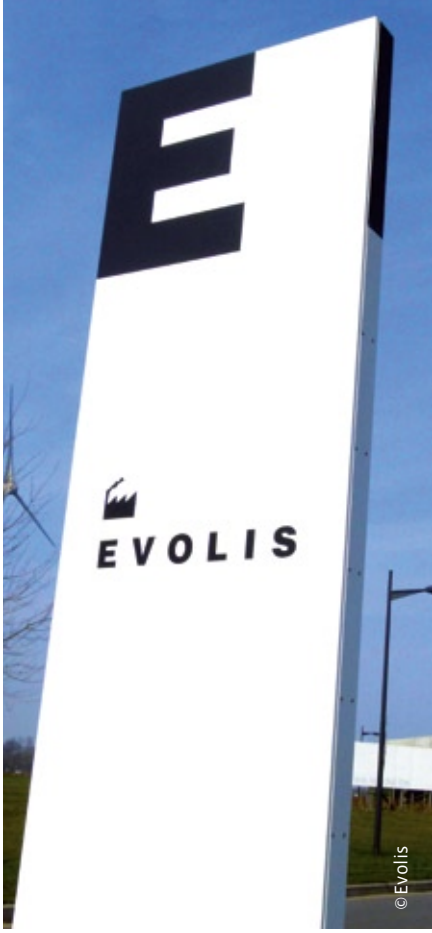
Evolis Business park is a sustainable business park that has been in operation since 2008. It hosts innovative businesses with an international profile that create high added-value. The companies pay a lot of attention to the design of buildings and public space. They are implementing measures to decrease their ecological footprint and cooperate through the joint business park management.

However, the business park is located along the E17 motorway and is mainly accessed by car. Of the more than 450 employees working at the site, 95% of them arrive by car and only 4% cycle to work. An assessment of the cycling potential showed that more than 50% of employees lived within cycling distance of the business park. Therefore, the business park association sees a significant potential to increase the share of sustainable mobility of employees and visitors. Evolis is located along the regional bicycle highway network, with a car-free connection to the Kortrijk railway station. A bikesharing scheme for the business park was prepared in 2017. A national call for projects was used to initiate the process.

Measures include the development of a business model, a joint selection of the bikesharing system, purchase of the bikes, maintenance of the bikes and communication. Besides, cycling facilities are improved, like facilities for e-bikes, bicycle parking, lockers and showers for cyclists.

CRITICAL SUCCESS FACTORS

1. The involvement of the businesses in all steps to set up the bikesharing scheme was crucial for creating momentum.
2. The collective approach unburdens a lot of businesses, creates ownership and also creates peer pressure to participate.
3. A subsidy scheme works as a lever for the project.
4. The site already has a good accessibility for bicycles.
5. Some participating companies have not yet moved in to Evolis business park. This means new mobility patterns can be shaped for employees and the shared bike system can be considered.



TYPE OF LOCATION
urban
Trip generators (companies, business parks, universities and events)

LOCATION SCALE
Small

INVESTMENT SCALE
Low

COST-BENEFIT-RATIO
Medium

TARGET GROUP
Employees/Commuters

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
No

MORE INFORMATION
http://www.evolisbusinesspark.be/nl/

'With my new e-bike, no sweat when arriving at work'

employee at Evolis Business Park

Op Wielekes: A Library for Children's Bikes

LOCATION

Ghent, Belgium
Aalst, Deinze, Hasselt, Lier, Lochristi, Merelbeke, Schoten-Wijnegem and Zoersel-Malle-Schilde

IMPLEMENTING BODIES

Netwerk Bewust Verbruiken

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Local cities and citizen initiatives

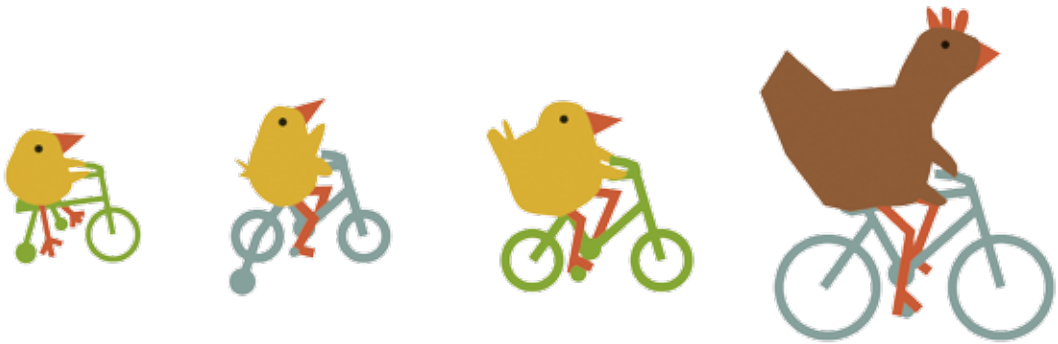
DESCRIPTION

Op Wielekes is a 'children's bike library'. Members get access to a stock of children's bikes in all sizes and colours. They can borrow bicycles as much as they want or need. Op Wielekes offers access to quality bikes suited for children of different ages and height.. This enables lower income families to let their children cycle. Maintenance is offered in a bike repair shop.

Op Wielekes has five depots in Ghent and is already available in 10 other municipalities. In 2015, Op Wielekes received prizes from the Delhaize Group Fund, the King Boudewijn foundation and newspaper 'De Standaard'.

CRITICAL SUCCESS FACTORS

1. A good location that is easy to find, is critical for the success and accessibility to all groups. Op Wielekes helps municipalities to select a spot for the bicycle depot, to organise the service and to attract visitors. They also connect partners and volunteers.
2. Cooperation with existing local organisations is even more successful. It also helps to find volunteers.
3. Working together with social economy to repair and maintain the bikes is beneficial and economical.
4. Promotion at schools helps to involve disadvantaged target groups and increase visibility and knowledge of the project.
5. Workshops and activities were a nice way to celebrate the openings. E.g. 'pimp your bike' or making creative things with bicycle tires are part of engagement activities here.



IMPACT

- Since the start in 2014, there are already 20 locations in Flanders. The service in Ledeberg (a neighbourhood in Ghent) has over 160 active participants.
- Op Wielekes helps to reduce the ecological footprint by making children's bikes reusable.

TYPE OF LOCATION
Urban

Rural

LOCATION SCALE
Small

INVESTMENT SCALE
Low

COST-BENEFIT-RATIO
High

TARGET GROUP
Families with children

Other: low income families

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
Yes

MORE INFORMATION
https://tinyurl.com/SHARE-North-Videos

OP WIELEKES

4.5 Shared Micromobility

»» Chapter 5.4 -> Impacts of Micromobility
Annex 1 -> Factsheets on Shared Mobility Typology

Definition

Micromobility is about small vehicles that are human or electric powered, such as e-scooters, mopeds, e-skateboards and segways. Micromobility forms a solution for last-mile mobility challenges, mainly in urban areas. (Electric) Bikesharing is often seen as a part of micromobility. In this guide, bikesharing is excluded from this definition for practical reasons. When spoken about micromobility, quite often shared e-scooters are meant.

Different Models

There are different models of shared micromobility, each with its own characteristics. Most common are:
- e-scootersharing;
- e-mopedsharing.

Other variations can include:
- Pramsharing;
- Wagonsharing;
- Go-kartsharing;
- Mobility-scootersharing (for people with mobility impairments).

Main Characteristics

E-scootersharing
Users of e-scooters, also known as 'kick scooters', stand on a scooter with small wheels and can 'twist and go' or throttle via the electric motor [26]. The vehicle speed varies between 15 and 25 km/h and batteries last for about 20 kilometres. Most e-scootersharing systems are operated by commercial providers in a free-floating or station-based system. The free-floating or dockless systems require regular charging and are collected by the provider by so-called 'juicers' using a larger vehicle so that the scooters can be charged overnight and redeployed overnight [27]. Users gain access to the scooter using a smart phone app and pricing models typically charge by the minute. E-scootersharing has a cool appeal, but may create problems like the use of sidewalks for riding and dropping the e-scooters. Examples of international operating companies are Lime, Bird, Voi and Tier.

E-mopedsharing
Electric mopeds fall between e-bikes and motorcycles. The user is seated and the vehicle is powered by the electric engine. The engine and operational speeds are low enough that many states do not require additional licenses or endorsements beyond those required for an automobile. The sharing technology is app-driven and resembles free-floating carsharing [26]. The e-mopeds are typically recharged by the provider simply by replacing the battery pack with fully charged batteries. Shared e-mopeds are used for trips within urbanized areas and replace car trips and trips with conventionally-fuelled mopeds. In some cases, a helmet is required. Examples include Felyx (NL and BE) and eCooltra (SP and IT).

Relation To Other Shared Modes

Bikesharing is often seen as a part of shared micromobility.

	E-scootersharing	E-mopedsharing
Main Trip Types/ User behaviour	Spontaneous	Spontaneous
Average Trip Length/Duration	Short distance (1-3 km; walking distance)	Short/medium distance (3-5 km; cycling distance)
Typical Trip Purpose	Mainly leisure trips; "last-mile"	All kinds of trips; not regular commuting
Entrance barrier for users	Low (simple pricing models – annual subscription or pay-as-you-go; online registration)	Low (no monthly membership fees, online registration only, no license required)
Business model	Revenue from users	Revenue from users

Main characteristics of shared micromobility models

Regulations for E-scootersharing

LOCATION

Bremen, Germany (570,000+ inhabitants)

IMPLEMENTING BODIES

The Ministry of Climate Protection, the Environment, Mobility, Urban and Housing Development of the City of Bremen
Bremen's Regulatory Authority

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

E-scooter providers

DESCRIPTION

As soon as the German Federal Government passed the Ordinance for Small Electric Vehicles in the Summer of 2019, providers of shared electric scooters began knocking on Bremen's door. The amount of public space, particularly in pedestrian and cycling areas is very limited in Bremen and the city wanted to avoid additional clutter and obstacles through e-scooters. An intervention on a federal policy level that prevented the allowance of e-scooters to be used on pedestrian walkways. On a local level, Bremen decided to regulate the e-scooter market by requiring providers to apply for special use permits. The city decided to limit the total number of shared e-scooters in the city to 2,000 vehicles, limiting the number per provider to 500 e-scooters and a use permit for 1 year, which must be reapplied for on an annual base.

Other regulations include:

- That a maximum of four e-scooters can be placed at one location.
- Definition of no-go and no-parking areas for e-scooters, such as pedestrian zones, parks and places of historical significance.
- Parked vehicles may not create an obstacle for pedestrians.
- The provider is required to have staff in Bremen to deal with problems or respond to user issues and complaints quickly.

The adherence to these rules is monitored by Bremen's Regulatory Authority. Operational areas are defined by the shared e-scooter operator and are based on whether these zones can provide a business case for the operator.

> *'It is our top priority that the E-scooters aren't lying around all over the place in Bremen'*
>
> **Jens Tittmann**, Speaker to the Press, Bremen Ministry for Climate Protection, the Environment, Mobility, Urban and Housing Development

CRITICAL SUCCESS FACTORS

1. The interest of these new mobility service providers to operate in the city required a quick response from the City's transport and safety ministries and fast decisionmaking about the role that this micro-mobility service should play in the city.
2. Risks and benefits had to be weighed quickly and stakeholders across two ministries had to draft a policy in less than three months. These policies had to ensure that the City's goals of promoting active and sustainable travel modes (walking, cycling, public transport and car sharing) were not jeopardised by these new services, while allowing room for a new mobility service.

IMPACT

- The decision to regulate the services and require shared e-scooter providers to apply and pay for a special use permit was unpopular with the press, some politicians and the providers at first.
- When chaotic situations in other cities where reported, with sidewalks and bike lanes being blocked and vehicles being dumped in waterways, Bremen's approach was quickly praised by the local media and accepted by the providers.
- Though the service is free-floating, mobihubs seem to be a point where the vehicles are parked regularly.

TYPE OF LOCATION
Urban

LOCATION SCALE
Medium

INVESTMENT SCALE
Low

COST-BENEFIT-RATIO
High

TARGET GROUP
Policy makers
Shared mobility operators and other stakeholders

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
No

MORE INFORMATION
http://h2020-gecko.eu/news-events/news/detail/gecko-webinar-managing-new-mobility-how-to-regulate-e-scooters-1

E-mopedsharing Felyx

LOCATION

Amsterdam, Rotterdam, The Hague and Groningen (The Netherlands)
Brussels (Belgium)

IMPLEMENTING BODIES

Felyx

DESCRIPTION

In 2016, Felyx started its operation with 100 e-mopeds in Amsterdam (350 in 2020). Soon it expanded to Rotterdam (800 e-mopeds) in 2020, The Hague (500 vehicles), Brussels (200 vehicles) and Groningen (100 e-mopeds). In comparison to e-scooters, e-mopeds are more solid vehicles that are suited for longer trips. The vehicles are being used for different purposes: for trips to work, to the train or metro station and for recreation.

Felyx offers a mix of e-mopeds that require a helmet and are allowed to drive up to 45 km/h, and e-mopeds without a helmet, that drive slower and use the cycle path. The company uses electric cars to replace the moped batteries. Redistribution of vehicles is rarely necessary. Since e-mopeds are more solid vehicles than e-scooters, their lifetime is far longer and usage is far safer. Felyx hardly suffers any problems from vandalism.

CRITICAL SUCCESS FACTORS

1. Operators have to response to complaints correctly and promptly. By giving feedback to users, bad behaviour is reduced quickly.
2. Cities should negotiate with operators and make clear arrangement on operation. Unfamiliarity with the concept may result in a fear for problematic situations and nuisance. It's helpful to discuss these fears with operators.
3. In order to develop trust, pilot projects with small fleets are helpful.
4. E-mopeds have the potential to serve large urban areas, replacing regional trips by car and conventionally-fuelled mopeds.

> ***'More than e-scooters, e-mopeds fill in the gap between car trips and cycle trips'.***
>
> **Daan Wijnants,** head of public affairs, Felyx

© Feylx

IMPACT

- The average trip length is 4-6 kilometres. Market research by Felyx indicates that 40% of the trips with e-mopeds are replacing car trips within a service area that is far larger than the city centre.
- 75% of the users claim that because of the service, they don't want to purchase their own moped anymore. If they had purchased one, this would have been a conventionally-fuelled moped. This leads to a shift to more environmentally sustainable moped use.

TYPE OF LOCATION
Urban

LOCATION SCALE
Large

INVESTMENT SCALE
Medium

COST-BENEFIT-RATIO
Low

TARGET GROUP
Residents

Students

Employees/Commuters

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
Not applicable

MORE INFORMATION
www.felyx.com https://tinyurl.com/SHARE-North-Videos

4.6 Ridesharing

»» Chapter 5.5 -> Impacts of Ridesharing
Annex 1 -> Factsheets on Shared Mobility Typology

Definition

Ridesharing is defined as the sharing of car rides by persons to reduce costs and environmental impact.

It also refers to a car service that allows a person to arrange a ride in another person's privately-owned vehicle via a smartphone app. This service requires a platform or scheme, where the origin and destination points of both drivers and passengers are collected and matched. Ridesharing may happen in different ways [28]:

- Passengers meet at the driver's house;
- The driver picks up all passengers at home (involves a detour) or another requested location;
- Everyone meets at a designated place from where they travel jointly.

Different Models

There are different models of ridesharing, each with its own characteristics:
- Short distance ridesharing (formal);
- Long distance ridesharing (formal);
- Informal ridesharing.

Other variations of ridesharing include (but are not limited to)
- Vanpooling;
- Eventpooling;
- Schoolpooling.

Also Called

- Carpooling, liftsharing, carsharing (UK);
- Short distance ridesharing: corporate ridesharing;
- Long distance ridesharing: monetised ridesharing.

Main Characteristics

Informal versus formal ridesharing
Informal ridesharing refers to individuals who find a rideshare partner through their own networks. Formalised ridesharing refers to individuals using a rideshare platform to find rideshare partners and may include payment systems.

Some employers use an informal ridesharing register, often map based, with participants self-matching. This is simple and low-cost to set up and administer, but it may lack credibility.

Short distance versus long distance
Carpool apps for short journeys are mainly used to bring commuters together for journeys that take place on a regular basis. These formalised schemes are sometimes subsidised or paid for by employers. Examples include Carpool.be (BE), Liftshare (UK) and Weepil (FR). There are usually no financial gains for the driver but financial contributions by the passengers reduce the travel costs of the car owner.

Long distance ridesharing services are usually used for bringing together individuals travelling between cities for one-time/irregular trips. Drivers like to share rides in these schemes as they have a guarantee that the costs will be shared. Revenue comes from mainly long distances, which often are occasional. Operators providing long-distance rideshare matching services get a fee for every transaction cost between driver and passenger. Examples include BlaBlaCar.

Implementing a formalised ridesharing scheme is challenging, since it often is a new area of work. Providers offer software, support companies and run campaigns to increase membership. Companies often demand customised advice and promotional activities. The costs of running the vehicle have to be divided equally between sharers, and no financial gain should be made by the driver. Any gain could invalidate the car insurance. Therefore, rideshare users ask for payment guidelines.
Liftshare (UK) calculates a suggested price per passenger, based on the length of the trip, vehicle size, number of sharers and travel allowances. Drivers can adjust the price within a capped window, to ensure passenger costs offset real costs. The price set by the driver is fixed and non-negotiable, making it simple and transparent. Payments for sharing should be within a range of 5-15 pence per mile (4-12 eurocents per kilometre).

Ridesharing calculators help users to figure out how much they can save by sharing the journey.

	Short distance ridesharing	Long distance ridesharing
Main Trip Types / User behaviour	Planned	Planned
Average Trip Length	Short / medium distance	Long distance
Typical Trip Purpose	Commuting	Leisure / business trips
Entrance barrier for users	High (no monthly membership fees required, but based on trust of drivers and fellow passengers; based on personal relationships)	Medium (registration and use may be easy, no monthly membership fees required and easy payment, based on trust of drivers and fellow passengers)
Business model	Revenue from users	Revenue from users

Main characteristics of ridesharing models

Details

Vanpooling

Vanpooling is transport in groups of around seven persons commuting together in one van, whereas carpooling involves groups smaller than seven traveling together in one car. Vanpooling is often organised by an employer or a group of employers for employees in remote industrial zones, in areas with a 24-hour economy where public transport is not available at the times when employees go to or come from work, or for transporting workers to varying work sites.

Eventpool and Schoolpool

While carpooling may have a strong emphasis on commuter traffic, carpooling may be used for other trip purposes as well, like combined trips to events or parents that combine trips with children to school.

Relation To Other Shared Modes

Ridesharing should not be confused with ridesourcing services such as taxis, Uber and Lyft; they also connect passengers with drivers but have different business and payment models. With ridesourcing, the passenger books a car with a driver to bring him/her to his/her destination. With ridesharing, driver and passenger(s) drive/travel to the same destination.

Ridesharing Service Carpool

LOCATION
Belgium

IMPLEMENTING BODIES
Mpact

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)
Regional governments (Flanders, Brussels, Wallonia)

DESCRIPTION
Carpool by Mpact is a ridesharing service for everyone who wishes to find a rideshare partner to commute with. It helps to lower the costs for the private car, offers a mobility solution and reduces traffic on the roads. With the multimodal registration tool 'MobiCalendar', it is easy for commuters to track carpooled kilometres and days for claiming fiscal advantages.

Municipalities can promote the use of the service and can sign up for free. Mpact creates a dedicated page at their portal with an interactive map of the region that displays drivers and passengers. This makes it easy for citizens to make carpool matches. Municipalities can also connect business parks and individual companies with service provider Mpact to roll-out a tailor-made rideshare scheme.

Users have to register, fill out their profile and enter the requested trips, including working hours and desired carpool days. The information is then added to the database. The system tries to match supply and demand. Potential partners can get in touch by telephone or by the internal messaging system.

CRITICAL SUCCESS FACTORS
1. Carpooling needs regular attention in order to be considered as a fully viable alternative to commuting with one's own private car.
2. The message needs to be delivered on multiple occasions before it fully sinks in. The carpooling policy requires a long-term approach.
3. Communication has to be delivered in the right way. Therefore, it is relevant to find the right target group to address. Examples include special events/challenges like a carpool week, a mobility lottery and personal travel advice for commuters..

IMPACT
In 2019, the 175,000 subscribers of Mpact's Carpool platform took 62,600 shared trips, carpooled ca. 1.1 million kilometres and reduced CO_2 emissions by 212,400 tonnes.

'If everyone would start carpooling just one day a week, there would be no traffic jams anymore'

Angelo Meuleman, project director shared and connected mobility, Mpact

TYPE OF LOCATION
Urban

Rural

Trip generators (companies, business parks, universities and events)

LOCATION SCALE
Medium

INVESTMENT SCALE
Low

COST-BENEFIT-RATIO
High

TARGET GROUP
Residents

Students

Employees/Commuters

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
Yes

MORE INFORMATION
https://tinyurl.com/SHARE-North-Videos

Vanpooling Keeps the Rotterdam Harbour Area Accessible

LOCATION

Port of Rotterdam, The Netherlands (582,000 inhabitants)

IMPLEMENTING BODIES

Vipre (private company)

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Metropolitan Region of Rotterdam – The Hague

DESCRIPTION

Since 1996, Vipre provides 9 person vanpools for employers and their employees, including a full-service package for matching, routes, itineraries, maintenance of the vehicles and communication to both employers and employees. One of the employees drives each vehicle, so no bus driver is needed. All vehicles are used as public transport, based on various licenses issued by the Metropolitan Region of Rotterdam-The Hague.

Most of the vehicles are used in the Rotterdam Port area, where public transport is hardly or not available. The average occupancy of all vanpools is 8 persons, so each vanpool replaces 8 individual vehicles and the same amount of parking spaces. By labelling the vanpools as public transport, specific tax advantages are applicable such as no road taxations for the vehicles. Vipre operates 78 public transit vanpools.

CRITICAL SUCCESS FACTORS

1. By offering employers a complete service package for their employees, they are taken work out of their hands, so they can focus on their core business.
2. Vanpooling works well if public transport is lacking.
3. It is a great solution for companies that work in shifts, where all staff has to be at the workplace at the same moment.
4. Success factors for companies include savings on travel costs and less required parking space.

IMPACT

Vanpools limit the use of individual cars. Consequently, less parking space is required at the workplace, while improving accessibility and air quality. In the vanpools provided, ca. 13,200 km are travelled per person per year. Every vanpool vehicle saves 14,000 kg CO_2 per year.

'We now have 36 vans with 270 passengers. All staff has a route close to home and the vans use the bus lanes to avoid congestion. Almost no one uses the private car anymore'

Arie van Gameren, Ore Transhipment company EECV

TYPE OF LOCATION
Trip generators (companies, business parks, universities and events)
Other: Port area

LOCATION SCALE
Large

INVESTMENT SCALE
Low

COST-BENEFIT-RATIO
High

TARGET GROUP
Employees/Commuters

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
Not applicable

MORE INFORMATION
www. Vipre.nl https://tinyurl.com/SHARE-North-Videos

Boosting Ridesharing with Congestion Charges and HOV Lanes

LOCATION

Bergen, Norway (280,000 inhabitants)

IMPLEMENTING BODIES

City of Bergen
County of Hordaland
Norwegian Public Roads Administration

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Businesses along Flyplassvegen
Providers and promoters of ride sharing services
ITS Norway

DESCRIPTION

Many large businesses in and near Bergen are located along the road to the airport, which is a distance from the city centre and residential areas. This generates a lot of car traffic. On average, car occupancy in Bergen is 1.15 persons during rush hours. In 2016, the city formulated the goal of increasing this number to 1.30 by 2020.

One step to achieving this was that the first High Occupancy Vehicle (HOV) lane was established along Flyplassvegen in 2008 by The Norwegian Public Roads Administration. With a length of 3.3 kilometres, it was the longest in Europe at that time. It is a 2+ lane, which means the vehicle needs to have at least one passenger. Buses, taxis and electric vehicles have access too. The second HOV lane in Bergen (450 metres long) was established in 2016 and is much closer to the city centre.

Progressive pricing models do provide a negative incentive for individual car use have a tradition in Bergen. In 1985, the City of Bergen introduced a toll ring in order to finance the development of road infrastructure and more recently a light rail system. In 2016, a congestion charge was implemented. The congestion charge more than doubles the toll for driving a car into the city during rush hours, compared to off peak times.

As a positive incentive for ridesharing, the city council decided to give a discount in the toll ring for registered ridesharers making trips with passengers.

The potential for more ridesharing is huge in terms of unoccupied seats during rush hours. 95% of seats in private are not in use. That transport capacity equals many times the passenger numbers of all public transport combined. Changing behaviour in favour of ridesharing is a slow process that meets a number of practical, cultural and psychological barriers.

© Lars Ove Kvalbein

CRITICAL SUCCESS FACTORS

1. The long-time struggle for Bergen to meet air quality standards has been a trigger for creating political support. The topic earned high media attention and there was a strong public demand for measures that actually work.
2. HOV lanes must be combined with other measures to have a significant impact on ridesharing. From restrictive measures like congestion charge to supportive measures like ridesharing services and toll discounts.
3. HOV lanes have a strong visual effect: as full speed ridesharing cars in the HOV lanes pass single occupancy cars stuck in traffic dues, this demonstrates the privileges and benefits possible by joining the scheme.
4. Even if HOV lanes and congestion charge are relatively effective measures, the change in transport behaviour is still quite small. Ridesharing has proven hard to scale up significantly and requires long-term commitment and communication strategies.

IMPACT

- Because of the congestion charge, total traffic went down by 15-18% during peak hours, and around 5% in total.
- Two years after the introduction of the congestion charge, the number of ridesharers increased by 40% on the route of the second HOV lane.
- The HOV-lane on Flyplassvegen opened as a 3+ lane, but the use was very low. A year later, it was changed to a 2+ lane. After this change, the share of cars with 2 or more persons rose from 13% to 23%.

TYPE OF LOCATION

Urban

Trip generators (companies, business parks, universities and events)

LOCATION SCALE

Medium

INVESTMENT SCALE

Medium

COST-BENEFIT-RATIO

High

TARGET GROUP

Employees/Commuters

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?

No

Schoolpool

LOCATION
Belgium

IMPLEMENTING BODIES
Mpact

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)
Local Schools and municipalities

DESCRIPTION
Schoolpool is based on the original carpool database of Mpact. It stimulates students (and their parents) who drive to school alone in their car to share this trip with others. This improves road safety and liveability of the school surroundings while allowing parents to gain time due to reduced car traffic congestion around schools.

In response to the demand from schools and Belgian municipalities, Mpact provides a dedicated association to the Schoolpool database. Candidate poolers subscribe to a school and then the rideshare offer and demand is immediately shown on a global map. Potential Schoolpoolers can get in touch with other drivers or passengers to arrange the trip. A municipality is able to subscribe to Schoolpool to support schools in the area.

CRITICAL SUCCESS FACTORS
1. It takes effort to get parents engaged in Schoolpool. Hosting information markets at school, handing out leaflets or sending out news messages help to inform and raise awareness.
2. Find an enthusiastic mobility coordinator or even a mobility team for supporting the rollout of the project is essential. This can be a group of students, supporting parents or a team of teachers.
3. Organising regular follow-up communication through the school year is important. For this purpose, Mpact has developed animations for school classes, communication materials and board games.
4. The geographical location of the school influences the impact.
5. The bigger the school, the more chance to find a suitable Schoolpool match (minimum of 1,000 students is recommended).

'Schoolpool is a wonderful idea. If only 15 persons carpool, for me, it's already worth the effort'

Olaf Mertens, school director

TYPE OF LOCATION
Urban

Rural

LOCATION SCALE
Small

INVESTMENT SCALE
Low

COST-BENEFIT-RATIO
High

TARGET GROUP
Families with children

Students

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
Yes

MORE INFORMATION
www.schoolpool.be (in Dutch and French)

4.7 On-Demand Ride Services

Definition

On-demand ride services are spontaneous, commercial ride services whereby the driver does not share a destination with the passenger(s), but serves only as a chauffeur.

Different Models

There are different models of on-demand ride services, each with its own characteristics:
- Real-time ridesharing;
- Taxi service apps;
- Ride-splitting;
- Ridesourcing.

Other variations include:
- On-demand shuttle services;
- Volunteer pools.

Also Called

- Ridesourcing: also known as ridehailing;
- Companies providing ridesourcing are called Transport Network Companies (TNCs);
- Real-time ridesharing: also known as dynamic ridesharing, dynamic carpooling and on-demand ridesharing.

Main Characteristics

Ridesourcing and most other types of on-demand ride services are highly disruptive to the taxi market. The impact of these services on transport is still unclear: Do they have an impact on car ownership in urban environments? Are these services leading to more or less car usage? It remains difficult to assess the added-value.

Ridesourcing

Ridesourcing providers use online platforms to connect passengers with drivers who use personal, non-commercial vehicles. In the early 2010s, several Silicon Valley based companies introduced apps for taxi rides. Instead of using certified taxi drivers, the App connects private car drivers with people demanding a ride. The App thus outsources rides to commercial drivers [29], who are freelancing part-time or full-time. Drivers are not direct employees of the service provider. The service is provided in large cities by international operators such as Uber, FillCar, Lyft and Djump. There are many controversies around these services, see chapter 8.6 about the dark side of shared mobility.

Ride-splitting

Ride-splitting is a form of ridesourcing where different riders with similar origins and destinations are matched to the same driver and vehicle in real-time, and the ride and costs are split among users. Examples include Uberpool.

Taxi service Apps

Regular taxi services are also developing Apps in order to compete with ridesourcing companies. Examples include Free Now by BMW and Daimler, taxi.eu, and Bolt. For ride-splitting there are Apps used by the taxi sector, like Splyt.

Real-time ridesharing

Real-time ridesharing services use GPS-enabled cars and smartphone apps to match users in real-time at the moment of demand with nearby commuters and share the cost

	Ridesourcing, Ridesplitting, Taxi-service Apps	Real-time Ridesharing	Volunteer Pools
Main Trip Types/ User behaviour	Occasional, spontaneous use	Occasional, spontaneous use	Occasional, planned use
Trip length	Short/medium distance	Medium/ long distance	All distances
Typical Trip Purpose	Leisure/business trips	Commuter trips, leisure	Leisure trips, shopping
Entrance barrier for users	Low (no monthly membership fees, online registration only)	Low (no monthly membership fees, online registration only)	Medium (no monthly membership fees required, but based on trust of drivers and fellow passengers; based on personal relationships)
Business model	Revenue from users	Revenue from users	Cooperative

Main characteristics of on-demand ride service models

of driving to a shared destination. Rides are one-time transactions with network services that handle payments to the driver. Examples include Carma, based in Ireland.

Volunteer pools

Volunteer pools focus on travel needs of the elderly. In order to encourage participation in society, volunteer drivers travel people to their destination. Often, they use their own car, but this also could happen with shared cars, minibuses or wheelchair-friendly vehicles. Governments may subsidise the vehicle or the telephone exchange.

Relation To Other Shared Modes

On-demand ride services can be distinguished from ridesharing through whether or not the driver shares a destination with the passenger(s) and whether or not multiple passengers can individually arrange seats in the same vehicle.

There is also a distinction between providers: the 'disruptive' App-based private services like traditional taxi services that were available only by street hails or by phone but are now offering ride-hailing apps. The line between these different services is becoming more ambiguous.

Mobitwin

LOCATION
Belgium

IMPLEMENTING BODIES
Mpact

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)
Regional governments (Flanders, Brussels, Wallonia)
Local transport authorities

DESCRIPTION
Mobitwin connects people connects people with a mobility need and low income to voluntary drivers. It usually concerns elderly with reduced mobility or people with a low income who do not own a car, cannot afford a taxi and perhaps live in areas with limited public transportation. They use this service for visiting family, doing their grocery shopping, going to a doctor's appointment, hairdresser, etc.

Municipalities and local supporting organisations operate the service in the local region. Mpact supports them with:
- an internet application for the administration;
- arranging insurances for members and drivers;
- provision of supporting materials for drivers like driver cards and kilometre booklets;
- helpdesk during office hours;
- and organising trainings for local coordinators.

Users request the trips 48 hours in advance. This gives the coordinator enough time to find a volunteer driver before the appointment. The driver picks up the member at the set time at their home and delivers the requested trip. At the end of the trip the member pays the expenses for the number of travelled kilometres. Since 2018, Mpact offers a mobile App to make it easier for drivers to manage their rides. However, most drivers and members still prefer to use traditional booking via personal contacts.

> *'I use Mobitwin as I have no children and I no longer dare to drive a car. Still, I can visit friends. The drivers are friendly, helpful and very punctual. I couldn't live without them!'*
>
> **User**

CRITICAL SUCCESS FACTORS

1. The first thing to organise is a group of volunteer drivers.
2. Next, the service has to be promoted within local networks of elderly people.

IMPACT

In 2019, 3 out of 4 municipalities in the Belgian region of Flanders offer the service. At that time, the network consisted of 2,948 volunteer drivers, 39,124 member users who took 82,502 trips and travelled around 10.7 million kilometres.

The service supports elderly in their daily or weekly transport needs. It helps to get people out of social isolation, which contributes to mental health and social equity.

TYPE OF LOCATION
Urban

Rural

LOCATION SCALE
Small

INVESTMENT SCALE
Low

COST-BENEFIT-RATIO
High

TARGET GROUP
Other: Elderly People

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
Yes

MORE INFORMATION
www.mobitwin.be (in Dutch and French) https://tinyurl.com/SHARE-North-Videos

5

SHARED MOBILITY IMPACTS

*Piece of s**t car*
*I got a piece of s**t car*
*That f***in' pile of s**t*
Never gets me very far

Adam Sandler

5. Shared Mobility Impacts

5.1 Introduction

Shared mobility is developing at a very high pace. Research on the impacts of the various shared modes is being continuously developed to include new methodologies, differentiate the impacts of the various modes and demonstrate the advantages and disadvantages of shared mobility. However, it is clear that, in most cases, shared mobility provides a means for solving a wide range of transport problems, from congestion and parking problems to air quality and resource efficiency problems.

This chapter focusses on the most important impacts of the various shared modes of shared mobility. The table gives a first impression of the benefits and impacts of shared mobility.

Shared mobility mode	General Benefits	Specific Benefits
 CARSHARING	› More travel options › Lower car dependency › Higher use of sustainable and healthy modes: walking, cycling and public transport (PT) › Less car use › Lower car ownership › Less congestion › Reduction of transport-related emissions › Safer streets › Affordable mobility › More purchases at local shops	› Lower car ownership › Downsizing of cars used › Cost savings for users (pay only for use) › Access to car without need to own › Less car use, higher use of sustainable modes › Higher support for redesign of streets
 BIKESHARING		› Encourages cycling and bike ownership › Higher support for cycling policies › Increase of PT use in conjunction with bikesharing for the last mile › Relief for overcrowded PT networks
 SHARED MICROMOBILITY		› Increase of PT use in conjunction with shared micromobility for the last mile › Relief for overcrowded PT networks
 RIDESHARING		› Higher vehicle occupancy › Fewer car traffic during peak hours › Fewer parked cars at destinations
 SHARED SPACE		› Efficient use of public space › More space for children and urban green › Liveable streets and cities › Better climate adaptation › Less heat stress

The benefits of shared mobility

5.2 Carsharing

»» Chapter 4.3 -> General Information
Annex 1 -> Factsheets on Shared Mobility Typology

Travel Behaviour

Car ownership and car use decrease after people start carsharing, while the usage of sustainable modes of transport increases. This has been proven to be the case all over the world, mainly for roundtrip carsharing.

Decrease in car use compared to before starting carsharing:

- UK: carsharers drive 912 km less per year in London and 821 km in Scotland [24].
- NL: carsharers drive 15 to 20% less. Before starting with carsharing, they drove on average 9,100 kilometres annually. Carsharing resulted in a 1,600 km average annual decrease in mileage [30].
- DE: In Bremen, a 2018 survey of carsharing users showed that ca. 75% of trips previously done using a car were now done with sustainable transport modes [33].
- USA: 27 to 43% less car kilometres.

Increase of walking, cycling and public transport:

- BE: In Brussels, 22% of new users of carsharing service Cambio purchase an annual public transport pass, increasing the revenues of public transport company MIVB [31].
- DE: In Bremen, carsharers walk, cycle and use public transport significantly more than the average car owner. 78% of the carsharers own a public transit pass vs. 58% of the non- carsharers [33].
- UK: percentage of carsharers in London and Scotland who cycle and use underground and train services, compared to the total population (in brackets in table below).

	Walking	Cycling	Underground	Train
London roundtrip (compared to all residents)	72% (65%)	23% (9%) 24% (13%)	62% (37%) 64% (14%)	33% (16%) 37% (17%)
London free-floating (compared to residents of boroughs with free-floating carsharing)		32% 30% (15%)	58% 65% (48%)	31% 39% (7%)
Scotland roundtrip	82% (64%)	29% (15%)		18% (8%)
England & Wales		42% (14%)		22% (8%)

Sources: [24], [32].

Car Ownership

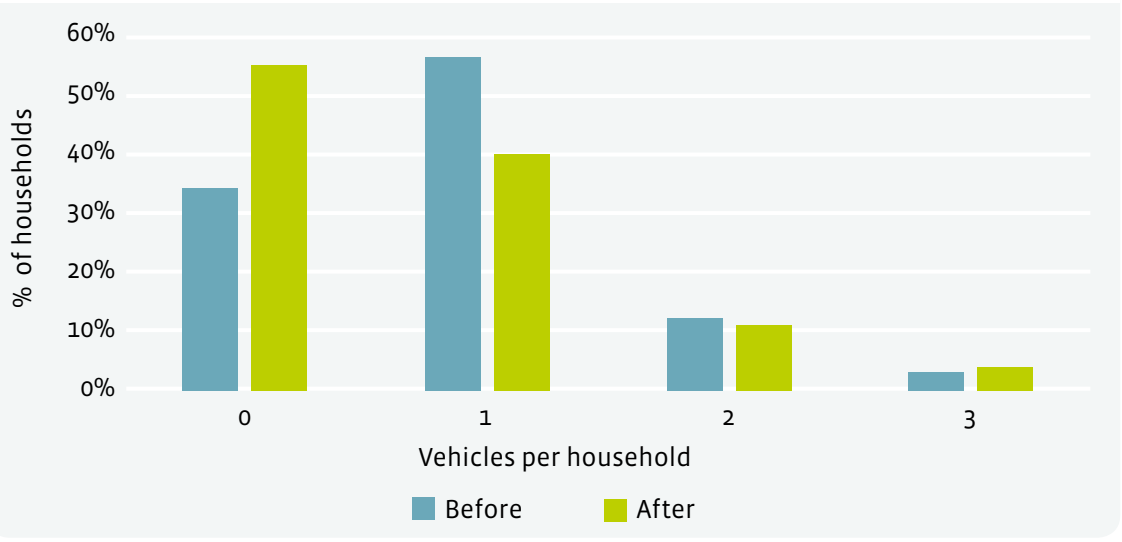
Carsharing results in lower car ownership:

- DE: In Bremen, every roundtrip shared car replaces 16 privately-owned cars. 7 cars are sold and 9 are not purchased [33].
- UK: In England and Wales, 6 cars are sold and 12 not purchased [24].
- UK: In London, every roundtrip sharing car replaces 10.5 vehicles, while free-floating vehicles replace 13.4 cars [24].
- USA: for roundtrip carsharing, one shared car replaces 9-13 cars: 4-6 cars are sold after people start carsharing, while 5-7 cars are not purchased [34].
- NL: carsharing mainly replaces the second or third car in a household [30].

The car replacement factor depends on a variety of criteria and is often a source of heated debate. The impact of carsharing on car ownership depends significantly on the type of carsharing (roundtrip station-based vs. free-floating, for example), the built environment of a city and region and the availability of public transport, walking and cycling infrastructure as well as the general availability of carsharing itself. The most important facts to remember are:

- Roundtrip carsharing has the highest impact on reducing private car ownership;
- Combined carsharing systems (roundtrip and free-floating services offered by one provider via one platform) has the second highest car replacement factor, followed by Peer-to-Peer carsharing;
- Free-floating carsharing has the lowest im pact on reducing car ownership;
- The most important factors for carsharing to be viewed as a viable alternative to car ownership are: vehicle availability, accessibility (nearby) and ease and reliability of booking [23].

Impact of Carsharing on the Number of Vehicles per Household in the Netherlands, 2014



Impact of carsharing on the number of vehicles per household in the Netherlands. Source: PBL [30].

Emissions

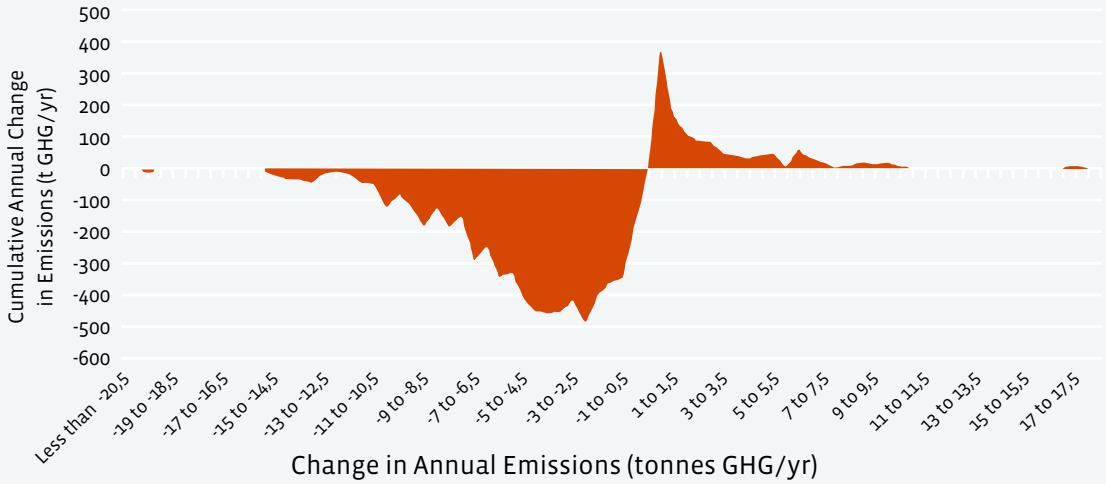
Carsharers replace car trips by more sustainable modes of transport. Furthermore, carsharing vehicles are cleaner than average national car fleets, due to a more frequent renewal of the fleet. This is even more the case with electric carsharing. In most cases, shared cars are newer and smaller, while the vehicles that people give up, tend to be older vehicles with poorer emissions standards.

- NL: carsharers reduce CO_2, PM_{10} and NO_x emissions by 8 to 13% compared to average car owners [30].
- NL: 6.7% of the carsharing fleet consists of electric vehicles (average Dutch fleet: 1.3% [35].
- BE: 15% of the Flemish carsharing fleet consists of electric vehicles (average Belgian fleet: 0.4%) [36].
- UK: in London, carsharing vehicles are 29% cleaner than the national average of cars. In Scotland they are Scotland 50% cleaner [24].
- UK: In Scotland, 22% of the carsharing fleet consists of electric vehicles [24].
- SE: If the City of Helsingborg is expected to grow by 40,000 inhabitants by 2050 and with carsharing, less parking area needs to be developed, less urban space is needed. The CO_2 absorption of nature compared with a traditional parking standard is calculated 475 tonnes [18].

Calculating the emission impacts of carsharing is complicated. Some households get rid of a car because of carsharing. In other households where no car is available, carsharing results in extra car trips. However, if carsharing was not available, households might have purchased a car and driven more car kilometres.

In the USA, 60% of the households joining roundtrip carsharing were carless, however, the households that owned a car before showed a dramatic shift towards a car free lifestyle [37]. The number of users who make extra car trips because of carsharing is far smaller, and the number of extra car trips is low. The figure below makes this clear. The red area above the horizontal line in the chart below shows the increase in CO_2 emissions due to extra car trips, while the larger area below the line shows the decrease in emissions.

Cumulative Annual Change in Green House Gas (GHG) Emissions, Full Impact



Source: Martin and Shaheen [38].

Accessibility and Congestion

In the Netherlands, carsharers hardly use a car to get to work [39]. Half of the households with a carsharing membership own a car, but only 22% uses it for commuting. The national average is 51%. Carsharers use a car for 37% of all business trips, while the national average equals 100%. This implies that carsharing has a positive impact on reducing congestion. Since the number of carsharers is still small compared to the overall proportion of driver's licence holders, the overall impact on congestion reduction shouldn't be overestimated. However, a small reduction in car traffic can lead to a relatively large reduction of congestion.

With regard to social accessibility, carsharing provides an opportunity for individuals and households to access a car without the need to and expense of owning one. Access to the occasional use of a car can mean that people are able to participate in activities and trips that require a car which they may not have been able to access previously. Carsharing can improve social inclusion.

Economy

For car owners who do not use their cars very often, carsharing may be cheaper than owning and maintaining a private car, which includes hidden expenses such as depreciation, taxes, insurance and maintenance costs. Estimates indicate that below 10.000 km per year, carsharing becomes cheaper than owning a car. For governments in medium-sized to large cities, carsharing requires practically no subsidies or investments, while at the same time it supports a new mobility culture in which cars and car-related infrastructure play a minor role. In addition, while many approaches to reducing car-related congestion require stringent policies like road closures or parking restrictions, carsharing is a voluntary choice made by individual citizens. Therefore, policies to encourage carsharing should be included in strategies to solve parking problems in urban neighbourhoods.

Carsharing can significantly reduce infrastructure costs for municipalities, as investment in facilities like new parking spaces becomes redundant. In Bremen, for example, users of the local carsharing scheme had replaced 5,000 privately-owned cars through carsharing, thus removing this number of cars from the streets [33]. Assuming that constructing one parking space costs 20,000 € on average, a 100 € million investment would be required by the city for parking facilities to accommodate this number of cars.

Carsharing users also strengthen the local economy, because they shop at local stores and markets more often than at large shopping centres. Non-carsharers shop at large shopping centres outside of the city three times as often as carsharing users [33].

Urban Space

Fewer parked cars means more street space.

- DE: As of 2017 in Bremen, over 14,000 carsharing users contributed to a reduction of more than 5,000 privately owned cars, which equals a 25-kilometre-long line of cars [33]. The number of cars replaced by 2020 has exceeded 6,500 vehicles.
- UK: In London, 31,000 cars were sold by carsharing members, which equals the area of 62 football pitches [24].

- NL: In Amsterdam, the replacement effect is rather low, since car ownership in this city is already rather low. Still, in the city centre 400 parking spaces were freed up through carsharing [40]. This equals 1.5 football pitches.

Incorporating carsharing into transport strategies makes it easier to remove parking spaces or forego building new ones. The extra space may be used for trees, cycling lanes, playgrounds, broader sidewalks, additional living spaces or pedestrian plazas. Through these alterations, urban streets become more liveable.

When carsharing is included, urban housing projects need less parking space, which makes the development of (social) housing cheaper as parking spaces are expensive to build (see also chapter 6.5).

Road Safety

It is assumed that the impact of carsharing on road safety is positive. Carsharers replace car trips by train, bus, bike and walking. Public transport usage is extremely safe. The safety of cycling and walking differs from country to country, but there is evidence that cycling becomes safer when the number of cyclists increases [41]. And that's what happens by promoting carsharing: carsharing users walk and cycle more and contribute less to high-speed traffic.

A negative side effect may be that carsharers drive a car less regularly and are less experienced in driving, which might decrease safety or result in overly cautious drivers. However, no research has been done to confirm this. Therefore, carsharing policies should be part of an urban mobility strategy that encourages a shift to sustainable and safe modes of transport [42].

Social Impacts

Carsharing increases the usage of healthier transport modes and, thus, has a positive health benefit.

Peer-to-Peer carsharing and carsharing communities result in more contacts between neighbours, which supports social cohesion. Many carsharing operators report that people who start with carsharing also share other items.

Carsharers are more aware of the communities in which they live, resulting in more eye contact and fewer traffic accidents. Carsharing makes people happier [42].

Gender Impacts

The gender balance across carsharing is fairly even, although more men tend to use free-floating carsharing than women.

Some aspects are viewed different by the genders. To female carsharing users, it is more important than to male users that:

- the distance to the next carsharing station is short;
- these stations are located in visible, well-lit places in the public realm rather than in parking garages;
- the booking process is fast and uncompli cated;
- the vehicles are available at the desired time [33].

For carsharing services that are exclusively operated with electric vehicles, the users are predominantly male.

5.3 Bikesharing

»» Chapter 4.4 -> General Information
Annex 1 -> Factsheets on Shared Mobility Typology

Travel Behaviour

Bikesharing increases the use of public transport with multi-mode trips and also relieves pressure on overcrowded public transport routes. It can also contribute to reduced car use as well as encourage more cycling in cities. This has been proven to be the case all over the world, mainly for free-floating bikesharing.

- US: bikesharing complements public transport by acting as a last mile connector to increase bus and train use in low-density suburbs. It substitutes public transport use on over-crowded city routes [43].
- IRL: 56% of users in Dublin combine bike sharing with train and 35% with bus travel [44].
- UK: Bikeshare usage is higher at London docking stations near transport hubs [45].
- UK: 35% of bikeshare users combines a train trip with the use of a shared bike. Additionally, 23% use the bus in conjunction with bikesharing [25].

Bikesharing is decreasing car use by 5-22%, depending on the density of the city. The table below outlines the transport mode that was used if bikesharing had not been present.

In cities with low cycling levels, bikesharing is often the trigger for people to start cycling. When they discover the added value of cycling, they are more likely to decide to purchase a bicycle of their own, which enables them to cycle even more. Bikesharing makes cycling a very visible mode of transport in the cityscape. Many cities use bikeshare as a means to stimulate cycling. This again justifies further investment in cycling infrastructure. As numbers of cyclists and segregated lanes are added, cycling gets safer for all [51].

	UK average	London	Melbourne	Minneapolis-Saint Paul	Washington DC
Public transport	30%	58%	41%	20%	44 %
Walking	32%	26%	27%	37%	31 %
Car / taxi	17%	5%	22%	22%	17 %
Private bike	6%	8%	9%	8%	8 %
New trip		3%	1%	9%	4 %

Mode substitution to bikeshare in selected cities. Sources: UK [25], London [46], Melbourne [47], [48], Minneapolis-Saint Paul [49] and [50].

Car Ownership

In some cases, bikesharing availability can have an impact on car ownership. Particularly in places with high car dependency. In the USA, 5.5% of bikesharers sold or postponed a vehicle purchase [52].

Emissions

Just like all modes of shared mobility, it's hard to calculate the emission reductions of bikesharing. The effects strongly rely on assumptions on the emissions of the previous transport mode used. When a shift from car use to bikesharing takes places, bikesharing will lead to a reduction in transport emissions.

Accessibility and Congestion

Bikesharing helps to solve 'first-/last-mile' connectivity issues, making public transport and a variety of destinations more accessible for all users.

- Bikesharing offers more affordable and flexible travel choices in low-density suburbs, as it is used to reach public transport stations [43].
- UK: 23% of bikeshare users use bus in conjunction with bikesharing, while 35% use train alongside bikesharing [25].
- UK: Bikeshare usage is higher at London docking stations near transport hubs [45].
- UK: Convenience is a key motivating factor for using bikesharing [53], [54]. Also speed is a main reason for joining the bikeshare scheme [55].
- Bikesharing is particularly important for destinations with limited car parking or where busy public transport has limited space for bicycles.

Economy

Bikesharing brings numerous economic benefits:

- UK: the economic benefits of investing in cycling initiatives is estimated at £5 for every £1 invested. While the majority of this consists of traditional transport decongestion benefits, around a fifth is arising from e.g. health, journey quality and safety [56].
- USA: 70% of businesses surveyed in Washington, DC identify a positive impact of bikesharing on the neighbourhood and 20% of the businesses report a positive impact of bikesharing on sales [57].
- USA: Saving time is a benefit of bikesharing for 73% of users in Washington DC [57].
- EU: The annual economic benefit of cycling is at least 205 billion Euros. [58].

Urban Space

Shared bikes offer a more efficient use of space compared to private bikes. In an ownership-based model, one bike is only ever used by one person. If unused, it is consuming public space if it's not parked on private property. In cities facing congestion issues due to parked private bicycles, such as in many Dutch cities, this could create a need for regulation and enforcement, in order to prevent excessive situations. With bikesharing, fewer private bikes are needed to make the same number of trips. To date, no research has been undertaken to measure the space saved using public bikes over private bikes.

Road Safety

Bikesharing increases road safety. The increase of cyclists results in an increased visibility of cyclists and a higher awareness

of cyclists. However, if bikeshare is a first step that a city makes on the way to increase bike use, the users of the bikeshare system are exposed to a traffic system that has not been designed for cyclists.

Some evidence:
- USA: Five American bikeshare cities (Washington D.C., Minneapolis, Boston, Miami Beach and Montreal) show a total drop in reported cyclist injuries of 28%, versus a 2% increase in the control cities [59].
- IRL: 93% of Dublinbikes users say that using the scheme had increased their awareness of cyclists on the road [44].
- UK: However, the London Bike Hire scheme records accidents involving scheme users. Between 2010 and 2014 one cyclist has been killed while using a shared bike [46].

Social Impacts

Bikesharing supports inclusion by improving access to jobs, education and amenities:
- Bikesharing helps to overcome mobility issues and open up a wider range of opportunities for people who do not own a bike or car. Many cities offer free bike access via employment services (e.g. Nottingham City Card).
- Bikesharing is used in conjunction with public transport by acting as a last mile connector in low density suburbs. In those areas, more affordable and flexible means of travel become available for people without access to a car [43].
- Residents' use in less affluent areas of London rose from 2.9 to 4.3% when bikesharing stations were added in their local areas. This is relevant, as very few individuals from deprived areas regularly commute into London from the outside [45].

Bikesharing also has positive health impacts as a result of increased physical activity among the users.:

- IRL: 68% of users had not cycled for their current trips prior to the launch of Dublinbikes and 63% who owned a bike say they purchased it as a result of using the scheme [43].
- UK: 78% of users report starting to cycle or cycle more as a result of the scheme in London [46].
- USA: 72% of users in four cities reporting cycle more as a result of a bikeshare scheme [60].

Gender Impacts

In countries with low levels of cycling in general, such as the UK, USA and Australia, 60 to 90% of bike trips are by men. In typical cycling countries like the Netherlands or German cities with a high modal share of cycling such as Bremen, women cycle more than men. Bikeshare usage also reflects these figures.
In London, the share of female users is higher for recreational trips. More trips by women start or end in a park. A possible reason is that women prefer to avoid motorised traffic routes [51].

5.4 E-scootersharing

»» Chapter 4.5 -> General Information
Annex 1 -> Factsheets on Shared Mobility Typology

Travel Behaviour

The impact of e-scootersharing on travel behaviour is just starting to be researched and first results differ very much according to location. In places with a good public transport network, walking and cycling infrastructure, e-scooter use tends to compete with active travel modes and does not replace car trips. Use cases from Berlin show that most shared e-scooter trips cover a distance of 2 kilometres or less, which could easily be walked. It is also not possible to carry any cargo aside from personal belongings on e-scooters, which does not make them a practical alternative to a car [61].

In places with a greater car dependency, some early studies show that e-scootersharing replaces car and ridesourcing trips (Portland USA: 34%, Lisbon 2% and France 8%). Whereas, in other nations with a higher modal share of sustainable transport modes, the e-scooters compete with active travel modes and public transport: for example in Paris, where 90% of daily trips are done using sustainable travel modes, the shared e-scooter trips replace 47% of foot trips, 9% bike trips and 29% of public transport trips. Another Germany study showed that in Germany, shared e-scooter trips replace [62] public transport trips of 65% of the respondents and 49% trips that would normally be done on foot. However, the Paris study showed that 23% of the shared e-scooter rides were in conjunction with public transport. Thus, it is possible that e-scootersharing can contribute to solving last-mile issues, close gaps in the public transport network and supplement public transport [27].

Car Ownership

No research has been done yet on e-scootersharing affects car ownership. However, it can be assumed that shared e-scooters do not have a direct impact on car ownership. Combined with other shared mobility modes it could add to lower car dependency and thus to lower car ownership. Chapter 6 dives into these benefits more deeply.

Emissions

E-scooters are by definition zero emission vehicles, though this applies to the trip by the user itself and not the production and redistribution process of the e-scooters by the provider. They are only environmentally friendly if they replace car and motorcycle trips. Though e-scooters mainly replace active travel modes in Europe, in some locations, such as the USA, they also replace trips in larger vehicles like cars and buses, therefore, contributing to reducing transport-related emissions somewhat.

A source of controversy is the short lifetime and production conditions of the lithium batteries used in shared e-scooters, which puts a dark shadow on the environmental impact [63, 64]. Lifetime vehicle emissions are related to the batteries and the charging process, the

transport of e-scooters to overnight charging stations and the manufacturing process. The first generation of shared e-scooters are not made for intensive use. As this is a requirement for shared vehicles, average lifetime might only be 28 days [64]. Providers are eager to solve this issue, since it endangers their business models as well.

Shared e-scooters are typically charged overnight or have their battery packs replaced by the provider. That means collecting the e-scooters with a larger vehicle by a so-called 'juicer' (see also chapter 8.6). In order to view e-scooters as zero emission transport, this process should be carried out with zero emission vehicles.

Accessibility and Congestion

In congested urban areas, e-scootersharing may relieve congestion if their use replaces car trips. It also may offer relief for overused public transport networks and increase accessibility of urban areas with a gap in the public transport network. E-scooters can improve accessibility if they are part of a multimodal transport chain and serve as last-mile transport solutions.

Economy

Not much research has been carried out about the impacts of e-scootersharing on the local economy. However, one US study showed that in Washington DC, 72% of riders have visited more local businesses and explored more local attractions since using e-scootersharing service Lime [65]. This is similar to the economic behaviour or pedestrians and cyclists, who are more likely to patronise local businesses than car users.

Urban Space

Though e-scooters are very small vehicles, they consume additional already scarce public space. In places where space is already limited for pedestrians, persons with limited mobility and visual impairments as well as cyclists, e-scooters provide an additional barrier. Free-floating vehicles may block pavements and litter public spaces if policies are not in place to prevent this. This can best be prevented through urban policies that encourage fixed parking spaces for e-scooters such as at docking stations or geo-fenced areas and ban their use on pavements and in pedestrian areas (see chapter 9.9 on shared mobility policies).

Road Safety

Because of their speed, the best place for e-scooters is the bike lane. In cities with scarce bike facilities, riders have to choose between the pavement and the road. The use of the pavement presents a danger for pedestrians, particularly because e-scooters travel at fairly high speeds and are virtually silent. Conflicts between pedestrians and e-scooter users are predestined here. Busy and poor-quality roads, on the other hand, are dangerous for e-scooter users. Because of their small wheels, a flat surface is required. Potholes, cobble stones or uneven roads easily result in accidents, especially if the user is travelling at a high speed and/or is unfamiliar with the vehicle or the location [66].

Social Impacts

In Europe, no research has been done yet about the specific social impact of e-scooter sharing. However, analysis of pricing models of e-scooter providers has shown that the use

of these services are not suitable for commuting purposes and is much more expensive than other sustainable travel options. This is due to the restriction of operating areas and pricing models that charge a standard fee for each rental and by the minute [67].

In places where public transport is not available and the cycling culture is limited, shared e-scooters could provide an alternative to car use and accessibility solutions to jobs and education: for example, in the USA, lower income groups are more likely to choose e-scooter-sharing because it is a more affordable travel option that car use, whereas higher income riders are more likely to use it for convenience and fun [65].

Gender Impacts

Currently, the largest user group of shared e-scooters is male, aged between 18 and 25 [62]. In Paris, Lyons and Marseille, on average 66% of the users are male [68].

5.5 Ridesharing

»» Chapter 4.6 -> General Information
Annex 1 -> Factsheets on Shared Mobility Typology

Ridesharing results in a higher vehicle occupancy. Fewer vehicles are needed to get the same number of people from A to B.

Travel Behaviour

Ridesharers travel more sustainably because they make better use of vehicle capacity. In the USA, employees participating in a rideshare scheme drive 4 to 6% fewer car kilometres [69]. The main motivating factor for people to rideshare is to reduce the cost of driving or travelling by car. Ridesharing is mainly an option in areas that are underserved with public transport and cycling facilities. In Belgium, improved conditions for public transport and cycling have resulted in a decrease of ridesharing [70]. As labour times are becoming more flexible and people work at home more, ridesharing is less likely to be used for commuting purposes.

Formal ridesharing measures supported by employers result in a higher number of shared rides rather than informal ridesharing. For example, in Belgium:

- When employers use a database for ride sharing, 5% of staff shares rides, versus 2% at companies without a database;

- Offering preferred parking places for ridesharing doubles the number of ridesharers [70]. This also applies to examples from rideshare promotion activities at business parks in the UK.

Other impacts on travel behaviour include that travel times and destinations must be coordinated in order to share trips. This requires the user to plan ahead on the short term or the long term depending on the nature of the trip and service being use. It also requires a shift in mindset, particularly if a user is sharing seats/a trip with other individuals that he/she does not know. In some cases, concerns about safety and security prevent people from opting to participate in formal long-distance ridesharing, for example. Solutions that allow users to rate drivers or vice versa can increase the sense of personal safety.

In San Francisco (USA), ridesourcing resulted in a 50% increase of car traffic, because car use became more attractive than public transport [71].

Car Ownership

Access to reliable ridesharing options, particularly when public transport is not available or difficult to access, reduces the need to own a private car. In some cases, ridesharing offers mobility to groups who cannot own a car, such as the 'Less Mobile Service' described above. The majority of the research focusses on the reduction of car use, however, rather than the reduction of car ownership. In the Netherlands, for example, 26% of carpool passengers occasionally can use a car [28]. This may indicate that ridesharers own fewer cars and are planning car use and carpooling more carefully.

Emissions

Ridesharing of any kind leads to a more efficient use of vehicle capacity and a reduction of nearly empty car or van trips. Every car removed from the road results in the significant reduction of transport emissions. Some examples include:

- UK: if 100 employees within one organisation drive 10 kilometres per day to work, and they would drive together with just one other person, they would reduce 61 kg CO_2 per day.
- NL: on average, a commuter in the Netherlands saves 428 kg CO_2, 524 g NO_x and 60g PM_{10} when carpooling one day a week [72].
- USA: ridesharing employees reduce 4 to 5% of CO_2 compared to their solo driving colleagues [69].

Accessibility and Congestion

More ridesharers means fewer cars on the road, leading to reduced congestion, fewer delays, faster journey times, and lower car-related expenditures.

In Belgium, research has shown that if everyone on a congested journey carpooled once a week, this could reduce congestion by 40%. Furthermore, the study says that if 25% of single-occupant car drivers shift their mode, there wouldn't be any congestion [73].

Economy

One major benefit of ridesharing is the cost saving potential of users during their journey as well as the reduced need for parking facilities at final destinations if targeted at commuter traffic. By encouraging employees to

rideshare and providing incentives for doing so (monetary incentives or priority parking, for example), employers can benefit by downsizing parking spaces for employees, leading to significant savings because parking garages and lots are very expensive to build (averaging 20,000 € per space) and maintain. Time savings as a result of reduced congestion can also translate to economic savings.

On-demand and shuttle services also experience positive economic effects through ridesharing because they are able to make better use of available resources and reduce empty seats during trips.

Urban Space

Ridesharing can significantly reduce the number of vehicles on the road, particularly if it is formal and informal ridesharing targeting commuter travel. With long-term strategies that integrate ridesharing, the need to expand road infrastructure could be reduced. Lanes on arterial roads and motorways are used more efficiently when High Occupancy Vehicle (HOV) lanes are created. Seat occupation increases and travel times for ridesharers decreases [41].
At workplaces, less parking space is needed. Dedicated parking places can be created for ridesharers. In order to verify if the vehicles are used together, ridesharing apps provide solutions with QR codes.

Road Safety

Sharing rides increases road safety, due to more responsible driving behaviour than single occupancy vehicles:
- 75% follow traffic rules better;
- 61% take a break more frequently;
- 57% never exceed the speed limit;
- 84% stay awake and more alert [74].

The presence of one or multiple passengers outside the usual circle of relatives provides drivers with a greater sense of responsibility [75]. Also, fewer cars on roads leads to an increase in traffic safety for all road participants.

Social Impacts

Ridesharing contributes to a more pleasant commute to and from work and improves the wellbeing of staff. Ridesharing with colleagues is a good way to socialise and to include interaction and fun in daily transport routines. It also provides health, environmental and social equity by encouraging social interaction between users and drivers – for the elderly, for example, a shared ride or pick-up service may be their only social interaction in the day or may allow them to participate in social events rather than remaining socially isolated (see case study on Mobitwin in Chapter 4.7).
- NL: For users without driver's licenses (in the Netherlands, for example, this is 20% of users; and 25% don't own a car), these options also allow them to use a car when required [28].
- USA: Ridesharers reduce stress associated with driving and enjoy the convenience of HOV lanes and preferred parking space at the destination. This can improve employee morale and productivity [69].

Gender Impacts

The gender distribution varies depending on location. Women and men have a similar interest in carpool [76] but in the Netherlands, for example, most carpoolers are men aged 35-50 years [28].

20:20

donderdag 20 februari 2020

Te voet

Fiets

Trein

Bus

Autodelen

Taxi

Mobipunten

Feedback

Meer info

6

INTEGRATING SHARED MOBILITY

We built this city
we built this city on rock an' roll
Built this city
we built this city on rock an' roll

Starship

6. Integrating Shared Mobility

6.1 Introduction

The more modes of shared mobility that are in place, the bigger the synergy effects between them and the higher the benefits for society. Synergy effects also exist with cycling and public transport. In order to maximise these synergetic effects, two kind of integration are needed:

- Physical integration ('bricks');
- Digital integration ('bytes').

The strongest impact may be possible when shared mobility is integrated in new urban developments.

6.2 Synergy Effects

GOLDEN RULE 5

The more modes of shared mobility that come to exist in an area, the bigger the synergy effects and the highest chance that it provides a more attractive transport alternative to people than the privately-owned car.

Shared mobility helps to decrease car dependency, as stated in chapter 2. As shown earlier, the amount and diversity of shared mobility options is developing fast. Recent research shows clearly that shared mobility modes provide strong synergy effects.

If bikesharing systems are available in a city, this fosters the grow of carsharing [14]. This is because:

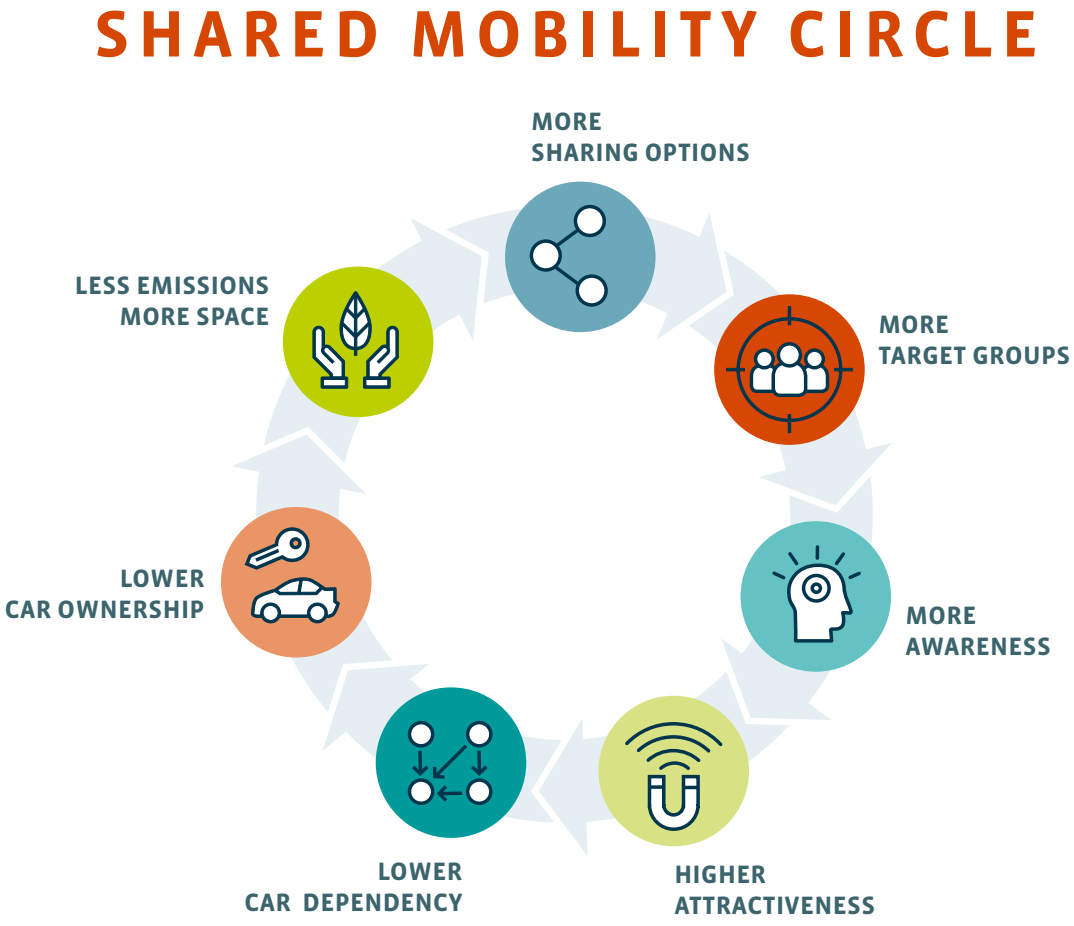
- People get acquainted with the concept and habit of sharing rather than owning;
- They gain experience with vehicle access procedures common in shared mobility;
- People become less car-dependent because of additional mobility options and carsharing begins to seem like a viable alternative to private ownership.

There is also evidence that the availability of several types of carsharing raises awareness about each other and supports each other's success. For example, Peer-to-Peer carsharing supports the growth of roundtrip carsharing and vice versa [14]. Free-floating carsharing attracts new target groups to shared mobility. Once they started with free-floating carsharing, they are more eager to join more effective types of carsharing, like roundtrip carsharing [77].

Based on this, we may define the 'shared mobility circle'. The more shared mobility options, the more target groups enter. This results in a higher awareness of sharing. Shared mobility will become more attractive. Users will reduce car use, become less car dependent and will get rid of their cars. This will reduce greenhouse gas emissions. Also, less urban space is needed for roads and car parking and more space will become available for other uses such as urban green spaces, for more sustainable modes of transport and for people.

The synergy effects are not exclusive for shared mobility. Shared mobility fosters the further growth of shared mobility and the growth of walking, cycling and public transportation.

A negative side effect however might be that shared modes start to compete with each other, if too many new modes become available [78]. For example, e-scootersharing might compete with bikesharing or e-mopedsharing. This competition might especially occur if too many services are offered while demand isn't growing that fast. The challenge is to ensure



The Shared Mobility Circle © Advier.

that existing sustainable modes of transport together with shared modes compete with car ownership instead of competing with each other [79].

6.3 Mobihubs: Physical Integration

GOLDEN RULE 9

Physical integration with mobihubs is essential to make shared mobility visible. Digital integration with MaaS helps to make shared mobility connective and gives it a strong appeal.

A mobihub is a transport hub on neighbourhood level, where different sustainable and shared transport modes are linked with each other. A mobihub can have multiple functions but some are essential [80]. Preferably, a mobihub includes carsharing.

A mobihub forms the start of any sustainable trip and also acts as a place for intermodal change. It is designed to enable and promote multimodal transport on a local level and can be tailored to meet the needs of the neighbourhoods in which it is established. Moreover, mobihubs make it possible to use different transport modes from day to day. The mobihub offers a full-fledged alternative for car ownership and the reflexive habit of car usage linked to it. Shared mobility functions at mobihubs are usually station-based, with options for returning the vehicle to the same mobihub or delivering them at a different mobihub within the network. Basically, dockless variants do not need mobihubs. However, these shared mobility modes may prove

a natural indicator for mobihub locations, as idle vehicles tend to clutter at specific points of interest.

Mobihubs provide an easily accessible, visible and recognisable offer for end users. For policy makers, they offer a tool to enhance a shift towards sustainable transport and more efficient use of public space.

Essential and optional elements

Mobihubs include the following essential elements:

- At least one shared mobility mode (in most cases a parking space for carsharing);
- High-quality bicycle parking;
- Proximity to a public transport stop or collective transport;
- Safety (e.g. good lighting);
- Easy accessibility for everyone;
- A unique name;
- Clear and visible branding.

Optional elements that can increase the quality and the usage of mobihubs are:

- Nearby neighbourhood functions;
- Charging stations;
- Mobile food units;
- Delivery and collection points for parcels;
- Storage facilities for other sharing facilities like bike helmets, trailers, freight carts, roof boxes etc;
- Meeting point for neighbourhood activities. Depending on the features and needs of a neighbourhood, a mobihub may also be useful to apply to business parks, shopping areas or housing projects.

Other names for a mobihub:
German: mobil.punkt
Norwegian: mobilpunkt
Dutch: mobipunt
English (UK): Mobility Hub or Transport Hub

Mobihub Networks

Groups of mobihubs together form a regional network that even creates more added value to the user. Ideal locations for large-scale mobihubs are:

- Central places in neighbourhoods and villages;
- Train, tram, bus and metro stations;
- Business parks;
- Shopping centres, marketplaces and neighbourhood focal points;
- P+R facilities for commuters.

Ideal locations for small-scale mobihubs focussing on providing alternatives to car ownership, are on-street neighbourhood sites. Ideally, the mobihub is closer to a user's front door than the privately-owned car. It is important that mobility alternatives to the private car are available where the journey begins.

Short distances between mobihubs provide an added incentive to use these services rather than private cars.

Developing Mobihubs

The development of a mobihub network starts with a strategy. Mobihubs must be related to policy targets that provide a clear framework for the development of highly visible, easily accessible places that are related to a mix of transportation options. By showing commitment to develop mobihubs, governments make a clear statement about shared mobility and the relationship with walking, cycling and public transport.

The planning of new mobihubs allows for a flexible planning and tailor-made solutions. Stakeholder engagement is a main key for implementation. Open communication with the public is essential for public acceptance. Local representatives know the area well and can provide valuable input on aspects like the suitable location of a mobihub and the way in which the wider area can benefit from the development. Examples include improved pedestrian crossings, transferring parking spaces into urban green and climate adaptation.

Mobihubs can vary in size, layout and orientation. The offer of services may also vary from place to place. Small mobihubs e.g. offer small carsharing vehicles and bikesharing. Larger hubs for example, can provide bike parking facilities, a larger mix of vehicle types, a taxi stand and parcel delivery options.

Networks can be developed on an urban or a regional scale. SEStran carried out a study to research the potential for mobihubs in South East Scotland, in relation with the public transport network. The study includes a framework for local authorities to identify sites and implement hubs [81].

Branding

A strong visibility of mobihubs in the streetscape is of great value for the marketing of shared mobility. In Bremen, 85% of the citizens knows about carsharing, thanks to the visibility that mobihubs provide for carsharing in the streetscape [33]. The UDO marketing campaign (see case study in Chapter 7.5) added to this. Joint branding is also very valuable for generating political support as policy makers can rally behind the concept.

In order to increase the visibility of mobihubs and to make it easy for the public to recognise them, a branding strategy is required.

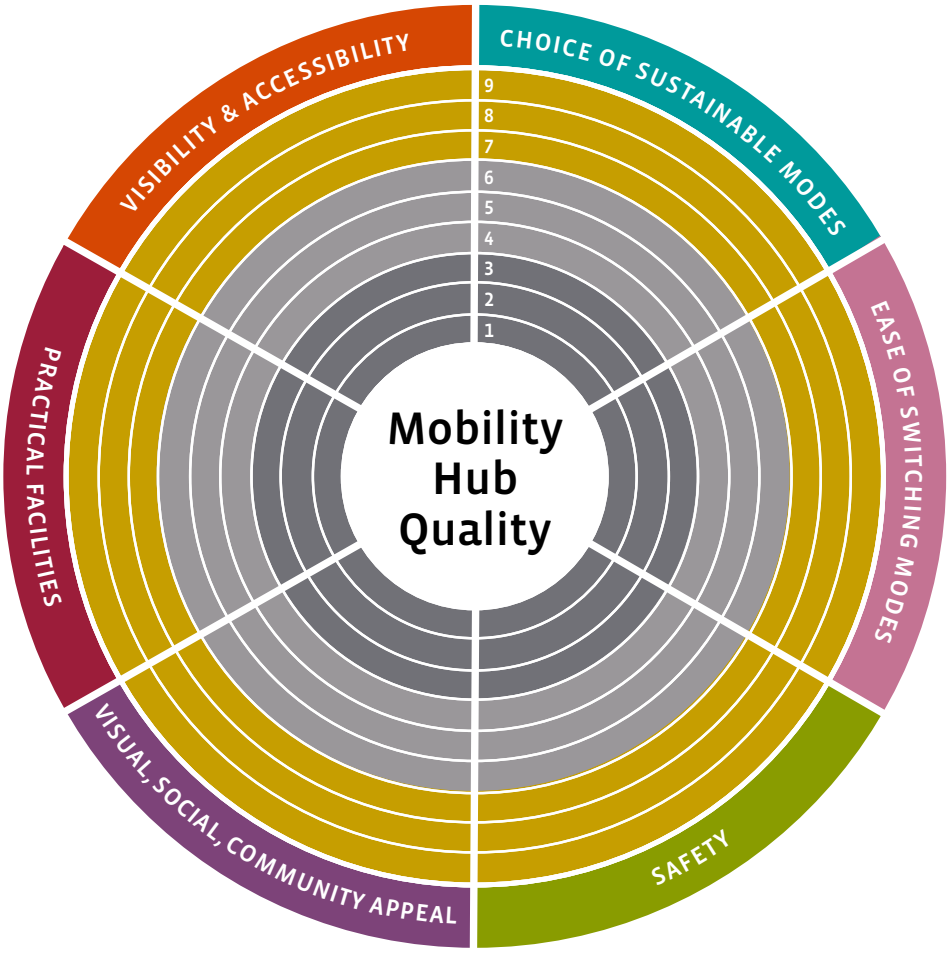
This branding includes:

- Totem with the mobihub logo and the mobihub name;
- On street use of the shared mobility icons;
- Information about the hub;
- Websites and apps in the same style.

Monitoring

The quality of mobihubs can be monitored by looking at a number of aspects. For this purpose, the Mobihub Wheel has been developed by CoMoUK.

A mobihub in the Flemish village of Sint Lievens Houtem



The CoMoUK mobihub wheel.

Expansion of Mobihubs in Bremen

LOCATION

Bremen, Germany (570,000+ inhabitants)

IMPLEMENTING BODIES

Ministry for Climate Protection, the Environment, Mobility, Urban and Housing Development

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Streets Planning Department
Elected District Parliament
District Management Offices
Carsharing Providers
Municipal Safety Services
Environmental Services and Green Space Management

DESCRIPTION

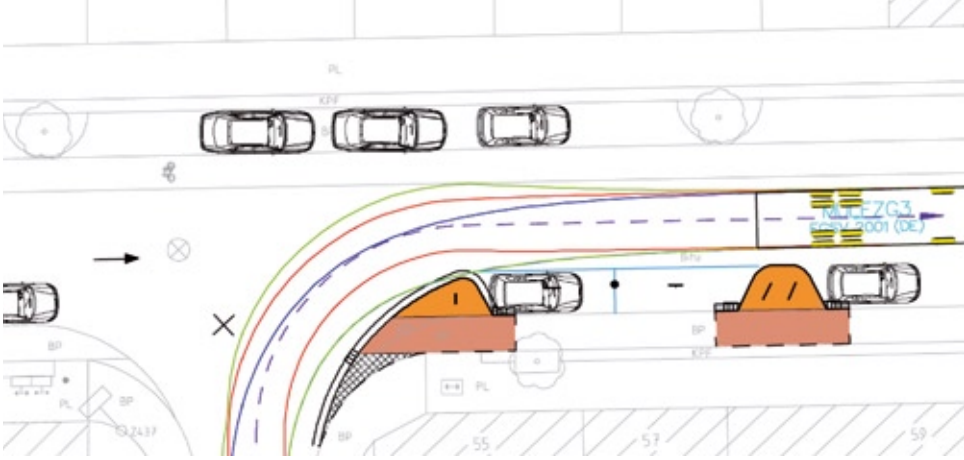
Policy makers in Bremen recognise carsharing as a valuable method for reducing parking pressure on crowded neighbourhood streets. The City began to plan mobility hubs on public street space that link several modes of transport and provide a highly visible, easily accessible space for carsharing as early as the year 2003. These hubs are called mobil.punkte (or mobil.pünktchen in the smaller format).

The hubs are always include clearly marked, reserved spaces for carsharing vehicles and secure bicycle parking places in a visible, easily accessible location by bike or on foot. The larger hubs host 4-12 carsharing vehicles and are located near a public transport stop and occasionally feature a taxi stand and other local amenities. The smaller hubs are located in residential areas where parking pressure is high and feature 2 to 3 carsharing vehicles. In the planning process, Bremen also considers aspects of traffic safety and manoeuvrability for large vehicles in narrow neighbourhood streets, improving barrier-free access for children, the visually and physically impaired at and around the hubs as well as climate adaptation (e.g. by using permeable paving rather than concrete for better rain water infiltration in the city). A few hubs feature charging facilities for electric carsharing vehicles and all new mobil.punkte are equipped with the necessary infrastructure for easy retrofitting for electric vehicle charging when the market is ready and there is greater demand for and when electric cars become more affordable for the providers to operate.

Every year, plans are developed for expanding the network with the goal of a maximum distance of 300 metres between stations.

The mobil.punkte are planned and implemented by the City of Bremen. The services available at the mobil.punkte are provided by mobility operators. By a modified tendering procedure, providers can express interest to operate at a mobil.punkt. Providers have to meet national environmental standards for carsharing and assure that their service reduces private car ownership.

Mobil.punkt with 4 carsharing vehicles near a bus and tram stop.



A 'mobil.pünktchen' that also ensures barrier-free access in narrow sides streets for, e.g., emergency services vehicles.

CRITICAL SUCCESS FACTORS

1. By creating hubs, the City made a clear statement about the relation between shared mobility and the overall transport network.
2. The involvement of stakeholders is a main success factor. Support is needed from policy makers, planners and public service providers. This requires a holistic approach.
3. Expert knowledge by the City is also required to choose the right site.
4. The City must understand and be considerate of the business case of service providers.
5. Keep the planning process as flexible as possible, as the need for services at the hubs will vary from neighbourhood to neighbourhood.

IMPACT

The mobil.punkte make multi-modal lifestyles possible and reduce the number of privately owned cars in the City. Every shared car in Bremen replaces 16 privately owned cars (see also chapter 5.2). The mobil.punkte and carsharing in Bremen have contributed to getting rid of more than 6,500 privately owned cars in the city. A short distance to the next carsharing station is very important for user satisfaction and the decision to use carsharing. In the 2018 study in Bremen, it was determined that especially for female users, it is important that carsharing stations are located in the public realm, in easily accessible and visible spaces that feel safe.

TYPE OF LOCATION
Urban

LOCATION SCALE
Large

INVESTMENT SCALE
Medium

COST-BENEFIT-RATIO
High

TARGET GROUP
Residents

Employees/Commuters

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
Yes

MORE INFORMATION
https://mobilpunkt-bremen.de/english/

MORE BREMEN CASES

› Sustainable Urban Mobility Plan › Carsharing Action Plan › Real estate development
› Carsharing campaign

Mobihubs in Bergen

LOCATION

Bergen, Norway (280,000 inhabitants)

IMPLEMENTING BODIES

City of Bergen

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

County of Hordaland
Ministry of Climate
Bildeleringen (Carsharing Cooperation)

DESCRIPTION

As a result of transnational collaboration, the City of Bergen has been inspired to implement and expand upon the Bremen concept of 'mobil.punkte', including the branding. Each of the 'mobilpunkte' in Bergen links the basic components. Bergen is also meeting the demand of modern, integrated planning and tailoring each mobility hub to meet the needs of the neighbourhood in question. In some neighbourhoods, for instance, the mobilpunkte include underground trash collection facilities and bicycle hangars that can be rented by residents to park pedelecs or e-bikes safely. In other areas, parking places for private cars are eliminated and sidewalks are broadened.

All mobilpunkte in Bergen are equipped with charging facilities for electric cars. Most of the charging bays are reserved for carsharing cars, but some can be used by private cars as well. In the beginning, there was some scepticism how electric cars would work in carsharing, such as: Will there be enough time between users to recharge the cars before the next user? Will semi-fast charging be needed to make this work?

The experience in operating the service since May 2018 has removed all scepticism towards electric cars in carsharing. The City provided standard 230V 7,3 kW AC charging outlets for the cars. There have not been any reports by users not having enough range on the battery. In the beginning, the operators put in 1-3 hours of idle time between each booking to ensure sufficient charging time, leading to fewer bookings and less income per electric car. This charging buffer proved to be unnecessary. The electric cars run with 2-3 bookings per day without problems. The electric cars are now the most popular cars among the users, and the carsharing operators put new electric cars into operation as soon as new charging bays are available.

> ***'The focus is to make the city work with fewer cars. A mobilpunkt is a way of organising the city in a way that you do not have to own a car'***
>
> **Berit Rystad,** head of the Environment Agency, City of Bergen

CRITICAL SUCCESS FACTORS

The following factors were essential for making the mobilpunkte in Bergen a success:

1. Careful planning and involvement of stakeholders.
2. Good design and careful blending into the environment.
3. Control over charging facilities: the City of Bergen had experience on planning, installing and operating street-level charging facilities, and was able to tailor the charging service to the needs of the carsharing operators and their members.
4. Clear instructions in shared electric cars on how to plug cables in, charge at public charging facilities etc.

IMPACT

- The Bergen mobihubs are a key element in the strategy of the City to remove all street parking for private cars. Stricter parking management and the implementation of carfree zones in the city may create protests among residents, but when the City facilitates better access to car sharing, people can see there is an alternative.
- The number of parked cars in the streets went down significantly in the areas with mobilpunkte. This was evidenced by the drop of number of street parking licences sold in these zones, but it is also clearly visible in the streets of the urban residential areas.
- The shared electric cars save about 50 tonnes of CO_2 emissions per year compared to shared fossil fuel cars. When taking into account the private fossil fuel cars they replace, the annual cuts in CO_2 emissions for the city are around ten times higher, amounting to at least 500 metric tonnes per year.

TYPE OF LOCATION
Urban

LOCATION SCALE
Large

INVESTMENT SCALE
Medium

COST-BENEFIT-RATIO
High

TARGET GROUP
Residents

Employees/Commuters

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
No

Developing a Mobihub Network in North-Holland

LOCATION

Northern part of the province of North-Holland, The Netherlands (163.500 inhabitants)

IMPLEMENTING BODIES

De Kop Werkt! (a cooperation of the municipalities of Hollands Kroon, Den Helder, Texel and Schagen and the province of North-Holland)

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Public Transport Company Connexxion
Citizens boards of several villages
Agriport Business Park
Social Employment organisation Pro
Avia petrol stations
Justlease Carsharing and WeGo Carsharing (shared cars)
Uw Deelfiets (shared bikes)
Advier Mobiliseert

DESCRIPTION

The northern area of the province of North-Holland is a rural area that is facing challenges like population decline and a decline of public transport services. The municipalities want to keep the area attractive and liveable. Therefore, they need to improve the accessibility. It's not possible to connect all residential areas and business parks with public transport. Shared mobility provides solutions. With shared cars and bikes, commuters and residents can get everywhere. Therefore, a network of 40 mobihubs is being planned. In the first stage, 8 mobihubs have been opened in Den Helder, Den Oever, Middenmeer, Wieringerwerf and 't Veld.

The mobihubs will have a uniform and recognisable signage. Facilities at the hubs depend on the local needs. Social employment organisation Pro will take care of the maintenance of the system and additional services to customers. The municipalities will share their own fleets as well.

A marketing campaign has been developed by Advier that stresses the benefits of the mobihub network for the area. For every village, ambassadors will promote the services. The strategy is to strengthen motivations to use shared mobility, while tackling mental barriers.

Shared bikes will be available at many mobihubs and companies will receive a membership. Therefore, they can use the same system for company bikes. Visitors can get access to bikes as well for the last mile. This makes it possible for them to use the public transport for the long-distance portion of their trip and still access their final destination conveniently.

Public transport will be improved in a new industrial zone, where the costs for the new link will be paid by annual travel cards guaranteed by the bigger companies like Microsoft and Google.

CRITICAL SUCCESS FACTORS

Developing shared mobility in rural areas is quite challenging. Many operators are not interested to invest. The following factors will be critical to making the establishment of a network of mobihubs in North-Holland a success:

1. Developing a positive business case by getting commitment from local stakeholders. This takes away the risk of low usage of the service.
2. For companies, it's important to be accessible for staff that cannot afford a car, for trainees, job applicants and so on.
3. Cooperating with local companies like fuel stations, car repairs and social employment companies. Shared mobility provides chances to strengthen the local economy.
4. By placing carsharing software in existing cars, even private fleets can be used more efficiently.

IMPACT

- The opening of the mobihub network was planned in March 2020 but has severely been delayed by the outbreak of the COVID-19 virus.
- The municipality of Hollands Kroon chairs the P10 network of rural municipalities and gets lots of request by other rural municipalities.

TYPE OF LOCATION
Rural

Trip generators (companies, business parks, universities and events)

LOCATION SCALE
Large

INVESTMENT SCALE
Medium

COST-BENEFIT-RATIO
Medium

TARGET GROUP
Residents

Employees/Commuters

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
No

MORE INFORMATION
www.mobipunt.net

'Carsharing delivers a tailor-made solution for the accessibility and vitality of the countryside, in combination with train, bus and e-bikes'

Theo Meskers, alderman of Hollands Kroon and chairman of the Dutch Association of Rural Municipalities

Flemish Policy Vision on Mobihubs

LOCATION

Flanders, Belgium

IMPLEMENTING BODIES

Flemish Government, transport regions and local government

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Mobipunt vzw, NGO founded by Autodelen.net, Mpact and Infopunt Publieke Ruimte

DESCRIPTION

In 2017, the organisations that later formed Mobipunt vzw, launched the mobihub concept in the Flanders region of Belgium. After one year of promotion and further developing the concept, the Flemish Government started to develop a policy vision [82]. Together with several stakeholders, this document was finalised in April 2019. This document is an excellent planning tool for the implementation of mobihubs on a local or regional level.

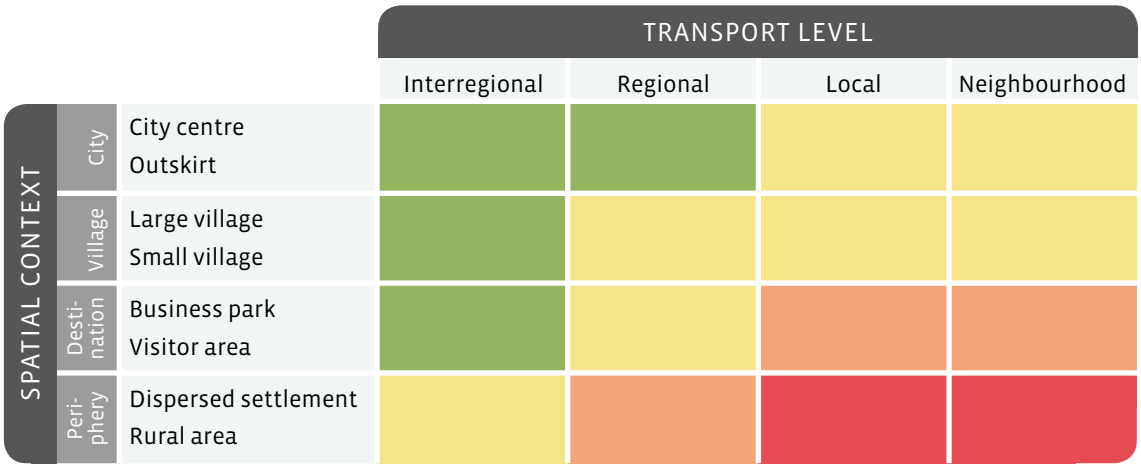
The mobihub matrix forms the base of the document. This matrix combines the transport level with the spatial level. The transport level is defined by the position of the mobihub within the transport network. Interregional hubs are mostly train stations, while local hubs have low frequency public transport. Neighbourhood hubs mostly lack public transport.

For the spatial context, four categories have been defined, each with two subcategories: city, village, destinations and periphery.

Based on both levels, 32 different hubs typologies are possible. Every type of hub corresponds to 25 criteria that have to be met. These criteria are related to mobility services such as carsharing, taxi services and kiss & ride sites. In addition, there are criteria related to non-mobility related services, the orientation around a hub, the integration in the area and the possibilities for future housing developments. Depending on the type of hub, the criteria are more or less important or applicable.

CRITICAL SUCCESS FACTORS

The Flemish Government was in need of clear guidance on the development of mobihubs, in order to review the public transport network in the 15 regions. Clarity was needed on the different functions of mobihubs in neighbourhoods and at public transport nodes. For this a tool was developed, based on existing knowledge on mobility hubs. The success was based on finding a balance between a centralistic, top-down approach and attention for the local contest.



Different mobihubs with their travel potential

IMPACT

The result of the institutionalisation of the mobihub concept was that now, the 15 Flemish regions are required to develop mobihubs in conjunction with the public transport network. The policy vision ensures a uniform and recognisable development of these mobihubs. This has prevented that every municipality develops its own branding, which could have led to problems on a network level.

TYPE OF LOCATION
Regional

COST-BENEFIT-RATIO
High

LOCATION SCALE
Large

TARGET GROUP
Policy makers

INVESTMENT SCALE
Low

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
Not applicable

MORE INFORMATION
https://dam.vlaanderen.be/m/27f2497e3c3010ed/original/Vlaamse-Beleidsvisie-Mobipunten.pdf (in Dutch)

'In order to promote modal shift, we want to make transport modes more complementary. By that, users can vary more in the transport modes they use. With a network of mobihubs, switching between modes will become fast and simple'

Flemish government

6.4 MaaS: Digital Integration

Mobility as a Service (MaaS) is a system in which a comprehensive range of mobility services is provided to customers by mobility operators [83]. These MaaS providers buy mobility services from service providers like public transport operators or carsharing operators and combine them as a service for their customers.

Multimodality is mentioned frequently in debates on public transportation systems, yet end users try to minimise modal shifts whenever possible for convenience reasons. This is why the car is a powerful door-to-door mobility device. How can we ensure that people can travel not only from A to B but door-to-door using shared mobility services?

For Mobility as a service, all mobility service providers are using a digital open market where they share data about their service offer. With these data, service providers can offer, book and pay for mobility services. In return, suppliers receive back data in order to improve their product.

The MaaS promise is to deliver a complete journey door-to-door: one price, one ticket and one payment. This makes it easier to use different transport modes and to improve access to the services of different providers as well. There are two main strategies for reaching this goal:

- Vertical integration: providers offering different mobility modes;
- Horizontal integration: one platform aggregating multiple services, providers and modes [78].

For the development of MaaS, a level of governance, coordination, trust and investment is required. This faces a number of serious challenges. The Dutch Ministry of Transport, for example, is facing this challenge by developing a standardized technical interface between users, MaaS operators and mobility providers. Agreements have been made about the interchange of data [84]. The so-called TOMP-API (Transport Operator Mobility Provider API) is a standard for interoperability, that facilitates planning and booking of trips, execution of trips, payment, operator information and support.

Mobility as a Service is a means to increase the market share for shared mobility. As digital integration is one element in this transition, MaaS will only grow if shared mobility options become widely available [79]. Therefore, shared mobility is a crucial prerequisite for MaaS implementation [85].

6.5 Spatial Integration in Real Estate Development

Societal changes and technology trends will dramatically change the way that people travel and this will affect urban planning. Many cities are facing population growth and need to densify. This may shorten travel distances and therefore cause a shift towards walking and cycling. However, it does not automatically result in lower car ownership. In many cases, there is no more space for parked and riding cars. Many cities focus on infill development instead of building new outskirts. Traditional parking requirements pose a challenge for such locations, since space is limited. Significant investments are required to develop parking facilities, for which in some cases there is no demand.

© Lars Ove Kvalbein

New urban development areas provide a unique chance to redesign mobility and urban space. This offers a bunch of benefits:

- Using life changing moments of residents to change mobility behaviour;
- Sustainable urban planning;
- Developing and promoting attractive urban lifestyles;
- Make housing more affordable;
- Preventing gridlock in cities.

An integrated vision on urban development and the mobility concept is needed. Current practice includes high parking requirements for new housing developments, as city planners often are afraid to risk parking congestion if less than the typical standard of parking space is provided. This results in situations where the project developer is required to build expensive parking facilities that must be paid for by the residents, and in turn drives up the price of apartments and social housing.

The local government is the key player in this development, as the definer of the rules of parking, mobility standards and spatial requirements [86].

Guiding principles in the design of the future city:

- Value of space in urban planning (see chapter 4.2);
- Design for people instead of designing for cars;
- The smaller the space use, the more a mobility mode is prioritized, according the mobility pyramid (see chapter 3.4);
- Parking rights instead of owned parking places;
- Develop infrastructure and parking facilities as fall back scenarios and plan for other functions if parking garages become redundant.

The mobility planning process for housing projects should include:

- A spatial plan that prioritises walking, cycling and public transport use;
- A low parking space requirement;
- Integrated shared mobility offers and memberships for residents;
- Mobihubs close to residents with a variety of convenient shared mobility services;
- Integrated MaaS offer for the residents.

Project developers will have to guarantee the long-term provision of shared mobility,

while they themselves need a clear framework for delivering less parking space. In order to be successful, it has to be ensured that all actors benefit:

- Cities can densify without generating traffic problems;
- Developers can build cheaper, as the costs of shared mobility don't outweigh the costs of parking;
- Residents get higher value for money: more living space or cheaper housing.

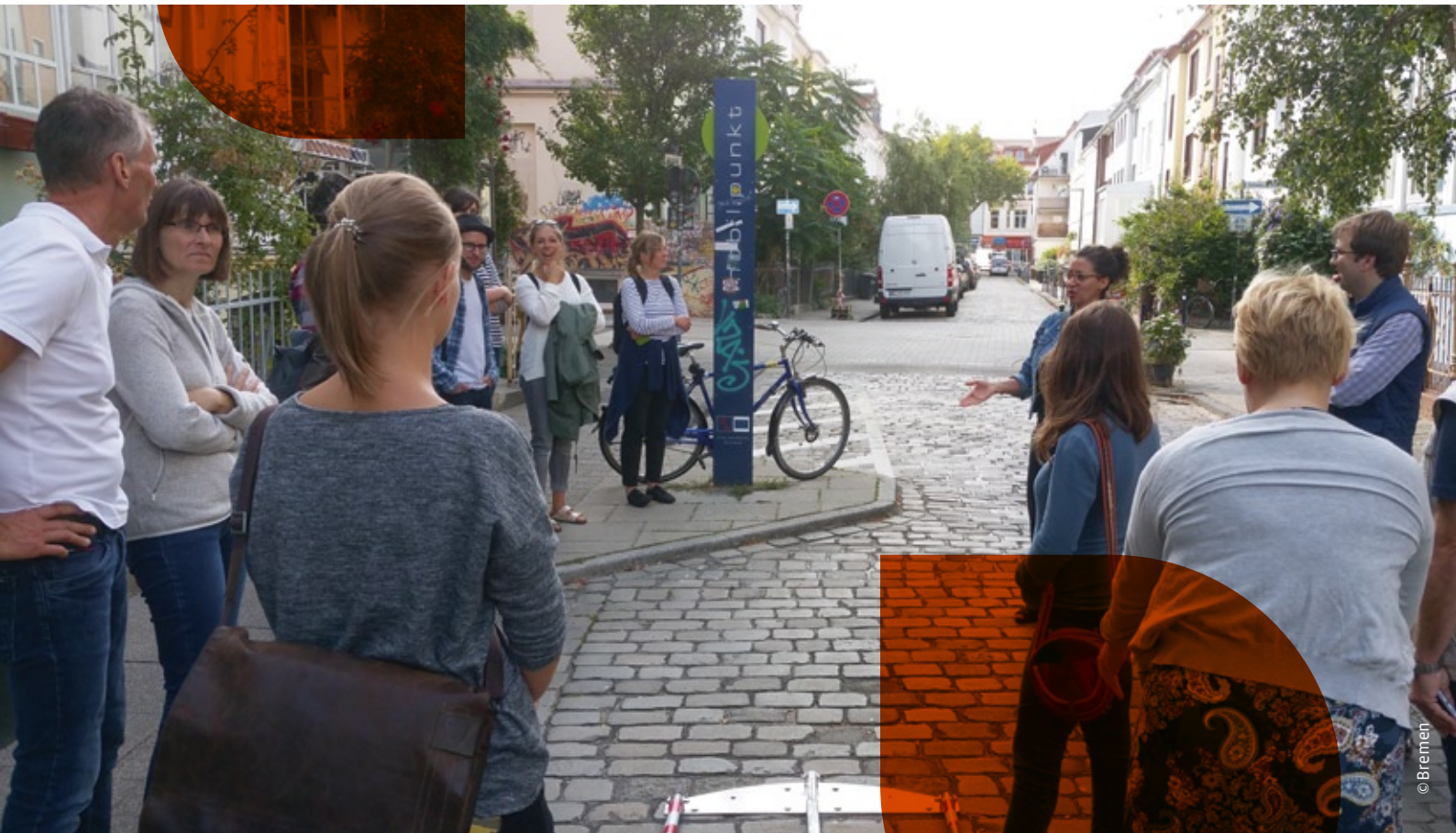
The development agreement between the developer and the city is the legal base for ensuring:

- Quality level of the service;
- Costs of delivering the service;
- Service guarantees;
- Minimal terms for the service to be in place;
- Communication;
- Usage incentives.

Basically, there are two options for offering shared mobility in new housing areas:

1. As 'shared use': shared mobility providers deliver a public service that is accessible for everyone. New housing projects can speed up the development of the mobihub net work. A requirement is that the facilities are accessible for everyone and not in private parking lots or as 'island solutions'. Solutions that are integrated with the rest of the city provide more flexibility for all users.

2. As 'shared ownership': an association of residents defines the service and decides which vehicles are included. Mostly these are closed systems. This model is more at tractive for residents, since it gives them a greater sense of control, just as they are used to with car ownership.



© Bremen

Integrating Carsharing into Housing Development Parking Requirements

LOCATION

Bremen, Germany (570,000+ inhabitants)

IMPLEMENTING BODIES

Ministry for Climate Protection, the Environment, Mobility, Urban and Housing Development of the City of Bremen

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Real estate developers

DESCRIPTION

Nearly every municipality is dealing with the issue of scarce public space, growing mobility needs, the need for affordable housing and every municipality has a parking code which may not reflect changing mobility demands. The City of Bremen created a more flexible way of managing parking by integrating mobility management options in the parking requirements for new housing developments.

Traditionally, developers were required to build parking spaces with new developments or pay a fee to the City if they could not or did not want to provide the required amount of parking places. As a solution and to create greater flexibility for housing developers and more integrated planning, the City of Bremen modified its parking requirements for new developments. As of 2013, a developer can invest the budget for the previously mentioned fee in mobility management options for the new residents, such as:

- public transport tickets;
- on-site carsharing stations;
- carsharing memberships;
- and other complimentary measures such as shared bikes, cargo bikes and bike repair shops.

It incites behavioural change, because people are most willing to shift to and try a new mode of transport when they are in a transition period in their life. A recent study has shown that these mobility management offers are effective in reducing car use and car ownership among the tenants. For cities who seek to promote sustainable transport and combat limited urban space, this is an opportunity that should not be missed.

CRITICAL SUCCESS FACTORS

1. The biggest challenge is to communicate the benefits to developers, planners and potential users. They must deviate from the status quo in order to implement mobility management. This requires communicating, based on earlier experiences and case-by-case advice for investors.
2. A certain level of flexibility should exist on both sides of the table: investor and municipality.
3. It is possible to link private developments to public targets like expanding the network of mobihubs on public street space. This may create a win-win-solution for developers, tenants, carsharing providers and the public.
4. This concept is embedded in Bremen's urban policies, including its parking regulations for building developments and Carsharing Action Plan. Therefore, political support was generated for such an approach.

IMPACT

By reducing the number of required parking places and investing in mobility management concepts:

- The overall building costs per housing unit can be reduced.
- By providing access to mobility alternatives at a crucial point in an individual's life (like moving), residents are more likely to switch to more sustainable transport modes.
- Private car-ownership and the demand for parking space decrease.

TYPE OF LOCATION
Urban

LOCATION SCALE
Small

INVESTMENT SCALE
Medium

COST-BENEFIT-RATIO
High

TARGET GROUP
Residents

Other: property developers

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
Yes

MORE BREMEN CASES

› Sustainable Urban Mobility Plan › Carsharing Action Plan › Mobihub strategy
› Carsharing campaign

Slachthuishof Mobility as a Real Estate Service

LOCATION

Haarlem, The Netherlands (161,000 inhabitants)

IMPLEMENTING BODIES

BPD and De Nijs (project development)
Hans van Heeswijk architecten, ZUS, Van Ommeren architecten (architects)
Wijngaarde & Partners, and Alliander DGO (sustainability and energy)
Markus (infrastructure design)
City of Haarlem

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Advier Mobiliseert

DESCRIPTION

Trends in society like urbanisation, the energy transition, the sharing economy and the use of smartphones as data integrators will change our travel habits dramatically. The planning of new urban areas however is based on mobility patterns from the past. When taking into account current developments and future trends, it is possible to create liveable and attractive areas and to transform cities in a more sustainable way.

Advier has developed the Mobility as a Real Estate Service concept which delivers a new way to design residential areas. Key principles include:

- Design has to be based on the value of space. Bikes are 28 times more space efficient as cars, therefore, space should be dedicated to bicycles as primary mode of transport rather than cars.
- Delivery of a mobility package, including shared mobility.
- Using the life changing moment of moving to foster behaviour change.

If residents could apply the costs of maintaining a second car to getting a higher mortgage, it would be possible to get 125,000 € extra mortgage. The costs of a second car are comparable to 2 or 3 extra rooms.

Slachthuishof is a redevelopment area close to the city centre of Haarlem in the Netherlands. 166 new houses will be developed there. It will not be possible for residents to park directly in front of their house and second cars are not allowed. Instead, 18 shared vehicles will be provided and available for all residents. All residents will also receive a public transport pass and every household gets one e-bike for free. Residents won't get a parking permit for onstreet parking in the area.

> ***'Everyone likes a view of urban green or water. Why then do we develop housing that overlooks the parking space?'***
>
> **Minze Walvius,** owner of Advier Mobiliseert

CRITICAL SUCCESS FACTORS

This is an innovative approach to developing a new housing area. The factors critical to its success are:

1. The concept results in a win-win situation, but there are also risks involved. Benefits and risks must be equally shared between cities, developers and residents.
2. Parking areas must be developed in a way that they can be converted into other functions when there is no longer a demand for them.
3. The vision is dependant on cooperation with cities. Municipal staff has to get acquainted to new ways of city planning and has to let go of traditional planning standards.
4. The residents have to be made responsible for the mobility concept. Giving them influence on e.g. the type of vehicles, results in a higher commitment; shared ownership instead of just shared use.
5. In the orientation phase, potential residents already have to get information about the mobility concept.

IMPACT

A reduction of 40% parking space has been realised at the Slachthuishof development site. This is a huge cost saver for the project developer while there is more space for urban green. This space can be used for community events such as music festivals as well.

TYPE OF LOCATION
Urban

LOCATION SCALE
Small

INVESTMENT SCALE
Medium

COST-BENEFIT-RATIO
High

TARGET GROUP
Residents

Other: property developers

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
No

MORE INFORMATION
www.advier.nl

6.6 Mobility Management for Companies

Regional commuter traffic is a significant cause of congestion. In cooperation with the business sector, regional governments can develop commuter plans that increase the accessibility of work sites and that tackle emission problems related to car traffic.

Shared mobility can add to these plans in several ways, including:

- **Rideshare** services and on-demand bus services to business parks;
- **Bikesharing** systems that solve the last-mile problem from a public transport station to or in between company sites;
- **Electric bike libraries** with shared bikes for business trips and for employee trials to test whether e-bikes are a useful means of transportation;
- **Carsharing** for business trips.

Calder Park Travel Plan

LOCATION

Wakefield, UK (99,000 inhabitants)

IMPLEMENTING BODIES

West Yorkshire Combined Authority (Travel Plan Network)

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

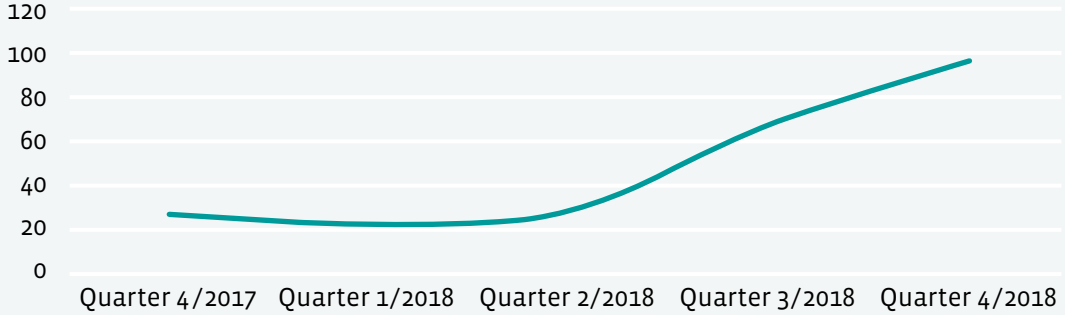
Wakefield City Council
Arriva Bus operator
Business tenants
City Connect Cycling Highway
TPS Transport Consultants

DESCRIPTION

Calder Park is a business park in Wakefield with 4,000 employees working at 70 businesses, like offices, manufacturers and car garages. With the M1 motorway nearby, commuting to Calder Park is car dominated. This results in excess demand for car parking, having a negative impact on existing business. It's also hard to attract new companies. In 2016, WYCA installed a travel plan coordinator, who set up a business community initiative with tenants, WYCA, Wakefield Council and local bus operator Arriva. During regular meetings, travel issues were discussed directly with all partners.

As a result of successful negotiations, peak hour bus service has been diverted to the business park, enhancing connectivity between the business park, city centre, train and bus stations. This service started in May 2017 after an employee survey pointed out the potential for this service. Employees can purchase annual tickets and tenants get 15% reduction on annual public transport tickets (MCard) when joining the West Yorkshire Travel Plan Network. An on-site event was held to promote the service. The bus service is particularly popular for Minster Law, one of the larger companies that has relocated staff from their York office. Around Christmas 2018, a 'Don't Drive December' campaign was launched to encourage bus use, including prize drawings with shopping vouchers.

Number of bus users per day on Calder Park



CRITICAL SUCCESS FACTORS

1. Proactive engagement with businesses and key stakeholders lead to the delivery of travel plan measures that reduced commuter car trips.
2. Robust travel data helped to convince bus and train operators to provide better services.
3. Transport issues were able to be better addressed when including tenants in wider discussions on a regular basis.
4. Organising car park management workshops was and is an effective way to exchange experiences between companies and to share best practices on mobility management and ridesharing.

IMPACT

- The number of regular ridesharers at Minster Law in 2019 was 421, after their ridesharing scheme was relaunched in 2017. This made the need for additional car parking redundant. 46% of the employee is regularly sharing rides. In June 2019, the company was awarded as manager of the month by Liftshare.
- Bus usage has increased significantly thanks to the active engagement of the WYCA Travel Plan Network.

TYPE OF LOCATION
Urban

Trip generators (companies, business parks, universities and events)

LOCATION SCALE
Medium

INVESTMENT SCALE
Low

COST-BENEFIT-RATIO
High

TARGET GROUP
Employees/Commuters

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
Yes

MORE INFORMATION
https://www.traveltocalderpark.co.uk/

Paleiskwartier Company Carsharing

LOCATION

Den Bosch, The Netherlands (111.000 inhabitants)

IMPLEMENTING BODIES

Stichting Paleiskwartier Elektrisch

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Companies and organisations in the Paleiskwartier area, including Brabant Water, Van Lanschot Bank, Koning Willem I College, HAS Hogeschool.
City of Den Bosch

DESCRIPTION

Paleiskwartier is an office park in the City of Den Bosch, strategically located next to the main train station. The companies aim for efficient use of urban space, clean air and silent transport. Being in search of a positive business case for electric vehicles, a solution was found by sharing the vehicles.

Fifteen electric vehicles are situated throughout the area. Recently, shared bikes have been added to the offer. All users have access to all vehicles, also the vehicles of other companies. Outside working hours, residents may use the vehicles as well.

The shared mobility services are integrated in a MaaS solution by the TOMP-API (see chapter 6.4). If companies in the area tender for new shared mobility service, they can select providers that use this API as well, in order to keep services connected.

The project is part of the regional business initiative 'Brabants Mobiliteitsnetwerk' that wants to improve the accessibility of business parks throughout the province. The City of Den Bosch took care of the charging infrastructure. Prolease delivers the vehicles and service provider Goodmoovs takes care of the sharing platform. Students of participating schools take care of the dissemination to other areas in the City.

> *'If three persons are using one car, two cars don't need to be produced. We have one globe but we are using the resources of three at the moment'.*
>
> **Marc Graetz,** Stichting Brabant Elektrisch

© Stichting Brabant Elektrisch

CRITICAL SUCCESS FACTORS

1. The success of sharing projects depends on the interest of the end users. Therefore, it's impor tant to involve them and to discover their needs and demands.
2. Think one step further than the level of 'an idea that looks interesting'; it has to work in daily life. Systems have to do what they promise. They have to be easy to use and to make the life of the users easier.
3. It's crucial to demonstrate how the system works.
4. Electric cars are a means for mobility, not an end. If the market is not ready yet, make small steps towards electric driving.

IMPACT

- Between 2018 and 2019 the number of business trips has increased with 13%.
- In the same period, private use increased with 89%, as companies allow staff to use the vehicles outside office hours. Staff discovers that carsharing is also a solution for private trips.
- Business trips are made by electric cars and bikes instead of conventionally-fuelled cars, therefore, reducing transport emissions.
- As demand keeps growing, companies in the area want to increase the number of shared vehicles.
- Other companies and municipalities in the Province of Brabant are inspired by the success and are implemented carsharing too. In Brabant, 36 company shared cars are available already.

TYPE OF LOCATION

Trip generators (companies, business parks, universities and events)

LOCATION SCALE

Medium

INVESTMENT SCALE

Low

COST-BENEFIT-RATIO

High

TARGET GROUP

Residents

Employees/Commuters

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?

Not applicable

MORE INFORMATION

http://stichtingbrabantelektrisch.nl/ (in Dutch)

7

BOOSTING SHARED MOBILITY UPTAKE

You know that I love you,
I need you
You know that I'm caring,
sharing everything I've got

Santana

7. Boosting Shared Mobility Uptake

GOLDEN RULE 10

Car ownership is rooted deep in our society. It takes time and effort to raise awareness about new forms of transport. Shared mobility needs clever, consistent communication and marketing over a long period of time.

7.1 Introduction

A main lesson from the case studies in this guide is that stakeholder engagement and communication over a longer period of time are essential to implement shared mobility measures and to attract target groups to using shared mobility.

Carsharing has a number of characteristics that have the power to speed up the uptake of shared mobility [87]. However, it competes with car ownership. Owning goods influences human behaviour in a very strong way. A well-known behavioural principle is that people do not like to give up what they already own. This is called 'loss aversion' [88]. Therefore, it is important to acquire a good understanding of the behavioural aspects related to ownership, sharing and shared mobility. This chapter presents a brief overview of stakeholder involvement, target groups and behavioural change.

7.2 Stakeholder Engagement

Everything starts with creating support for shared mobility. Support is needed from:

1. Politicians and policy makers;
2. Public interest groups;
3. Shared mobility operators.

Active engagement, transparency, consistency, positivity and storytelling are essential for effective communication with different stakeholders. This makes a positive outcome more likely.

Politicians, Policy Makers and Public Interest Groups

These stakeholders need to know the main facts about shared mobility and respond to rational, evidence-based arguments. They have to be convinced about the benefits that can be achieved for the local environment, spatial challenges, the economy and social issues. For example, the potential for carsharing to allow a city to reclaim valuable public space carries are highly relevant for these target groups.

These stakeholders will also need to know why they have to take action, as they might assume that market actors will take the lead.

Examples from other cities and rural areas are very convincing, just like benchmark data that helps to compare them with other cities.

In many areas, the concept of mobihubs proves to be interesting for politicians.

Shared Mobility Operators

For operators, it is relevant to know whether a specific area provides opportunities for a positive business case. A crucial element for such a business case is, in addition to a solid user base, the political will to develop shared mobility. The existence of a shared mobility action plan with earmarked budgets is an indicator for this. Data about parking policies, tariffs and parking pressure may add to this.

For operators, it is also relevant that they know what is expected of them by the city or

region in which they wish to operate. Expectations and criteria by which the municipality would like shared mobility providers to operate should be clearly defined. Examples include:

- requirements for service quality and duration;
- accessibility and data transparency.

An open communication channel between municipality and mobility provider is essential for understanding each others goals and needs in order to achieve the desired impact.

7.3 Target Groups

The most important target groups for shared mobility are:

1. Users for business purposes (this can be public or private sector);
2. Users for private purposes (citizens).

Users for Business Purposes

The public sector can make use of shared mobility for employee trips during business hours. For example, local governments using shared mobility play an important role in providing a market/demand as well as demonstrating that shared mobility is a viable alternative to fleet ownership.

For companies and organisations, economic benefits are a main trigger to start using shared mobility. Companies can save significant amounts of money on the number of employee parking spaces that they provide by actively promoting ridesharing (see the Calder Park case study in Chapter 6.6).

Companies can sign long-term contracts with operators for purchasing shared mobility services. This is often important for the launch of local and regional car and bikesharing schemes.

Carsharers shop more locally [33]. This can be a strong argument for local shopkeepers to cooperate with carsharing providers. This also may remove resistance against the development of mobihubs in shopping areas.

Citizens

Private citizens form the largest group of end users for shared mobility services. This target group is quite diverse. Communication methods that apply to one individual may not work with another. The communication methods that are successful with the public stakeholders above is not likely to be successful for attracting this target group.

Shared mobility is mostly still at the early adaptor stage [88]. Early adaptors generally consist of young and middle-aged persons with higher education and a higher income [14]. However, shared mobility is becoming available for a growing number of target groups. Target group characteristics may change quickly, therefore, when promoting shared mobility, the aim should be to get the interest from a growing public.

7.4 Marketing and Communication Strategies

Personal daily mobility choices are not driven by economics or other rational factors but rather by habit, ease and comfort. Therefore, focusing on facts about emissions reductions, economic savings and the potential to burn calories and so on are not successful means

to encourage shared mobility among the target group of citizens and private end users.

Instead, it is important to strengthen people's motivations to join. At the same time, barriers that prevent people from taking part should be removed. A variety of triggers can be provided to get people to take action.

Marketing and communication do not need to be complicated or expensive. In any case, they need to be based on an understanding of behavioural psychology and behaviour change.

Strengthen Motivations

Communication strategies that focus on the aspects of convenience, comfort, objective and subjective safety, simplicity and the emotions of travel are more likely to sway the target group of citizens and private end users.

Just look at automobile commercials: They almost never focus on cost per trip, mileage or emissions. Instead, they zero in on aspects like freedom, the joy of driving and comfort. The same principles may be applied when promoting shared mobility.

Remove Barriers

Resistance against shared mobility may include [89]:

- Unfamiliarity with the concept and how it works: it is perceived as being complicated;
- Perceived costs: people think it is expensive;
- 'I have to share my ride with a stranger';
- A car may be unavailable when the user needs it most;
- The emotional value of ownership is rated much higher than that of shared mobility. We love to own things;
- Getting rid of a car looks like losing freedom [90];
- Status: people may wonder how friends and relations regard shared mobility;
- Most people do not like shared cars if they are decorated with large stickers and advertisements;
- Availability of shared mobility services in the area.

Most of these resistances are mental barriers. That means that it is possible to change them. Attitudes and social norms can be altered and information on how things work can help to break down these barriers.

It is a delicate task to develop the right communication message. Car users may feel offended if they get the feeling that they are being told to get rid of their cars; to them, a precious possession. It is a challenge to address the right target groups, e.g. those who use their cars only on occasion. Resistance can arise when the wrong type of message is communicated, which can even make campaigns counterproductive.

Provide Triggers

If people have the possibility to start carsharing or use any mode of shared mobility and they are motivated, still most of them will not jump into action. A trigger is needed for that. A trigger could also be the temporary provision of free carsharing membership or a travel budget for shared mobility and public transport.

7.5 A Framework for Behaviour Change

The EAST framework is a practical tool for promoting the uptake of shared mobility. In

order to change peoples' behaviour, services should be:

- easy,
- attractive,
- social and
- timely [91].

'Social' refers to social influence: we are heavily influenced by what those around us do and say.

The EAST framework helps governments to decide which aspects of service providers are relevant in e.g. tendering procedures. It also helps to stress relevant aspects of shared mobility. The framework also works the other way around: by making car use and car ownership less easy and less attractive, shared mobility will become more attractive. Examples include parking charges at home or at work and creating car parking further away from homes while offering shared mobility nearby.

While much of the attributes described below are the responsibility of shared mobility providers, it is important for municipal planners and public stakeholders to have a good understanding of what makes shared mobility services attractive for end users. Understanding both user needs and the shared mobility market (also see chapter 8) enables policy makers to ask the right questions when new operators seek permission to operate or when designing your tendering strategies.

Make it Easy

- Sign up for membership should be as simple as possible;
- Hassle-free booking, payment, and unlocking and locking of vehicles;
- No hassle with maintenance of cars, insurance costs, etc;
- Mobihubs and shared vehicles should be found where journeys start (from neighbourhood to regional level) and easy to access;
- Provide clear information for those who search for information on the municipal website and at mobihubs.
- Services should be integrated with public transport.

Make it Attractive

- The service should be practical and help to fulfil travel needs [89];
- It should be safe to use. This requires good quality infrastructure, for example parking and unparking, cycling infrastructure, etc.[51];
- It should be visible in the streets, e.g. in well-designed mobihubs;
- Strengthen the appeal of shared mobility, e.g. by showing that it is modern and the future of mobility;
- It should be fast, convenient and flexible;
- Emphasise that carsharing gives freedom of choice;
- Give users choice, e.g. different types of vehicles;
- Sharing has to be cheaper than ownership;
- If shared mobility offers more benefits than owning one car, it will be more attractive.
- Provide triggers or incentives, such as:

  - Reward shared mobility users, by e.g. giving them free access to a local theatre performance.
  - Reimburse the deposit for new users;
  - Provide the first rides or kilometres for free;
  - Offer temporarily free charging for electric vehicles;
  - Develop a scrapping scheme: if people sell their old car, they are provided a budget for public transport, cycling and shared mobility;
  - Reward people who give up their parking permit.

©Advier

Make it Social

- Show how many people are using shared mobility; if friends and 'other persons like me' are using it, it becomes more relevant [89], [92];
- Organise demonstrations and try-outs where people may discover how shared mobility works;
- Make use of ambassadors and quotes by users;
- Tell real life stories about people's experiences with carsharing;
- Local participation gives strong support. Organise information sessions with citizens;
- Involve the local business sector;
- Find early adopters;
- Start the talk and start a movement!

Make it Timely

- It takes time to get people used to shared modes. Change happens step-by-step. Take the time and make little steps and repeat campaign messages over a long period.
- People may be interested in carsharing, but may wait until their own car needs to be replaced before joining.
- Sharing means that other persons might use the vehicle, so the service is not available at the time one needs it. This is an important mental barrier that has to be overcome.
- Provide cues or messages at the right time and place; such as:
  - Organising a shared mobility offer for people who move or request a driver's license;
  - Organising shared mobility alongside new housing developments (see chapter 6.5);
  - Providing information alongside the application of parking permits;
  - Sending a letter to residents and companies if a new mobihub opens.

Carsharing Campaign 'Use It, Don't Own It'

LOCATION

Bremen, Germany (570,000+ inhabitants)

IMPLEMENTING BODIES

Ministry for Climate Protection, the Environment, Mobility, Urban and Housing Development of the City of Bremen

DESCRIPTION

Communication is a crucial component of successfully promoting shared mobility. Awareness raising is one of the building blocks of Bremen's Carsharing Action Plan. In 2012, the carsharing mascot Udo was created. Udo stands for 'Use it, Don't Own it'. This mascot is consistently used in various public awareness campaigns.

The main theme in the carsharing campaigns is that Udo is an average person with diverse needs and wishes. By walking, cycling and public transport, most needs can be satisfied. Occasionally he needs a car. With carsharing, Udo has access to a variety of vehicles, without worrying about maintenance, taxes and insurances. So, he has more time to 'chill'.

The message and the campaign design created by the City of Bremen are simple and provider neutral. It addresses potential target groups of all ages. Postcards, placards and billboards have been used. In movie theatres and public events, a short advertising film has been shown. The message has been adapted to fit the different media types. Postcards have a short message in front and additional information on the back. Billboards contain a brief message for motorists.

The principle of cognitive dissonance has been applied in order to get attention. This means that the message contradicts with the expectation of the viewer.

CRITICAL SUCCESS FACTORS

1. Highly rational arguments about the money, greenhouse gas savings are effective when addressing policy makers and public stakeholders. When addressing private end users, however, campaigns have to be more emotional than rational and have to include motivational factors that make carsharing attractive for private residents.
2. Campaigns need to be specific for the desired target groups and have to be based on main principles from behavioural psychology. It's important to focus on those aspects that are essential for users: no hassle with cars, flexibility, costs and a nearby mobihub.
3. Consistent use of branding is relevant, as this makes it easy for the public to recognise the message.
4. The message has to be repeated over time. One-time campaigns are far less effective. With a simple, more timeless design, Udo has the opportunity to be a spokesman for many years.

'Looking for a parking space? Changing tyres? Nah! I'd rather chill and use carsharing'

Udo, campaign mascot

IMPACT

Non-users of carsharing in Bremen are quite aware of carsharing: 85% of non-users have heard of carsharing and 79% sees it as a good idea [33].This is much higher than in other German cities. This can be explained by the high visibility of the mobihubs (mobil.punkte) and by the many years of campaigning with the Udo mascot.

TYPE OF LOCATION
Urban

LOCATION SCALE
Large

INVESTMENT SCALE
Low

COST-BENEFIT-RATIO
High

TARGET GROUP
Residents

Employees/Commuters

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
Yes

MORE INFORMATION
The Udo film is available in German, English, Norwegian and Dutch.
https://tinyurl.com/SHARE-North-Videos

MORE BREMEN CASES

› Sustainable Urban Mobility Plan › Carsharing Action Plan › Mobihub strategy
› Real estate development

National Liftshare Week

LOCATION

Edinburgh, UK (520,000 inhabitants)

IMPLEMENTING BODIES

South East Scotland Transport Partnership (SEStran)

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Liftshare UK

DESCRIPTION

National Liftshare Week is a UK-wide initiative by Liftshare UK. It was created to promote the benefits of ridesharing and encourages people to join a ridesharing scheme. By this, they save money, meet like-minded people and cut their carbon footprint.

In October 2016, SEStran celebrated the National Liftshare Week. SEStran joined with Edinburgh-based radio station Forth 1 to promote TripshareSEStran.com across the area. They teamed up with Forth 1's 'Home Run' presenters Mark Martin and Lynsey Gibson. SEStran chair and Edinburgh Councillor Lesley Hinds took part in a 'Liftshare Lip Sync' challenge. Listeners were asked to identify songs during their carpool for a chance to win numerous gift vouchers.

CRITICAL SUCCESS FACTORS

1. Getting high-profile partners to actively support the campaign was very useful. One of SEStran's board members from the City of Edinburgh Council endorsed ridesharing as a legitimate alternative to single occupancy car journeys.
2. Expensive 'paid-for' advertising does not always yield big results. Smaller campaigns can have a high return for only a small amount of focused investment. Examples include an email from a Director endorsing your rideshare scheme to staff, information for staff and teams, stalls within canteens or office break-out areas.
3. Ridesharing should be part of a Regional Transport Strategy or a Shared Mobility Action Plan.

IMPACT

During the 2016 promotions, 500 participants took part in the lip sync challenge. 84 new journeys were added to the database of over 8,000 people. At NHS Lothian, the membership has grown with 200% since the promotion event was held. Tripshare SEStran has continued to grow in popularity since its launch in 2006.

'If people who routinely drive to work, share their journey just once a week, it would take up to 20% of cars off the region's roads'

Lesley Hinds, SEStran Chair and Edinburgh Transport Councillor

TYPE OF LOCATION
Urban

Rural

Trip generators (companies, business parks, universities and events)

LOCATION SCALE
Medium

Large

INVESTMENT SCALE
Low

COST-BENEFIT-RATIO
High

TARGET GROUP
Students

Employees/Commuters

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
Yes

MORE INFORMATION
https://tinyurl.com/SHARE-North-Videos

(Car)Share Fest

LOCATION

Belgian cities like Brussels, Antwerp, Kortrijk, and Liège

IMPLEMENTING BODIES

Autodelen.net

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

(Shared) mobility providers
The city where the festival takes place

DESCRIPTION

Residents don't always know what sharing options are available in their area. The Carshare Fest brings sharing together and invites people to start sharing. A large public can be reached and providers can demonstrate how their (car)sharing system functions.

A carshare fest is identical to a tradition motor show, but instead of showing the newest cars, all exhibited cars are being shared. Other types of sharing are exhibited too, like cohousing, bikesharing and clothes swapping. The fest is held on the annual car free Sunday during the European Mobility Week.

Much more can be done in addition to promoting only carsharing: like a share bar, kids' animation, game contests, etc. This attracts a broad and diverse group of people and draws attention to the theme of sharing.

In smaller cities and neighbourhoods, voluntary carshare enthusiasts organise pop-up carshare fests. These fests are integrated in a bigger local event, like the annual fair. In an outdoor living room with couches and tables, ambassadors inform residents about carsharing.

CRITICAL SUCCESS FACTORS

1. The success depends on the participation of mobility operators.
2. It's important that a host city supports the event with communication and practical implementation.
3. Cities should local (sharing) organisations a platform at the festival and also look beyond carsharing.
4. Make it a nice place for young and old. Provide kids' entertainment, organise a street theatre and a bar where people share a drink with their neighbours.
5. The message about shared mobility should be repeated a lot and a Share Fest is one unique option for bringing this message.
6. Integrating this event into a broader event, like the Car-Free Sunday to have more visitors and make the programme of the other event more complete is very valuable.

© J. Pousset

'Did you know that the average person in Flanders works one day a week to own a car?'

Nick Balthazar, film maker

IMPACT

The (Car)Share Fest creates a better understanding of shared mobility for city inhabitants and provides equal marketing chances for small local providers and international providers. Through the event, the image of shared mobility becomes linked to fun.

TYPE OF LOCATION
Urban
Rural

LOCATION SCALE
Medium
Large

INVESTMENT SCALE
Medium

COST-BENEFIT-RATIO
High

TARGET GROUP
Residents
Families with children
Policy makers

IS THE ACTION PART OF A SUMP OR SHARED MOBILITY ACTION PLAN?
No

MORE INFORMATION
https://tinyurl.com/SHARE-North-Videos

8

MARKET DEVELOP-MENTS

Have mercy
been waitin' for the bus all day
Have mercy
been waitin' for the bus all day

ZZ Top

8. Market Developments

GOLDEN RULE 4

Some shared mobility modes develop slowly and have a strong positive impact on reducing car ownership and greenhouse gas emissions. Other modes develop rapidly, fostered by multinational corporations with investment power and have a more doubtful impact on reducing car ownership and greenhouse gas emissions. The latter modes have a strong appeal to people and get many people on board of shared mobility.

GOLDEN RULE 6

Shared mobility works best in dense areas with governmental support and policies that support the various modes.

GOLDEN RULE 7

In less dense areas, more guidance is needed to make shared mobility blossom. Multinational corporations are not interested in these areas. The main drivers are local cooperation and synergies with the local business sector.

8.1 Introduction

Most shared mobility services are offered by companies. Huge differences exist between operators with regards to:

- Type of company: from local cooperative to multinational corporation;
- Fleet sizes: from a few vehicles to thousands of vehicles;
- Area of operation: from rural areas to megacities;
- Use of technology: from 'no-tech and low-tech' to 'high-tech';
- User appeal: from low appeal to 'very cool';
- Disruption level: from slow growth to fast growing and highly disruptive.

Based on these characteristics, three groups of service providers can be identified:

1. Slow but steady;
2. Fast expansion;
3. Booming services.

This chapter explores these groups. Next, more details about developments within the shared mobility market are revealed. The chapter ends with the dark side of shared mobility.

8.2 Slow but Steady

Some modes of shared mobility develop slowly but steadily. They are not disruptive. In some cases, they need strong governmental initiatives like regional ridesharing schemes. These modes very often don't have a strong appeal to the large public but are highly effective in reducing car ownership and car use and, therefore, have strong impacts on greenhouse gas emissions. Examples include:

- Short distance carpooling;
- Roundtrip bikesharing;
- Roundtrip carsharing;
- Ride-splitting.

Operators most often are national or regional market providers that operate on a commercial base. In rural areas, providers may work at a not-for-profit base. Schemes for carpooling may be subsidised by local and regional governments.

8.3 Fast Expansion

Other shared mobility modes have a stronger user appeal and a faster growth pace. They also are likely to be more disruptive, meaning they are bringing a rapid change in the car-sharing market. They contribute to reducing car ownership and car usage, but this might be to a smaller extent than the 'slow growers'. Examples include:

- Peer-to-Peer carsharing;
- Long distance carpooling;
- Free-floating bikesharing (with or without docking stations).

Operators are (inter)national players with large-scheme investors behind them. Free-floating bikesharing with docking stations is often tendered and subsidised by local authorities. Most services may be found in cities, while Peer-to-Peer carsharing also works in small town and more rural areas.

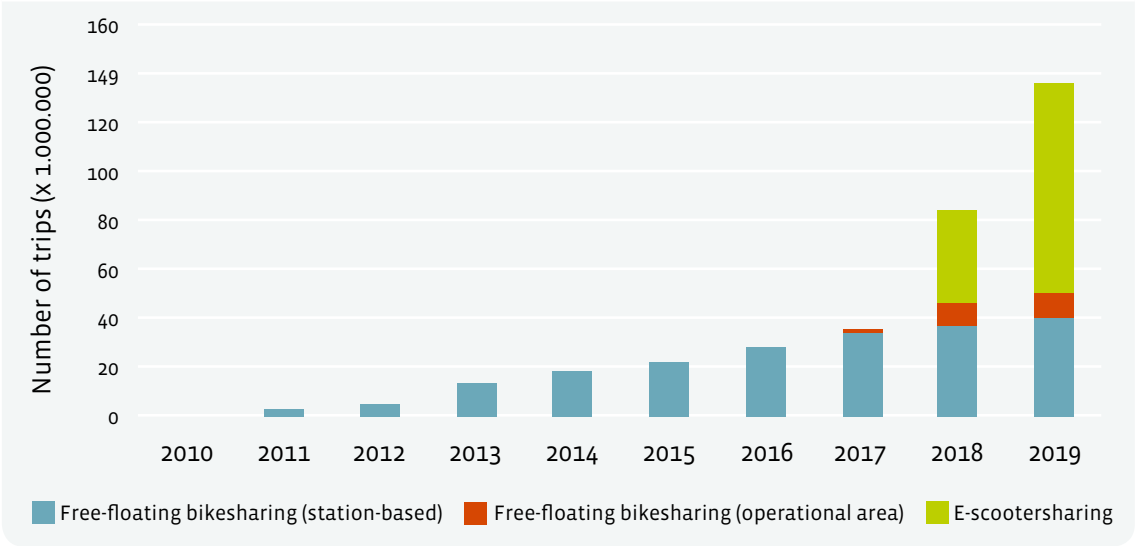
8.4 Booming Services

Finally, there are the shared mobility modes with a very strong user appeal and a high growth pace. Their services are very disruptive. Impacts on car ownership and car use are often small or even unknown. Their power is to attract large groups of new users to shared mobility. They may be used as a catalyst to get people into sharing other mobility modes that may, at first glance, appear to be a bit less 'cool'. Examples include:

- E-scootersharing;
- E-mopedsharing;
- Free-floating carsharing;
- Ridesourcing.

These forms are more likely to be found in megacities. In most cases, they are backed by multinational corporations.

Bikesharing and E-scootersharing, USA 2019



E-scootersharing is disruptive as it saw an explosive level of growth in a short amount of time. Source: NACTO [93].

8.5 Changing Markets

This paragraph deals with a number of developments that are characteristic for the shared mobility sector.

New Concepts

The market for shared mobility is developing fast. This is a result of trends in society that are changing in the market for mobility as a whole. New shared mobility service concepts have come into existence in the past years, like:

- Long-distance ridesharing services like Blablacar;
- Ridesourcing services like Uber;
- Free-floating carsharing services like DriveNow;
- Dockless bikesharing concepts like Mobike;
- E-scooter services like Lime;
- Shared mobility services for new housing concepts.

As described before, some concepts are very disruptive. As a result, branch protests by existing market operators are common.

New Investors

New investors become interested in either providing shared mobility services themselves or collaborating with shared mobility providers for a diverse number of reasons. Examples include:

- Public transport operators may work with bikesharing and carsharing to offer last-mile transport from train and bus stations;
- Car manufactures may want to be ready for a future in which car ownership may be less common;
- Car lease companies may get requests from customers that want to decrease expensive car fleets, causing these companies to seek alternatives to individual leasing contracts;
- Petrol stations and local car sellers are thinking about a future in which cars do not need petrol anymore and require less maintenance.

These investors look at shared mobility from their own point of view and will look for ways to strengthen their own activities or create a broader offer for their customers. For example, public transport companies will focus on shared mobility trips in combination with the use of a bus, tram or train. They will be less interested in trips that are made completely with shared cars.

As a result of the interest of and activities by these potential investors, new target groups are becoming acquainted with shared mobility. However, shared mobility may threaten the activities of these market actors. Moving too rapidly to access-based models could lead to a cannibalisation of e.g. public transport use or car sales. However, delaying a transition to other service models might result in exclusion of these investors from future markets [14]. This dilemma results in stakeholders who are entering the market, but do not push developments forward.

High Competition

Experiences with shared mobility shows that it's not easy for operators to run a shared mobility business. This is caused by:

- Small profit margins: it's difficult to earn money with sharing;
- High competition: many market players want to conquer a position in a rapidly developing market with low entry barriers;
- High dependency of cooperation with local governments;
- Often unrealistic expectations by operators, financiers and governments.

For governments, it is important to understand the market and be flexible. For example, during the COVID-19 lockdown, carsharing operators did not need to pay parking fees in the public realm in Bremen in order to reduce the financial burden on the companies during this time. The city benefits from the carsharing service and offered a gesture to companies that provide services that should not disappear.

Internationalisation and Mergers

In many cases, international players are changing the game. It looks like they are exploring the market potential, which often is a struggle. In some cases, operators discover that the market is more complex than foreseen, which may result in a closure of services in a city or a complete shutdown of the service. Mergers of companies also happens regularly. This situation is very common in markets with venture capital [94]. They could involve providers offering the same type of service. In other cases, providers are creating a portfolio with several modes of (shared) mobility.

No Dominant Business Models

Sharing economy markets have the tendency to develop towards monopolies, since the main asset is the online marketplace. The bigger the market, the higher the value for those who offer services like rooms, houses and cars. The same counts for users. The result is a 'winner-takes-all' situation with natural monopolies. For shared mobility, there are different business models that are viable in different urban settings. Peer-to-Peer models that require face-to-face contact between car owners and users, have different dynamics that free-floating schemes where a nearby vehicle is picked up with one click on a smartphone. Business models also have their own geographic range. Free-floating services typically are found in very large cities, where they are most economical to operate for the provider. Roundtrip services can be found in large and small cities. In rural areas, local cooperatives without commercial targets are more common. A conclusion might be that dominance of one business model for shared mobility is not obvious [14].

8.6 The Dark Side of Shared Mobility

In some cases, shared mobility has a 'dark side'. It is important to be aware of these aspects and to search for ways to deal with these negative features.

Adequate Regulations

While user satisfaction often is high, on-demand ride services may be controversial, variously criticised as they often lack adequate regulation, insurance and licensure. In some cities and countries, Uber's ridesourcing services has been banned. In other countries, Uber cooperates with regular taxi drivers.

Labour Conditions

The 'gig economy' provides a supplementary income for people providing services, like offering rides for ridesourcing companies such as Uber or sharing own vehicles on Peer-to-Peer platforms.

Like in many sectors of the sharing economy, there is a political discussion on labour contracts and the protection of basic rights of employees. Drivers of ridesourcing services often are considered as independent contractors. When taken into account with costs like insurances and vehicle costs, drivers might earn well below the minimum wage.

In policy making and in tendering procedures, fair working conditions for staff of mobility providers should be taken into consideration. For example, it might be taken into consideration whether staff are self-employed or direct employees.

Consumer Protection

Consumers should be able to trust drivers of ridesourcing services. It is important that such companies carry out background checks of drivers.

An additional condition for operating in the market could be the aspect of training drivers to fulfil their tasks, especially in the field of assisting customers with mobility impairments.

Data and Privacy Aspects

Shared mobility providers are using GPS-data to track vehicle position. Aggregating these data provides useful information about urban trips and destinations. These data may also be misused. For example, if they are sold to private, third-party companies. If data is not aggregated properly, it still may be possible to track individual trips. Therefore, it is crucial to find out who owns the data, with whom it is shared, and how privacy aspects of users are being protected [95].

Negative Impacts on Travel Behaviour

In the case of some shared modes, shared mobility modes may have negative impacts on more sustainable travel behaviour. For example:

- Roundtrip carsharing could result in more car trips by people who did not own a car before;
- Free-floating carsharing can replace public transport trips and bike trips;
- Cheap ridesourcing can lead to an increased attractiveness of car use over public transport;
- E-scooters compete with walking, cycling and public transport for short journeys.

It is important to know to what extent these use behaviours occur and to consider if these are side impacts or main impacts and whether it jeopardises a municipality's sustainable transport goals. When, for example, public transport in cities is lacking capacity, a bikesharing or e-scootersharing system may provide relief to capacity challenges during peak commuting hours or for closing gaps in the public transport network, particularly as part of the last-mile of a journey.

Research after the impact of shared mobility provides many answers to these questions. The impact section of this guide gives many answers. In addition, the Shared Mobility Circle (see chapter 6.2) makes clear that the more shared mobility services are in place, the bigger the synergy effects and the higher the impacts of the various shared modes.

Redistribution of Vehicles and Battery Charging

Free-floating varieties of bikesharing, e-scooter and e-mopedsharing as well as carsharing can result in a cluttering of vehicles at popular destinations, while other areas are left empty. Operators must solve this issue by redistributing vehicles around town. This might create lots of additional traffic and freight travel with distribution vehicles, which, in the worst case, happens with polluting freight trucks. Smarter solutions include:

- Incentivising users for leaving the vehicle in less popular areas;
- De-incentivising this for popular areas;
- Using cargo bikes or electric vehicles for the redistribution of vehicles.

© Bremen

For shared electric vehicles, the same problem can occur for the charging of batteries. The same solutions may apply.

Juicers

E-scooter providers may hire so-called 'juicers' to pick up the shared e-scooters overnight and charge them at their private homes. Besides issues with labour contracts and additional car/truck trips, this practice causes dangerous situations, as the batteries with chemical substances are being charged at places where the juicers are living. Providers are tackling this issue by purchasing e-scooters of which the batteries can be removed and be charged at safe places. At mobihubs, charging facilities can be created for e-scooters and e-bikes. The usage can be incentivised.

9

POLICIES THAT MAKE SHARED MOBILITY ROCK

Climb the ladder, your security
Upward social mobility

Napalm Death

9. Policies that Make Shared Mobility Rock

GOLDEN RULE 8

Without proper policy frameworks, shared mobility cannot rock. Local governments have to create the essential conditions, while tackling negative aspects in a proactive way.

9.1 Introduction

It takes effort to make shared mobility rock. Public governments play a crucial role in this. Policies for shared mobility create the essential conditions to make shared mobility rock while negative aspects are tackled in the right way.

This chapter explores the needs and the possibilities for governments to develop shared mobility policies. The chapter starts with stressing the need for shared mobility policies. Next, a brief overview is given of the ways in which municipalities and other tiers of governments can create progressive policies that strengthen shared mobility.

9.2 Why It Is So Hard to Make Shared Mobility Rock?

Making shared mobility rock is not that easy. A couple of factors add to this:

- Car ownership is the default mode of transport for many citizens and planning policies are still centred around the automobile in most cities;
- Many citizens are unaware of shared mobility;
- Our society is still highly car dependant [96];
- Politicians need to be convinced;
- Policy frameworks are based on paradigms related to ownership instead of usage;
- A straightforward strategy for shared mobility is often lacking in municipalities;
- Smart implementation focused on market uptake is needed;
- The shared mobility changes so rapidly that it is sometimes hard to keep track of.

In attempt to make shared mobility rock, there are many pitfalls to be aware of, like:

- A lack of understanding of how shared mobility works;
- A lack of understanding of the shared mobility market results in subsidising the wrong stakeholders that have no chance of survival;
- Governments are waiting for market operators to come, while the operators are waiting for the municipal governments to create the right framework conditions for them to enter the market;
- If market operators come and ask for cooperation, the government does not know how to deal with shared mobility;
- Unsuitable sites for shared vehicles are often selected and, therefore, users do not come;
- No marketing or only communication at the start of a new service;
- Bad visibility of shared mobility.

It takes serious efforts to make shared mobility rock. Especially in rural areas and for dedicated target groups like people of lesser mobility and/or the elderly.

9.3 Need for Policy Making

This guide has made clear that shared mobility is an effective means to decrease car dependency, to reduce greenhouse gas emissions and to increase the quality of

life. Governments play a crucial role in the development of shared mobility. Without governmental support, a sound development of shared mobility is rather unlikely. At a first glance, one might think that this is not the case because there is an active market of operators that are developing and offering shared mobility services based on a positive business case.

Developing a vision on shared mobility is important because:

- Shared mobility needs public space;
- Shared mobility will come to you (or not);
- A vision can prevent chaos on the market;
- It contributes to inclusive mobility.

One of the biggest risks is that cities do not have a policy framework on shared mobility. If providers show interest, municipal representative do not know how to respond. This could result in the municipality missing out on the opportunity to benefit from shared mobility. Or worse, providers start services that create chaotic situations. Finally, there are dark sides of shared mobility (see chapter 8.6), that public authorities may have to deal with.

Therefore, it is highly recommended to be proactive and to develop a strong, flexible and transparent policy framework.

Shared Mobility Needs Public Space

Without policies that allow for parking places, stations for bikesharing and micromobility or permissions for dockless systems, it is almost impossible for operators to develop shared mobility services. For carsharing, the biggest hurdle is the parking policy of cities [14], [97]. Parking policies need to be adapted in order to create dedicated parking space for shared cars. Adaptions in the parking code have to favour shared mobility in new urban developments and provide space in existing infrastructure. Finally, strict parking regulations and financial disincentives to private car parking will increase the demand for shared mobility.

As public space and curb space is limited in cities and demand is high, shared mobility has to compete with other curb space uses. When things are working in the right direction, shared mobility results in less car ownership. In cities the largest contribution of shared mobility is the more efficient use of public space. For that purpose, some of this public space needs to be dedicated for shared mobility. The City of Bergen has developed a vision on mobihubs and is limiting the use of public space for private car parking (see case study in Chapter 6.3). This has resulted in a positive awareness, reduced car ownership and a fast uptake of shared mobility services.

Without access to public space, shared mobility services have to be made available in private areas like parking lots. This makes the services invisible for the public and thus less attractive.

It Will Come to You (or Not)

Based on the trends in society, the relevance of shared mobility will increase. Market operators are looking for business and they need cooperation with cities.

If the process of policy making by municipalities only starts when an operator shows interest, it may be too late to set standards and create a mutually beneficial environment.

Many choices have to be made and by the time that policies are finally in place, the operator or potential users have lost the interest. In other cases, operators might focus on other cities and areas where policy conditions are in place.

Many cities have needed to develop defensive strategies and tackle negative public opinions instead of being 'ahead of the game'. The bottom line is that cities and regions will not benefit from the opportunities that shared mobility provide if they are not prepared.

Preventing Chaos

In the more disruptive segments of shared mobility, operators do not always wait for governmental support and have started to deliver their services regardless of the views of the local government. This can result in chaos. Unregulated free-floating bikesharing and micromobility services have resulted in problems like blocked pavements, cycle paths, building entrances and emergency exits, particularly when they first emerged on the market. Safety of pedestrians and cyclists, users and non-users may also be at stake, when e.g. e-scooters use the pavement or the main road.

A natural response of governments and existing market operators is to forbid services or develop very strict regulations. By developing a shared mobility framework, this kind of chaos may be prevented, setting the focus on developing shared mobility services in a positive direction. At the time that other cities received negative media attention related to problems with shared bikes and e-scooters, the City of Bremen developed a policy framework that clearly outlined expectations for providers while protecting public interest. Chaotic situations have been prevented by this and public opinion is positive about the new mobility services (see also the case study about Bremen's micromobility policy in chapter 4.5).

The bottom line is that governments have to be ready for the services that are developing right now as well as be ready for the next thing. When, for example, autonomous vehicles become viable transport solutions for individual passenger transport on roads, they need to be shared, in order to prevent the chaos through a significant increase in traffic volume that thwart sustainable mobility goals.

Inclusive Mobility

When market operators work fully commercially, they will focus on areas and target groups where chances for a positive business case are best. Places like city outskirts, rural areas or touristic destinations will not be served automatically. Target groups like the elderly, unemployed persons, handicapped persons may not benefit from services when they are first launched in a city or if not supported by local governments or initiatives. In other cases, people without a smartphone, a credit card or a national bank account will not be able to join many commercial shared mobility services as at least one of these is required to sign up. This limits the social inclusiveness of many types of shared mobility.

In order to made shared mobility more inclusive, particularly for the target groups mentioned above, effort is required. In most cases, this is not the task for the operator to organise this but falls on the local community.

	Municipalities	Regions	Countries	EU
Dedicate staff	✔	✔	✔	✔
Integrate into SUMPs/ Strategic Transport Plans	✔	✔		
Create Shared Mobility Action Plan	✔	✔		
Create regulations	✔	✔	✔	
Physical and digital integration	✔	✔	✔	
Mobility management	✔	✔		
Communication	✔	✔	✔	
Fiscal measures	✔	✔	✔	
Research & data	✔	✔	✔	✔
Practice what you preach	✔	✔	✔	✔

9.4 What Governments Can and Should Do

The table below shows which options are available for governments of all levels to support the uptake of shared mobility. These items will be tackled in the following parts of this chapter.

9.5 Dedicate Staff to Shared Mobility

The starting point for governments is to dedicate staff to shared mobility. Without working hours and budget, it's hard to get things going.

One of the first things this dedicated staff should start with is acquiring knowledge on shared mobility and getting to know the market. Options for learning are:

- Diving into the literature on shared mobility;
- Find out how other governments are dealing with shared mobility;
- Participate in networks;
- Talk with multiple shared mobility operators (regularly);
- Follow trainings and seminars provided by various.

9.6 Sustainable Urban Mobility Plans

A Sustainable Urban Mobility Plan (SUMP) is a strategic plan designed to assess transport issues for the movement of people and goods in cities and urban regions.

A goal is to satisfy the mobility needs of people and businesses in cities and their surroundings in the service of a better quality of life. The development of a SUMP builds on

existing planning practices and takes into account the principles of integration, participation and evaluation [98].

A SUMP covers all transport modes and options in the entire urban agglomeration, including public and private, passenger and freight, motorised and non-motorised, moving and parking [99]. Therefore, shared mobility should be part of every SUMP, just like public transport, walking, cycling, urban logistics, road transport and intermodality [100].

As stated in chapter 3, shared mobility serves many policy targets by reducing car dependency and by shifting away from car ownership and usage. This helps to meet targets in the field of climate protection, more efficient use of public space as well as an increase of road safety [42]. The mobility pyramid (see chapter 3.4) should form the foundation for every SUMP strategy. Safe infrastructure for walking, cycling and micromobility is an important prerequisite for the uptake and success of shared mobility.

A SUMP provides the opportunity to define the relevance of shared mobility and to translate this into a clear ambition and strategic actions. By this, it becomes clear that shared mobility is a pillar of sustainable mobility. The ambition may be further defined in terms of responsibilities, investments and action plans. The following eight principles may be used for the integration of shared mobility in a SUMP [101]:

1. Plan for sustainable mobility in the ‘functional city’;
2. Develop a long-term vision and clear implementation plan;
3. Assess current and future performance;
4. Develop all transport modes in an integrated manner;
5. Cooperate across institutional boundaries;
6. Involve citizens and relevant stakeholders;
7. Arrange for monitoring and evaluation;
8. Assure quality.

A cornerstone for any SUMP is to look at the efficient use of street space. This is a great starting point for urban transport, since space efficient transport modes are also sustainable transport modes. Space in cities is very limited and, therefore, should be used efficiently. Walking and cycling are space efficient and result in cities with low congestion [102].

Sustainable Urban Mobility Plan Bremen 2025

LOCATION

Bremen, Germany (570,000+ inhabitants)

IMPLEMENTING BODIES

Ministry for Climate Protection, the Environment, Mobility, Urban and Housing Development of the City of Bremen

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Streets planning department
Local elected officials
Local non-profit institutions (e.g. German Cycling Federation and environmental organisations)
Chamber of Commerce
Other public offices

DESCRIPTION

A Sustainable Urban Mobility Plan (SUMP) is a city's foundation for its strategic transport planning. It serves to provide a strategic plan that ensures that individual transport measures fit together and contribute to meeting the same goals. The City of Bremen developed its SUMP in an intense 2.5-year participation process. A wide range of stakeholder groups has been involved, from local politicians, policy makers and interest groups to individual citizens.

During this process, the various aspects of Bremen's transport planning were analysed using an interdisciplinary approach in which current and future trends were studied. Measures defined in the SUMP should ensure environmentally-friendly and highly functional mobility. Stakeholders and decision makers in Bremen wish to achieve the following through the SUMP:

- More social inclusion;
- More traffic safety;
- Optimisation of commercial traffic and accessibility of Bremen as a regional centre;
- More and better services for environmentally friendly modes of transport;
- Linking of transport systems;
- Strengthening of walking, cycling and public transport, within the city and between the city and the surrounding region;
- Fewer negative effects on people, health and the environment.

Actions that support the achievement of goals include infrastructure measures, the promotion of cycling and public transport, increased efficiency of the road network and local and interregional passenger transport by rail, improvement of walking facilities. Carsharing was included too, as a solution for

- Improving intermodality and multimodality by expanding the carsharing network, increasing carsharing offer in neighbourhoods and by providing mobihubs (aka mobil.punkte).
- Mobility management concepts for new citizens or in new housing developments.
- Parking management in order to reduce parking pressure in neighbourhoods.

CRITICAL SUCCESS FACTORS

1. Interests of a huge variety of stakeholders and affected groups had to be considered and respected when developing a SUMP.
2. Innovative approaches to participation were employed in the planning process. The SUMP is the product of intensive collaboration among a wide range of actors. Examples include the use of online tools that made it possible to engage a younger demographic. A project committee included representatives of associations, the administration and decision makers which was consulted on an ongoing basis.
3. Intense cooperation and transparency contribute significantly to a high-quality plan with high political support.
4. A balance had to be sought between the necessary degree of planning detail and the 'big picture'.
5. The ongoing challenge is to implement (and finance) all of the measures and goals that were defined.

IMPACT

Carsharing is now an integral part of the long-term transport strategy of the City. The SUMP and its targets were unanimously agreed upon by all political parties. It is a guaranteed structural commitment and a basis of action to go on with the work of promoting carsharing and planning mobihubs.

TYPE OF LOCATION
Urban

LOCATION SCALE
Large

INVESTMENT SCALE
Medium

COST-BENEFIT-RATIO
High

TARGET GROUP
Policy makers

Shared mobility operators and other stakeholders

MORE INFORMATION
https://tinyurl.com/SHARE-North-Videos

SEStran's Regional Transport Strategy

LOCATION

South East of Scotland (1.5 million inhabitants)

IMPLEMENTING BODIES

South East of Scotland Regional Transport Partnership (SEStran)

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Transport Scotland
Local municipalities including the City of Edinburgh, Clackmannanshire, East Lothian, Falkirk, Fife, Midlothian, Scottish Borders, and West Lothian

DESCRIPTION

The Regional Transport Strategy (RTS) is a statutory document setting out the transport policy framework for South East Scotland for a 10-15-year period. The region covers 25% of Scotland's population. The current RTS was prepared in 2008 and updated in 2015. Recent developments in transport, such as the development of the National Transport Strategy 2, the announcement of a Climate Emergency and adoption of a net-zero emissions target by 2045 through the Climate Change (Scotland) Act 2019, the adoption of the Transport (Scotland) Act 2019 and introduction of Low Emission Zones in Scotland's four biggest cities have prompted the need to develop a new Regional Transport Strategy for the South East of Scotland.

The current Strategy lays out the vision for the strategic development of transport in South East Scotland up to 2025. It focuses in particular on travel-to-work areas to and from Edinburgh, being the economic hub of the region. It supports the Scottish Government's wider economic, social and environmental aims, including the National Carbon Reduction Target and links with the region's strategic land use development plan.

The RTS has four key objectives:

- Economy: to ensure transport facilities encourage growth, regional prosperity and vitality in a sustainable manner.
- Accessibility: to improve accessibility for those with limited transport choice or no access to a car, particularly those living in rural areas.
- Environment: to ensure that development is achieved in an environmentally sustainable manner.
- Safety & Health: to promote a healthier and more active population.

These objectives include a number of priorities:

- Reducing the number of commuter journeys by single-occupancy vehicles within South East Scotland.
- Minimising the overall need for travel, especially by car.
- Maximising public transport provision and achieving public transport integration and intermodality.

- Improving safety for all road and transport users.
- Enhancing community life and social inclusion.
- Maintaining existing infrastructure to a standard that ensures that it can be fully utilised.
- Enhancing movement of freight, especially by rail and other non-road modes.

Ridesharing has proven to be valuable for achieving many of these objectives, therefore, it has been identified as a high priority.

CRITICAL SUCCESS FACTORS

1. The RTS offers a key opportunity to address cross-boundary issue like single occupancy cars. These issues often are overlooked by local authorities that mostly deal with problems within their own jurisdiction.
2. The RTS facilitates sharing of best practice and knowledge across various levels of planning and government.
3. The success of the RTS depends on the delivery of the priorities identified and a commitment of funding. SEStran itself has only very limited funding. Delivery of regional transport priorities has been hampered as local authorities had to cut budgets and focus on local and immediate priorities.

IMPACT

The development of a new Regional Transport Strategy offers an opportunity to reflect on the achievements since the adoption of the original Strategy in 2008 and update in 2015. It also offers an opportunity to develop new policies and objectives that incorporate shared mobility as part of the transport network that is needed in the shift to a low carbon economy.

TYPE OF LOCATION
Urban

LOCATION SCALE
Large

INVESTMENT SCALE
Medium

COST-BENEFIT-RATIO
High

TARGET GROUP
Policy makers
Shared mobility operators and other stakeholders

MORE INFORMATION
https://sestran.gov.uk/news/sestran-strategic-studies/

9.7 Shared Mobility Action Plans

The development of a SUMP is an important but also time and resource intensive process for a city. Shared Mobility Actions Plans can be a less labour and resource intensive alternative to a SUMP for defining clear goals, strategies and measures for shared mobility. A Shared Mobility Action Plan (SMAP) can cover one or several modes of transport. For example, the Carsharing Action Plan for the City of Bremen covers one transport mode, whereas the Action Plan for the City of Deinze, BE covers several transport modes, including carsharing and bikesharing.

A SMAP should define clear long-term targets for shared mobility development, for example, the number of users or private cars replaced by a certain date. This can generate political backing and momentum for the cause. It should also define clear areas of action. This is the foundation on which planners and other local stakeholders can work to reach the established targets.

A SMAP should be concrete enough for a municipality and planners to be able to take clear action in specific areas. However, the plan should also be vague enough to allow planners to adapt to the changing needs of citizens, users and the shared mobility market in a city. For example, a municipality can define a goal to integrate shared mobility into the public realm and housing developments as well as set long-term goals of even coverage throughout the city. However, fixing very precise goals such as the number of mobihubs and specific locations over a timeframe of many years can create undo pressure and unrealistic expectations about market abilities or limit the flexibility of expansion when the needs of neighbourhoods change.

A SMAP could include:

- Specific targets for the uptake of shared mobility modes;
- A vision on the promotion of 'slow but steady' growers (see chapter 8.1);
- A strategy to deal with fast expanding and booming services (see chapters 8.2 and 8.3);
- Dealing with public space in relation to shared mobility modes;
- Parking codes for on-street shared mobility;
- Tackling aspects of shared mobility with a possibly negative impact;
- Licensing of operators (see case study in Chapter 9.9);
- Maximising the number of operators and the size of fleets for bikesharing and micromobility;
- Integration of shared mobility (see chapter 6):
  - Development of mobihub networks;
  - Interoperability and Mobility as a Service;
  - Real estate development;
  - Mobility management;
- Communication, marketing and incentives (see chapter 7);
- Measures that ensure that municipalities integrate shared mobility into their own operations: 'practice what you preach';
- How data is dealt with;
- Guidelines and principles for measuring the impacts of shared mobility.


MOB
PUN
2
3
P+R
oep-Zuid
Schagen Station
JE BENT HIER
Scan deze QR code voor het reserveren van een deelfiets of deelauto op dit mobip
Of ga naar
VERVOER
Fiets
Deelfietsen
Overdekte fietsenstalling
Trein
IC Amsterdam CS
IC Den Helder
Bus
152 Callantsoog Stuyvezandeweg
158 Warmenhuizen
652 Den Helder Station
652 Julianadorp
Auto
Deelauto
©Advier

Bremen's Carsharing Action Plan

LOCATION

Bremen, Germany (570,000+ inhabitants)

IMPLEMENTING BODIES

Ministry for Climate Protection, the Environment, Mobility, Urban and Housing Development of the City of Bremen

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Local Politicians (Committees for Construction, Transport, the Environment and Energy)

DESCRIPTION

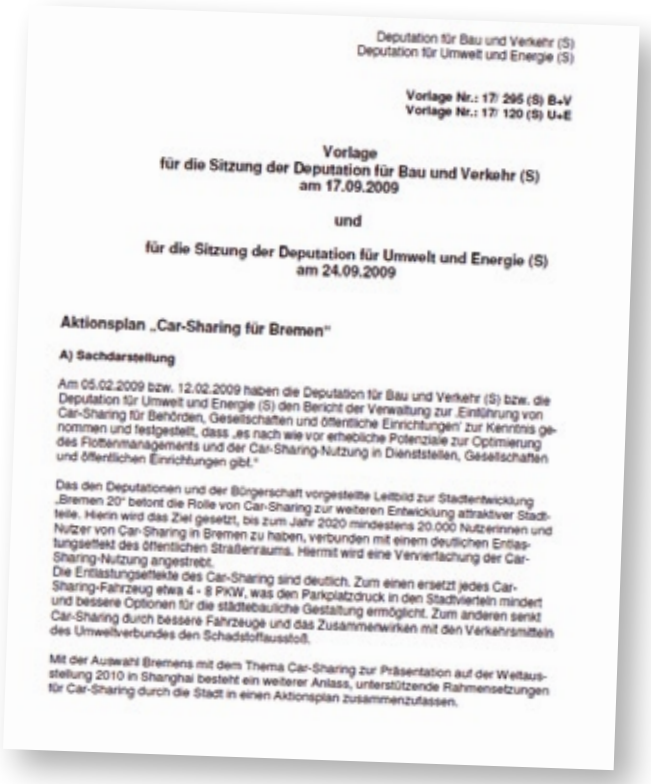
Like many cities, Bremen faces the problem of too many cars occupying limited urban space. Carsharing helps to organise mobility more efficiently, to regain street space and to improve the quality of urban life. Carsharing also reduces emissions supplementing the other sustainable transport modes and the use of appropriately sized low-emission vehicles. However, carsharing is still a niche product. That is why, by developing a Carsharing Action Plan, the City created the groundwork for activities on carsharing promotion and expansion of services to make it increasingly mainstream.

In 2009, the Action Plan was adopted by the Committees for Urban Development, Transportation, the Environment and Energy. The following goals were set for 2020:

- More attractive neighbourhoods;
- 20,000 carshare users;
- 6,000 fewer privately owned cars through carsharing;
- Reduction of parking pressure.

The plan includes five core steps:

- The implementation of mobihubs (mobil.punkte) in public street space to relieve parking pressure;
- Raising awareness for carsharing;
- Integrate carsharing with public transport and encourage cooperation between mobility providers;
- Integrating carsharing into new housing developments;
- Using carsharing in the municipality's own operations.



Deputation für Bau und Verkehr (S)
Deputation für Umwelt und Energie (S)

Vorlage Nr.: 17/ 295 (S) B+V
Vorlage Nr.: 17/ 120 (S) U+E

Vorlage
für die Sitzung der Deputation für Bau und Verkehr (S)
am 17.09.2009

und

für die Sitzung der Deputation für Umwelt und Energie (S)
am 24.09.2009

Aktionsplan „Car-Sharing für Bremen"

A) Sachdarstellung

Am 05.02.2009 bzw. 12.02.2009 haben die Deputation für Bau und Verkehr (S) bzw. die Deputation für Umwelt und Energie (S) den Bericht der Verwaltung zur „Einführung von Car-Sharing für Behörden, Gesellschaften und öffentliche Einrichtungen" zur Kenntnis genommen und festgestellt, dass „es nach wie vor erhebliche Potenziale zur Optimierung des Flottenmanagements und der Car-Sharing-Nutzung in Dienststellen, Gesellschaften und öffentlichen Einrichtungen gibt."

Das den Deputationen und der Bürgerschaft vorgestellte Leitbild zur Stadtentwicklung „Bremen 20" betont die Rolle von Car-Sharing zur weiteren Entwicklung attraktiver Stadtteile. Hierin wird das Ziel gesetzt, bis zum Jahr 2020 mindestens 20.000 Nutzerinnen und Nutzer von Car-Sharing in Bremen zu haben, verbunden mit einem deutlichen Entlastungseffekt des öffentlichen Straßenraums. Hiermit wird eine Vervierfachung der Car-Sharing-Nutzung angestrebt.
Die Entlastungseffekte des Car-Sharing sind deutlich. Zum einen ersetzt jedes Car-Sharing-Fahrzeug etwa 4 - 8 PKW, was den Parkplatzdruck in den Stadtvierteln mindert und bessere Optionen für die städtebauliche Gestaltung ermöglicht. Zum anderen senkt Car-Sharing durch bessere Fahrzeuge und das Zusammenwirken mit den Verkehrsmitteln des Umweltverbundes den Schadstoffausstoß.

Mit der Auswahl Bremens mit dem Thema Car-Sharing zur Präsentation auf der Weltausstellung 2010 in Shanghai besteht ein weiterer Anlass, unterstützende Rahmensetzungen für Car-Sharing durch die Stadt in einen Aktionsplan zusammenzufassen.

CRITICAL SUCCESS FACTORS

1. Showing and convincing politicians across all party boundaries of how carsharing addresses several of its pressing transport, spatial and environmental issues was essential for passing a Carsharing Action Plan of long-term benefit.
2. A Carsharing Action Plan has to be specific enough on targets, but should not be so specific that it limits flexibility when implementing actions.
3. Define clear, measurable goals that give planners, politicians and carsharing providers a motivational factor. The goals also stressed the need to continue activities that ensure the success of carsharing.
4. The unanimous support for the Carsharing Action Plan was valuable, as it was able to be used to remind politicians of the initial goal when specific conflicts arose.

IMPACT

Research in 2018, showed that 14,000+ users replaced more than 5,000 privately owned cars. The activities like the public awareness campaign and the expansion of the mobil.punkte have fostered the success of carsharing. The City reached the goals laid out in the Carsharing Action Plan in the second half of the year 2020.

TYPE OF LOCATION
Urban

LOCATION SCALE
Large

INVESTMENT SCALE
Low

COST-BENEFIT-RATIO
High

TARGET GROUP
Policy makers

Shared mobility operators and other stakeholders

MORE INFORMATION
https://mobilpunkt-bremen.de/downloads/ (in English and German)

Shared Mobility Action Plan Zemst

LOCATION

Zemst, Belgium (21.000 inhabitants)

IMPLEMENTING BODIES

Municipalitiy of Zemst

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

Autodelen.net
Province of Vlaams-Brabant

DESCRIPTION

Zemst is a small city between Brussels and Mechelen (Belgium). With support of the Province of Vlaams-Brabant, Zemst adopted a Shared Mobility Action Plan in 2018.

The action plan contains detailed measures and actions towards 2025 and contains the following elements:

1. An environmental analysis: assessing all sustainable mobility modes in the City together with an overview of the shared mobility landscape in Belgium.
2. Detailed goals and actions for shared mobility: Zemst strives for 19 shared cars, one bikesharing scheme and 5 companies that will implement carpool schemes. This will reduce the number of private cars by 1% by 2025. Furthermore, 50% of the shared cars in Zemst have to be battery-electric by this date.
3. An overview of actions with potential partners and timelines.

CRITICAL SUCCESS FACTORS

1. Follow-up of the Action Plan is key. Autodelen.net started work together with the municipality to support them to set up mobihubs and sharing their own fleet. The Action Plan is a starting point for a local government, not the finish line.
2. A valuable addition for the Shared Mobility Action Plans would have been to define targets for the number of users. This puts the focus on the actual use of the measures rather than just the availability of them.
3. For monitoring purposes, municipalities can be supported by a template that helps them to monitor the progress of their action plan on an annual basis.

TYPE OF LOCATION
Rural

LOCATION SCALE
Medium

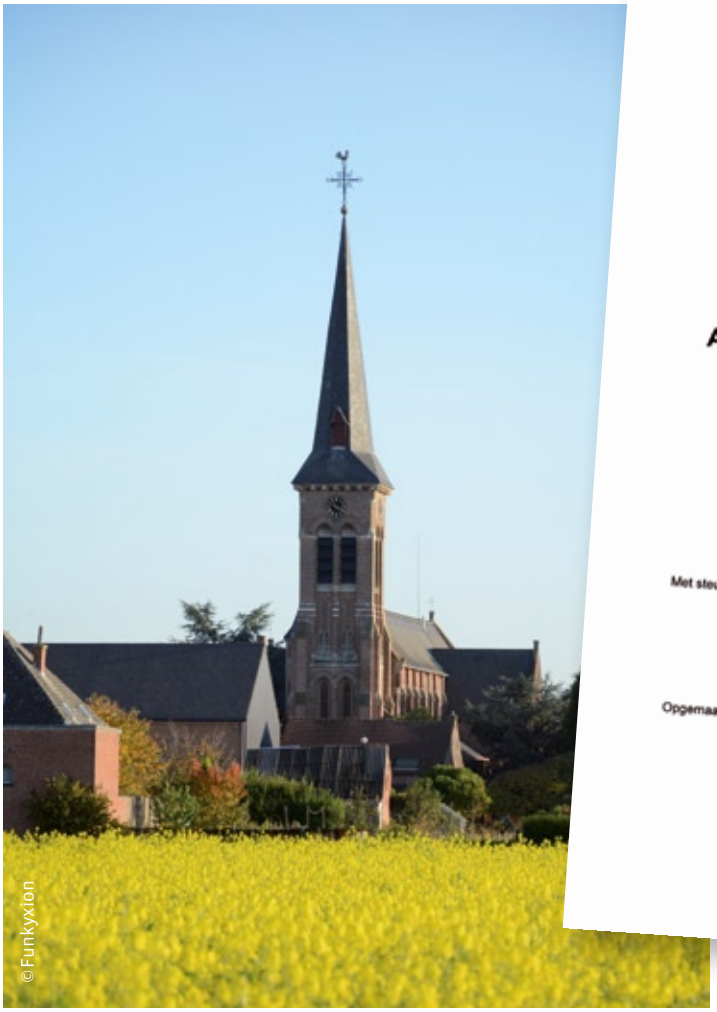
INVESTMENT SCALE
Low

COST-BENEFIT-RATIO
High

TARGET GROUP
Policy makers

Shared mobility operators and other stakeholders

MORE INFORMATION
https://www.zemst.be/file/download/990/717B4CE81A1609F847D5BBD00BFBCB3B (in Dutch)



9.8 Cooperating with and Selecting Service Providers

The cooperation between municipalities and service providers is often challenging. Cities may wait for providers, while providers wait for the city to take the initiative to support shared mobility. Service providers may contact cities and request to start operation. On the other hand, cities may come with plans and want to tender for services. This segment explores both models.

It's always smart for municipalities to have a regular dialogue with shared mobility operators and discuss expectations on both sides of the table as well as requirements and regulations of the municipality. The shared mobility providers usually have lots of experience and often are willing to support the development of smart regulations hand-in-hand with municipalities. Cities that are already experienced are often also eager to provide a helping hand.

Dealing with Requests from Providers and Competition

Shared Mobility providers are looking for places where they can expand their services. They often use models to predict where to find new customers. When they want to start operation in new areas or expand in a place where they already are, they may approach the local government, as they need public space for the service.

A policy framework is required for dealing with such requests. Clear information for providers is helpful, like how to get in touch with the right department and what steps have to be taken in order to get permission.

A big question is whether multiple operators should be allowed or if only one operator is more beneficial in an area, just like with public transport.

At any time, a strong cooperation with the providers is important. Local governments can benefit from shared mobility services, while the service providers need the local government in order to establish successful operations. Therefore, it is helpful to make agreements with providers, in which expectations from both sides are clearly described (see Section 9.9). Without any agreements, an operator might leave when they discover that the market is not developing in a profitable way. In that case, cities are left without a service that they would like to keep.

Tendering for Services

When a government wants to attract shared mobility services, they could request providers to develop a proposal or an expression of interest to operate in an area.

A basic understanding about shared mobility, user needs (see chapter 7), the market (see chapter 8) and the role of government (see chapter 9) is required in order to develop a proper tendering proposal.

Tendering with One Winner

In some cases, the city is looking for one operator. For example, they are looking for a provider that offers a citywide bikesharing system with docking stations or they ask for a provider that offers shared cars and bikes for municipal staff. Traditional tendering services may work well here.

Arguments for Single Provider	Arguments for Multiple Providers
In the start-up phase, it may be practical to limit the number of operators, in order to create mass	Competition can support a healthy mobility market
Free-floating services require mass	More providers means more choice for customers
One operator can provide large-scale seamless solutions over one booking platform	Prevent potential exploitation through monopolies
No need for customers have multiple memberships	Allow for new concepts
Prevents isolated 'island' solutions	There is no rule that states one should have just one provider

Tendering such services requires a great knowledge of the market and many the details of shared mobility. If tendering goes wrong, a valued existing service might lose its customers, leaving them and the City with a mobility problem. For example, after operating in place for many years, the bikesharing system Vélib was tendered again by the City of Paris. Due to complications with e.g. new docking stations and electric bikes, the service lost many customers, resulting in a political problem for Paris' mayor at the time (see case study).

Situations should be avoided in which a single operator requests subsidies while other parties are not contacted about the opportunity to provide the service. Operators should be treated in the same way in order to create a level playing field.

In addition, it is important to look closely at start-ups with new service concepts. Before putting lots of time and money into them, a municipality should try to get understanding of their market situation and find out if they have a solid business case.

Tendering with Multiple Winners

In other cases, it is not necessary or even undesired that only one provider carries out all the services, for dockless micromobility services, for example, or for carsharing services at mobihubs.

If local governments own the public space of a mobihub, they may request providers to offer services. This does not need to be limited to a single provider. The City of Bremen organises a modified tendering procedure in the form of an 'Expression of Interest' by shared mobility providers. Providers are selected that meet the defined quality criteria, such as complying with the national environmental standards for carsharing and the provider's contribution to a decrease of car ownership. If multiple operators want to use the same parking places, they are first requested to resolve this among themselves. If no solution is found, the City selects one provider based on a more classic tendering procedure criteria.

Participatory Approach in Rural Areas

In rural areas, local participation is the key for success. General tendering procedures could yield no results if operators are not interested in operating in less dense, rural areas or if they area lacks local networks that are an essential requirement for establishing services here. If tendering procedures need to be followed, it is recommended to reward cooperation with local stakeholders.

Vélibgate

LOCATION

Paris, France (2.2 million inhabitants)

IMPLEMENTING BODIES

City of Paris
64 municipalities around Paris
Syndicat Autolib' et Vélib' Métropole (SAVM)
Smovengo

DESCRIPTION

Since 2007, JCDecaux operated Paris' well-known bikesharing system Vélib'. As the contract period ended, a 700 € million public tender was organised to improve the system, implement better and safer bikes and introduce electric bikes. Smovengo won the tender with an offer that was cheaper than JCDecaux.

The new operator had to install new stations in Paris and surrounding municipalities. This caused many problems, as electricity was hard to arrange. 1,400 stations were planned, but realisation went slow. In 2017, more than half of the realised stations had to run on batteries. When empty, the complete station went down, so vehicles could not be booked or docked anymore. Additionally, the new provider struggled with initial problems including broken seats, defective screens, crashing apps and deactivated cards.

This caused a mass of complaints. It also caused a political scandal. Paris' Mayor Anne Hidalgo had promised to boost sustainable mobility and bikesharing, instead, 'Vélibgate' resulted in a decrease of her popularity [103].

The tendering procedures focused on a new form of cooperation between the city districts of the Greater Paris area and the service providers. As a result, the implementation phase started with financial and legal arrangements while neglecting the technical aspects essential for the actual use of the system, such as the instalment of electric docking stations.

CRITICAL SUCCESS FACTORS

1. Changes of service providers may impact users and trust is lost easily.
2. Tendering is necessary but as projects may increase in size, budget and complexity, things may go wrong.
3. Good ideas for improvement do not necessary make users happier.

© Bremen

'Parisians consider that the system they loved has been ruined. We must have a service that works, as fast as possible, to regain users' trust.'

Anne Hidalgo, mayor of Paris

IMPACT

- The number of subscribers dropped from 290,000 to 220,000 in 2018. The number daily users dropped from 110,000 to 30,000 in 2018.
- As of 2019, most problems have been solved. Subscribership is back at the old levels and usage is increasing [104].
- Users start to depend on shared mobility services. If these services create trouble or even leave the city, the daily life of many people is being affected.

TYPE OF LOCATION
Urban

LOCATION SCALE
Large

INVESTMENT SCALE
High

TARGET GROUP
Residents

Employees/Commuters

Students

MORE INFORMATION
www.velib-metropole.fr

9.9 Parking Regulations

Parking policies are an essential policy tool for regulating and supporting shared mobility. These can be established on a national, regional or municipal level. These parking policies can take the form of providing privileged parking for shared transport modes in easily accessible and visible areas in the public realm, such as reserved parking bays or zones.

Clear Procedures

Station-based types of shared mobility need dedicated places for parking of the vehicles. For free-floating services, citywide regulations are needed that allow the service to be in place in a certain area.

The following procedures have to be clear for shared mobility providers:

- How and where to contact the city about operating requirements;
- How to request permits;
- Which steps need to be taken in order to acquire a permit.

It is important to ensure that permits are provided as quickly as possible. The speed with which permits can be provided obviously depends on the legal framework of municipality. If procedures require a more lengthy amount of time, the reasons for this should at least be communicated transparently to the providers and the public as well as stakeholders. If the approval structures are simple, software systems that are used by governments to manage parking permits can, for example, be suited for the purpose of approving car-sharing permits [105].

Tariffs

The space which shared mobility operators occupy with their services can either be provided free of charge or at a fee to the shared mobility operator, depending on the strategy the municipality intends to follow. Charging a fee to the operator for this privilege can have the advantages for a municipality such as generating income for future measures or increasing public acceptance of a measure, in particular in neighbourhoods where parking pressure is high and the perception of 'losing' parking space is strong. The disadvantage for shared mobility providers, of course, is an additional financial burden in an often low-profit and highly competitive mobility market.

Charging a Usage Fee for Providers	
Advantages	**Disadvantages**
Increased acceptance among public/politicians	Increased financial hurdle/risk for providers, particularly in new market area
Means of financing future parking facilities (e.g. mobihubs)/ legitimising public investment	

In order for shared mobility to be competitive with ownership, it should be ensured that parking space for shared cars should be cheaper than parking space for private cars [105].

Visibility

Reserved parking bays in the (semi-) public realm can be made visible by placing totems, using the shared mobility icons or by developing mobihubs that combine several transport modes under a joint branding. Exemptions for shared mobility providers such as free-floating carsharing operators can also be established in these areas.

Providing privileged parking areas for carsharing, ridesharing or bikesharing can improve access to these services, increase public awareness of these services due to better visibility and can demonstrate clear political support of shared transport modes.
Clear signage also reduces the chance that privately-owned vehicles are parked at shared mobility stands.

Parking Management

In order to make shared mobility work, it is important to arrange that parking spots are dedicated for the shared mobility service. If private cars or bikes are placed at shared mobility stands, it will be a problem for users to return the vehicle in a proper way. Incorrectly and illegally parked vehicles should be towed away. In addition to this, if a shared vehicle must be parked somewhere else because of an illegally parked vehicles, this should not be fined. Finally, shared mobility providers should be informed about events, road works and street closures so that they can plan their operations accordingly.

Since many of these aspects involve the operational level of everyday life of parking management, it is extremely important to consolidate shared mobility policies into work processes of enforcers, communication around events and road works and other staff.

Charging Infrastructure

The lack of available charging infrastructure might limit the uptake of electric carsharing. Station-based carsharing requires a different approach for charging infrastructure: for publicly accessible charging infrastructure targeted at privately owned cars, it is relevant that vehicles are removed as soon as they are fully charged. For carsharing, this is not possible. If time implementation of electric carsharing is desired, charging facilities and parking bays only for electric carsharing must be provided.

For other electric shared mobility modes, charging infrastructure can be integrated in docking stations for bikesharing or shared e-scooters.

Limiting Possibilities to Park Private Cars

Parallel measures to provide limits to the parking of privately-owned cars in the public realm are also very important for the success and uptake of shared mobility services and the desired effect of reclaiming street space for uses other than parking private cars. Paid parking in the public realm at a significant fee can serve to discourage the ownership and use of private cars. This can support the uptake of shared mobility use.

Parking Standards for New Housing Developments

By applying lower parking standards for new housing developments, developers will be

nudged to offer shared mobility. In addition, parking standards for bikes of all sizes should be required. Chapter 6.5 dives deeper into this topic.

Criteria for Operators

Agreements between municipalities and operators make it possible to create clear expectations about responsibilities, tasks and distribution of costs. Criteria may include [12]:

General criteria

- A definition of shared mobility or a specific shared mobility mode;
- Licensing of operators: they should comply with national and international standards and regulations;
- Environmental criteria such as emission standards;
- Standards for interoperability and MaaS;
- Information on how to apply for new locations;
- Equal service to all areas of a municipality;
- Transparent information about costs for the usage of public space;
- Agreements about the way to end the usage of locations by the city and the operator;
- Agreements on data exchange.

Tasks for the municipality

- Offering dedicated spaces for shared vehicles, like parking spaces;
- Issuing permits for parking or for operation;
- Creating charging facilities for electric vehicles;
- Informing providers about road closures and events that affect the service of the operator.

Tasks for providers

- Using the space in the way desired by the municipality;
- Taking responsibility for contributing to safe and orderly streets;
- Providing 24-hour service to customers;
- Providing information to the municipality about usage;
- Inform the city if parking places are not needed anymore.

Criteria for Bikesharing and Micromobility

For free-floating (dockless) bikesharing and micromobility, the following standards may be helpful [106]:

- Let operators provide incentives for proper parking behaviour and enable users to report inappropriately parked or dumped vehicles.
- Require operators to remove badly parked vehicles quickly or fine them if the city has to remove them.
- Together with the operators, develop zones where vehicles cannot be parked or develop dedicated ‘drop zones’.
- Ensure a smart and environmentally-friendly way to rebalance fleets. This needs to happen in order to guarantee even availability of vehicles and to avoid cluttering of vehicles at popular destinations.
- Ensure that recharging of batteries is done in an orderly and environmentally-friendly way.
- Stress the need for interoperability and MaaS.
- Agree on the exchange of data.
- Take care of privacy issues related to the European General Data Protection Regulation (GDPR).

Accreditation for Carsharing and Bikesharing

LOCATION

United Kingdom

IMPLEMENTING BODIES

CoMoUK

DESCRIPTION

CoMoUK runs accreditation schemes for carshare and bikeshare operators in the UK which provides assurance to local authorities on an agreed set of standards expected by operators when providing services. The schemes cover a range of points under the following areas:

- Business requirements;
- Service provision requirements;
- Safety requirements;
- Data collection requirements.

Accreditation is a voluntary scheme where each criteria is proactively assessed by CoMoUK to ensure that a collectively agreed set of standards is upheld across the industry. This ensures that the reputation of shared transport schemes is maintained as a valuable component of sustainable transportation. Both accreditation schemes have been developed in consultation with a wide range of stakeholders.

CRITICAL SUCCESS FACTORS

1. Extensive consultation with local authorities and operators was carried out to ensure that the accreditation scheme fits all needs.
2. The annual renewal on the same date is a requirement in order to allow for further accreditation. The sector is changing and standards are reassessed each year.

IMPACT

- The accreditation process works as a timesaver for public authorities, as they do not need to look at the operator's background in detail. CoMoUK has done this for them.
- Public authorities appreciate the assessment of shared mobility schemes by a third party.
- Operators can demonstrate that they have reached the agreed standards. New operators immediately stick to these standards, which prevents the delivery of low standards.
- The data from the annual surveys are convincing politicians and policy makers to work with carsharing and bikesharing.
- The system results in a coordinated approach and better policy making. This makes working with the carsharing and bikesharing sector more efficient and prevents chaotic situations.

© CoMoUK

TYPE OF LOCATION
Urban

Rural

National

LOCATION SCALE
Large

INVESTMENT SCALE
Low

COST BENEFIT RATIO
High

TARGET GROUP
Policy makers

Shared mobility operators and other stakeholders

MORE INFORMATION
https://como.org.uk/accreditation/

9.10 National and EU Policies

The European Union and national governments can play an important role in encouraging the uptake of shared mobility. Just like cities, they could ensure that shared mobility is being recognised as a solution for climate mitigation, urbanisation and transport related issues.

The following aspects support the development of shared mobility:

- Allowing on-street parking for shared mobility;
- Uniform signage of mobihubs and usage of shared mobility icons;
- Supporting the cooperation within the shared mobility sector and the exchange between operators, cities, insurance companies etc;
- Giving shared mobility services a comparable status like public transport and taxis etc. This includes tax benefits for shared mobility services [107];
- Dealing with issues that should be solved on a national level, like criteria for vehicles (especially with regards to micromobility) [108];
- Providing financial incentives and fiscal benefits for carsharing and shared mobility;
- Ensuring interoperability and promoting the uptake of Mobility as a Service (MaaS);
- Developing quality standards for providers, like:
  - Age limits;
  - Safety criteria;
  - Interoperability [109];
  - Service requirements;
  - Data requirements and exchange of data [110];
- Supporting innovations with new modes of shared mobility and defining key new target groups such as persons with low income or mobility poverty;
- Tackling issues within the sharing economy such as:
  - Insurances;
  - Social aspects and employment;
  - Inclusiveness;
  - Sharing of data;
  - Levelling the playing field for traditional and upcoming mobility services. If taxi companies have to comply with extensive safety regulations while ridesourcing companies don't have any regulations, this creates unfairness [111].
- Supporting research and knowledge development;
- Boosting the uptake of shared mobility by national governments, regions, cities and rural areas.

Green Deal on Carsharing in The Netherlands

LOCATION

The Netherlands

IMPLEMENTING BODIES

ShareNL (first term)
Advier Mobiliseert (second term)

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

42 participants, including the Ministry for Infrastructure and Water Management

DESCRIPTION

The Green Deal on Carsharing is a three-year scheme that aims to fasten the uptake of carsharing in the Netherlands. The Green Deal is the result of the demand for more carsharing, which has been stated in the National Energy Agreement. The goal is to strengthen the cooperation between the organisations that have signed this Green Deal. The Green Deal is a bottom-up organisation in which the government acts as a facilitator.

Initially, the aim was to have 100,000 shared cars in 2018. Though the main goal hasn't been reached yet, many sub-goals have been realised:

- Carsharing is on the agenda of policy makers;
- Improved cooperation between cities and operators;
- Influencing general opinion with articles in newspapers and in magazines of relevant sector, like automotive industry, traffic engineers, energy sector etc.;
- National website on carsharing: www.autodelen.info;
- Supporting municipalities to develop a vision on carsharing;
- Parking policies that include shared mobility;
- Transnational exchange between the Netherlands and Flanders.

As a follow-up, the Green Deal II continues to work on carsharing. The time horizon has shifted to 2021 and the focus is shifting towards a growth of the number of carsharers from 400,000 to 700,000. Rural municipalities have also joined the new Green Deal.

CRITICAL SUCCESS FACTORS

1. For cities, it takes effort to get carsharing on the agenda. It takes time to develop and implement parking policies for carsharing.
2. Cities and operators are eager to exchange information in an open platform.
3. Governments prefer electric carsharing, however many operators make clear that it takes time to implement this transition.

'One might say that carsharing is related to cities. But it is also a great solution for regions with longer distances'

Stientje van Veldhoven, State Secretary for Infrastructure and Water Management

IMPACT

- The carsharing fleet has been tripled since the launch of the first Green Deal on Carsharing: from 16,000 (2015) to 51,000 (2019).
- The number of carsharers has risen from 300,000 (2017) to 500,000 (2019).
- A factsheet about municipal carsharing policies has been developed.
- A factsheet with measures for the national government has been handed to the director-general of the transport ministry.
- Two cities developed actions plan for carsharing and several cities reduced parking tariffs for carsharing.

TYPE OF LOCATION

Urban

Rural

National

LOCATION SCALE

Large

INVESTMENT SCALE

Low

COST-BENEFIT-RATIO

High

TARGET GROUP

Policy makers

Shared mobility operators and other stakeholders

MORE INFORMATION

www.autodelen.info

Green Deal on Shared Mobility in Flanders

LOCATION

Flanders

IMPLEMENTING BODIES

Autodelen.net, The Shift, The New Drive and Mpact

SUPPORTING ORGANISATION(S) & INVOLVED STAKEHOLDER(S)

106 participants including the Flemish government

DESCRIPTION

Inspired by the Dutch Green Deal on Carsharing, Autodelen.net, The Shift, The New Drive and Mpact took the initiative to launch a Green Deal Shared Mobility with the Flemish Government.

The aim of the Green Deal is to accelerate the growth of shared mobility (carsharing, carpooling and bikesharing) in Flanders. The Green Deal is a partnership of many different organisations, who are willing to undertake actions and to remove barriers to provide alternatives to car ownership. The Green Deal is supported by the Flemish government. Three ministries are involved: Energy, Transport & Public Works and Environment. The Green Deal was launched on the 27th of March 2017 with 80 signatories, including cities, NGOs, operators and research institutions. The signatories chose their own actions to contribute to the objectives of the Green Deal. Cooperation is based on commitment without obligations. The objectives for 2020 are:

1. Increase the number of carsharers to 80,000;
2. Double the number of employers undertaking actions to support ridesharing to work to 1,000;
3. Double the number of bikesharers to 400,000;
4. Increase the number of electric carsharing vehicles by 500% and install a regular offer of electric shared bikes.

More signatories joined after the initial launch. At the end of 2019, there were 106 participants. Together they formulated 700 actions to reach the objectives. Twice a year, there are plenary meetings to follow-up the progress and to have interaction between the several actions. In between the meetings, teams work in-depth on topics, like technology and innovation, multimodality, business parks, awareness raising, legal aspects, insurance and transnational learning.

CRITICAL SUCCESS FACTORS

Factors important to the success of the Green Deal Shared Mobility and similar schemes are:

1. Having multi-disciplinary working groups to maximise the learning experience.
2. Creating physical events to have more exchange between partners and create energy.
3. Transforming thematic working groups into real taskforces with concrete actions.

4. Having sufficient resources to manage the Green Deal and keep every signatory motivated.
5. The principle of voluntary engagement helps stakeholders to find new synergies that result in actions with impact.

IMPACT

- The Green Deal supported the exchange of knowledge. Stakeholders are more aware of what is happening and what other stakeholders are doing.
- By the end of 2019, three objectives were achieved. For the fourth objective, data were not available yet, so the impact could not be measured yet.
- Over 465 measures have been implemented, like the opening of new carsharing stations, new bikesharing facilities, the sharing of electric fleets sharable and local campaigns.
- The Green Deal was consulted on zero-emission funding for carsharing providers. The funding scheme has extended, which is a great help to reach the 2020 targets on electric carsharing.

TYPE OF LOCATION
Urban
Rural
National

LOCATION SCALE
Large

INVESTMENT SCALE
Medium

COST-BENEFIT-RATIO
High

TARGET GROUP
Policy makers
Shared mobility operators and other stakeholders

MORE INFORMATION
https://gedeeldemobiliteit.be/english/

'Today, our society needs to make important choices: taking small steps around mobility or resolutely opting for more shared means of transport. We opt for the second, but for that you need governments, companies and civil society to work together'

David Leyssens, The Shift

9.11 Research and Data

Research and data support the development of shared mobility. Data on the impacts of shared mobility are very helpful to get insights in the benefits for society. Research is needed to get a clear understanding of:

- Development of supply and demand over time;
- User characteristics;
- Impacts on travel behaviour;
- Car replacement factors in different areas: the number of private cars that are sold or not purchased because of the uptake of shared mobility services.
- Environmental impacts;
- Economic impacts;
- Road safety;
- Social impacts and gender impacts
- Impacts related to the integration of shared mobility in new housing areas
- Impacts of marketing efforts.

Examples of research by the SHARE-North partners and levels of authority include:

Universities:
- The benefits of carsharing on spatial relationships and ecosystem services in Helsingborg [18].

Cities:
- Evaluation of the impact of the carsharing in Bremen [33].

Countries and regions:
- Carsharing and bikesharing annual surveys by CoMoUK, with editions for London, England & Wales and Scotland [24], [25];
- Annual carsharing monitor in the Nether lands for CROW, by Advier [35];
- Impact study on different carsharing variants by the German Carsharing Association (Bundesverband CarSharing e. V.) [23].

Collaborative Research across Several Organisations (funded by the European Union):
- Carsharing inventory by the STARS project [22].

9.12 Practice What You Preach

Governmental organisations can support the uptake of shared mobility by using shared mobility services themselves [112]. Often, they have an own fleet of cars or bikes. These vehicles might be shared with other users. Or instead of having an own fleet, they could become a member of shared mobility service. By doing so, shared mobility could start in less urbanised areas. This might be organised by providing a purchase guarantee (see also the case study on introducing carsharing in municipalities in Chapter 4.3).

When staff and politicians use shared vehicles for business trips, this helps to spread the story of shared mobility. Besides, staff may be the right target group to become private members of shared mobility services as well.


BXL
PIÉTONS PRIORITAIRES
VOETGANGERS
HEBBEN
VOORRANG
#BXLOVE
KOSMOS
-50%
TABAC - BOI
SOUVENIR

10

LOOKING TO THE FUTURE

Only the young can say
They're free to fly away
Sharing the same desire
Burnin' like wildfire

Journey

10. Looking to the Future

10.1 Introduction

Based on the latest insights, case studies, policy development and living labs from the SHARE-North project, this guide has given state-of-the art insights in the dynamic world of shared mobility. For the future it is foreseen that this world will become increasingly relevant.

10.2 Trends

The following aspects will lead to the greater relevance of shared mobility.

Societal Shifts
- Stronger attitude of younger generations in favour of access over ownership;
- More people are growing aware of and familiar with shared mobility;
- A growing urban population and urbanisation;
- More governments are discovering the relevance of shared mobility as a result of growing public interest.

Technological Changes
- New technologies such as automation;
- New vehicles like drones.

Market Developments
- New market partners and new stakeholders being involved;
- New business models;
- Blurring of vehicles, technologies and existing modes of mobility into new, smart solutions;
- Blurring boundaries between collective and private transport [14].

There are many developments that support the growth of shared mobility. However, our society is strongly car oriented. Measures focused on changing this orientation remain unpopular. As long as this happens, it may not be expected that shared mobility will fully substitute private car ownership. Instead, it is likely to become a stronger part of a multimodal transport system [14]. Therefore, it is important to integrate shared mobility with other transport options. The development of mobihubs, MaaS and integrated ticketing will support this. As shared mobility becomes more accepted, the smaller the resistance will become to measures that discourage car ownership.

10.3 The Challenge for Shared Mobility

For shared mobility, the biggest challenge may be to create added value by providing access. Often a parallel is made with Spotify when it's about the shift from ownership to usage and here this link can be made as well. What is the added-value of a CD collection if Spotify delivers 24-hour access to all music? The Dutch OV-fiets, which provides bicycle access across the Netherlands, is also an excellent example of this. Why should one own a bike in every city, when you only occasionally need a bike in another city? If carsharing offers more than ownership, for example, the freedom to choose the type of vehicle that suits the need of that moment against a lower price than car ownership, this might be the time that the battle against ownership will be won.

10.4 Take the Lead

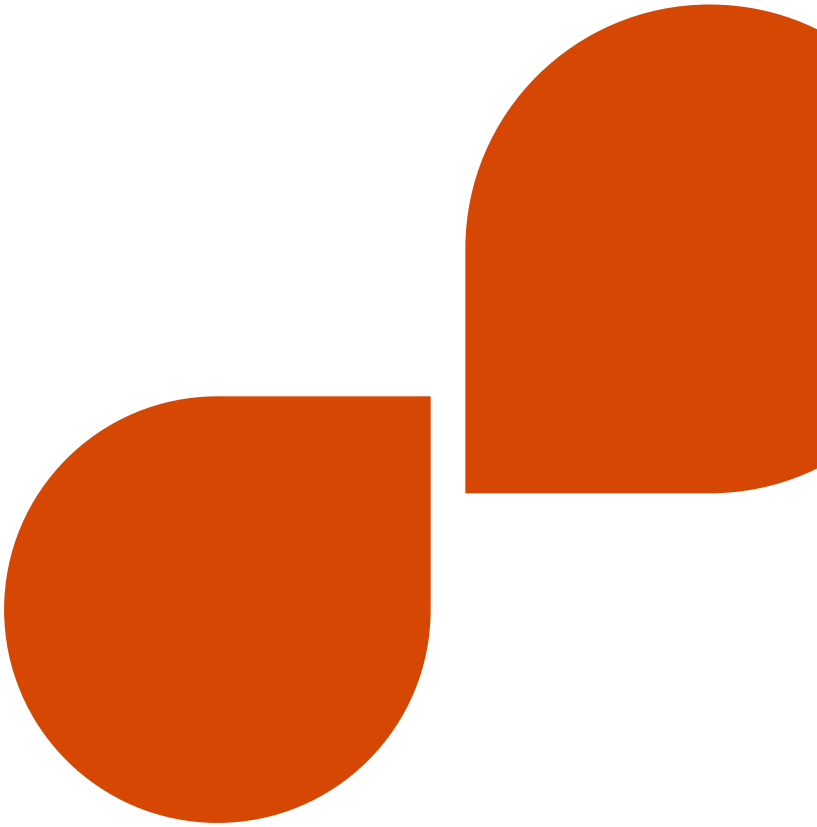
Many trends are pointing in the direction of shared mobility. If you want them to come to your municipality and preferably in a way that you benefit from it as much as possible, you should take the lead. Focus on creating impacts. Liberate valuable urban space from its function as parking space and adapt it for active transport modes and other more people-oriented purposes instead. Thus, streets will become safer and emissions lower.

Make broad alliances with a myriad of stakeholders and policy domains. Shared mobility has a wide range of positive impacts: from improved mobility and energy savings to liveable and inclusive cities. Work with those who benefit most.

Integrate shared mobility with the public transport by developing mobihubs and working on MaaS. Make shared mobility a part of mobility strategies to make the area more liveable and sustainable.

Be flexible. Adapt for new modes of shared mobility and new partnerships as well as respond to new opportunities and threats. Don't overvalue technology. Simple solutions that work well are often the most efficient with the greatest impact; and they don't require loads of budget. Don't forget the most important part: communicate. Talk with people, involve them and make them partners of the great story of shared mobility.

Be patient and don't panic. Travel behaviour doesn't change overnight. Expect change, but don't expect miracles. Success has to be earned and these things take time.



References

[1] J. W. Sheppard, "The Paradox of Urban Environmentalism: Problem and Possibility 1," Ethics, Place & Environment, 9(3), Vols. Ethics, Place & Environment, 9(3), 299-315, p. 29, 2006.

[2] European Commission, " A roadmap for moving to a competitive low carbon economy in 2050," 2011.

[3] EEA, "European Union emission inventory report 1990–2013 under the UNECE Convention on Long-range Transboundary Air Pollution (LRTAP)," EEA Technical Report No 8/2015, 2015.

[4] WHO, "Air Pollution," [Online]. Available: https://www.who.int/sustainable-development/transport/health-risks/air-pollution/en/. [Accessed 31 10 2019].

[5] M. Enoch, "Sustainable Transport, Mobility Management and Travel Plans," Routledge, 2012.

[6] European Commission, "Developments and Forecasts on Continuing Urbanisation," [Online]. Available: https://ec.europa.eu/knowledge4policy/foresight/topic/continuing-urbanisation/developments-and-forecasts-on-continuing-urbanisation_en. [Accessed 04 08 2020].

[7] G. Mattioli, J. Anable and K. Vrotsou, "Car dependent practices: Findings from a sequence pattern mining study of UK time use data," Transportation Research Part A: Policy and Practice , vol. 89, no. July 2016, pp. 56-72, 2016.

[8] CBS, "Nederlanders en hun auto. Een overzicht van de afgelopen tien jaar," 2017.

[9] CBS, "Autobezit 75-plussers neemt toe," 2018.

[10] D. Shoup, "Pay as you Park," 2005. [Online]. Available: http://shoup.bol.ucla.edu/PayAsYouPark.htm. [Accessed 1 11 2019].

[11] S. Shaheen, A. Cohen and I. Zohdy, "Shared Mobility. Current Practices and Guiding Principles," U.S. Department of Transportation Federal Highway Administration, Rep. No. FHWA-HOP-16-022, Washington, DC, 2016.

[12] CROW, "Factsheets autodelen," 2016. [Online]. Available: https://www.crow.nl/vakgebieden/verkeer-en-vervoer/bibliotheek/kennisdocumenten/factsheets-autodelen-2016. [Accessed 08 06 2020].

[13] K. Miedema, "Bicycle Parking. The Dutch Case. Final Conference Report," BiTiBi Project, Utrecht, The Netherlands, Miedema, K..

[14] K. Münzel, "Access over ownership. On supportive conditions for scaling up carsharing. Master thesis," Utrecht University, 2020.

[15] M. Glotz-Richter, "Opening speech of the SHARE-North project," Bremen, 2016.

[16] TomTom, "TomTom Traffic Index," [Online]. Available: https://www.tomtom.com/en_gb/trafficindex/. [Accessed 2020 5 5].

[17] OECD International Transport Forum, "Urban Mobility System Upgrade. How shared self-driving cars could change city traffic," 2015.

[18] M. Johansson and T. Bramryd, “Sustainable mobility and urban ecosystem services,” Urban planning and environmental strategies, Lund University, Helsingborg, 2020.

[19] K. Frenken, “Towards a prospective transition framework. A co-evolutionary model of sociotechnical transitions and an application to car sharing in The Netherlands,” Lund, Sweden, 2013.

[20] Bundesverband Carsharing, “Wirkung verschiedener CarSharing-Varianten auf Verkehr und Mobilitätsverhalten. Car Sharing Fact sheet Nr. 3,” Berlin, 2016.

[21] G. Nehrke and W. Loose, “Nutzer und Mobilitätsverhalten in verschiedenen CarSharing-Varianten,” Bundesverband CarSharing, Berlin, 2018.

[22] Stars, “Car sharing in European cities, status and trends, D2.1,” 2018.

[23] W. Loose and G. Nehrke, “Entlastungswirkungen von Carsharing-Varianten,” 2018.

[24] CoMoUK, “Annual survey of car clubs, editions London/ England & Wales/Scotland,” 2016-2019.

[25] CoMoUK, “Bike share users surveys 2016-2019,” 2016-2019.

[26] Shared Use Mobility Centre Learning module Electric Scootersharing, “Learning Module Electric Scootershare,” [Online]. Available: https://learn.sharedusemobilitycenter.org/learning_module/electricscootershare/. [Accessed 27 01 2020].

[27] CoMoUK, “Two Wheels Good. CoMoUK e-scooter position paper,” 2018 .

[28] CROW, “Carpoolpleinen, van beleid tot uitvoering,” CROW Publicatie 254, 2007.

[29] Wikipedia, “Real-time ride sharing,” [Online]. Available: https://en.wikipedia.org/wiki/Real-time_ridesharing. [Accessed 29 4 2018].

[30] H. Nijland, J. van Meerkerk and A. Hoen, “Effecten van autodelen op mobiliteit en CO_2-uitstoot. PBL-publicatie 1789,” PBL Netherlands Environmental Assessment Agency, 2015.

[31] Mpact, “Tevredenheidsonderzoek cambio-klanten te Brussel,” MoMo Carsharing project, 2011.

[32] CoMoUK, “Shared Cars. Why,” [Online]. Available: www.como.org.uk/sharedcars/why. [Accessed 7 5 2020].

[33] Team Red, “Analysis of the impacts of car-sharing in Bremen, Germany,” 2018.

[34] E. Martin and S. Shaheen, “The impact of carsharing on household vehicle ownership. Access. 38. 22-27,” 2011.

[35] CROW, “Dashboard autodelen,” 2019. [Online]. Available: https://www.crow.nl/dashboard-autodelen/home. [Accessed 5 3 2020].

[36] Autodelen.net, “Vlaanderen is Europese topregio op vlak van elektrisch autodelen,” [Online]. Available: https://www.autodelen.net/vlaanderen-is-europese-topregio-op-vlak-van-elektrisch-autodelen/ . [Accessed 5 5 2020].

[37] E. Martin, S. Shaheen and J. Lidicker, “Impact of Carsharing on Household Vehicle Holdings. Results from North American Shared-Use Vehicle Survey,” 2010.

[38] E. Martin and S. Shaheen, “Greenhouse Gas Emission Impacts of Carsharing in North America,” Mineta Transportation Institute, Report 09-11, San Jose, CA, 2010.

[39] CROW-KpVV, “Effect van autodelen op het woon-werk en zakelijk verkeer,” 2014.

[40] InnoV, “De deelauto in de binnenstad van Amsterdam,” 2006.

[41] Ministerie van Verkeer en Waterstaat, “Cycling in the Netherlands,” 2009.

[42] E. Britton, “Going Dutch, A new moment for carsharing in the Netherlands,” 2014.

[43] E. Martin and S. Shaheen, “Evaluating Public Transit Modal Shift Dynamics in Response to Bikesharing: A Tale of Two Cities,” 2014.

[44] E. Murphy and J. Usher, “The Role of Bicycle-sharing in the City, analysis of the Irish Experience,” 2015.

[45] A. Goodman and J. Cheshire, “Inequalities in the London bicycle sharing system revisited: impacts of extending the scheme to poorer areas but then doubling prices.,” 2014.

[46] Transport for London, “Barclays cycle hire customer satisfaction and Usage – Wave 2,” 2011.

[47] E. Fishman et al., “Barriers to bikesharing: an analysis from Melbourne and Brisbane,” J. Transp. Geogr. , 2014.

[48] E. Fishman et. al., “Bike share’s impact on car use. Evidence from the United States, Great Britain, Australia,” 2014.

[49] M. Vars, “2010 season comes to a close with over 100,000 rides,” Nice Ride Minnesota, 2010.

[50] LDA Consulting, “2012 Capital Bikeshare Member Survey Report,” 2012.

[51] E. Fishman, “Bike share,” Routledge, New York, 2020.

[52] S. Shaheen and N. Chan, “Mobility and the sharing economy: impacts synopsis. Shared-use mobility definitions and impacts. Special edition,” Transportation Sustainability Research Center, University of California, Berkeley, 2015.

[53] E. Fishman, S. Washington and N. Haworth, “Bike share: a Synthesis of the literature,” Transport Reviews, 33, 148-65, 2013.

[54] S. Shaheen, E. Martin, N. Chan, A. Cohen and M. Pogodzinski, “Public bikesharing in North America during a period of rapid expansion. Understanding business models, industry trends, and user Impacts,” Mineta Transportation Institute Report, 12-29.

[55] Transport for London, “Barclays Cycle Hire customer satisfaction and usage survey: members only: Wave 9 (Quarter 3 2014/15),” 2015.

[56] Department for Transport, “Investing in cycling and walking, the economic case for action,” 2015.

[57] R. Buehler and A. Hamre, “Economic benefits of capital bikeshare: a focus on users and businesses.,” 2014.

[58] European Cyclists’ Federation, “Cycling fact and figures,” n.d.. [Online]. Available: https://ecf.com/resources/cycling-facts-and-figures. [Accessed 28 4 2018].

[59] J. M. Graves, B. Pless, L. Moore, A. B. Nathens, G. Hunte and F. P. Rivara, “Public bicycle share programs and head injuries,” 2014.

[60] S. Shaheen, Martin, C. E., A.P. and R. Finson, “Public bikesharing in North America: Early operator and user understanding,” Mineta Transportation Institute, San Jose, CA, 2012.

[61] Umwelt Bundesamt, “E-Scooter momentan kein Beitrag zur Verkehrswende,” 02 09 2019. [Online]. Available: https://www.umweltbundesamt.de/e-scooter-momentan-kein-beitrag-zur-verkehrswende#aktuelles-fazit-des-uba. [Accessed 14 06 2020].

[62] The Nunatak Group, “New Urban Mobility,” München, 2020.

[63] J. Hollingworth et al., “Are e-scooters polluters? The environmental impacts of shared dockless electric scooters,” 2019.

[64] A. Griswold, “Shared scooters don’t last long,” 2019. [Online]. Available: https://qz.com/1561654/how-long-does-a-scooter-last-less-than-a-month-louisville-data-suggests/. [Accessed 28 1 2020].

[65] Ridefatdaddy, “The Economic Impact From Electric Scooter Sharing,” [Online]. Available: https://www.ridefatdaddy.com/the-economic-impact-from-electric-scooter-sharing/. [Accessed 5 5 2020].

[66] A. Roberts, “Evidence for Impacts of Shared E-scooters,” 2019.

[67] B. Kühne, “Was bringen E-Scooter?,” VCD Verkehrswende Blog, 20 10 2019. [Online]. Available: https://www.vcd.org/startseite/newsroom-uebersicht/vcd-verkehrswende-blog/was-bringen-e-scooter/. [Accessed 14 6 2020].

[68] 6t bureau de recherche, “Usages et usagers des trottinettes electriques en free-floating en France,” 2019.

[69] S. Shaheen, A. Cohen and A. Bayen, “The benefits of carpooling. The environmental and economic value of sharing a ride,” UC Berkeley, 2018.

[70] Federale Overheidsdienst Mobiliteit en Vervoer, “Federale diagnostiek woon-werkverkeer 2017,” Brussels, 2019.

[71] San Franciso County Transportation Authority, “TNCs and congestion,” San Franciso, 2018.

[72] CROW-KpVV, “Sumo Effect Calculator,” 2014. [Online]. Available: https://www.crow.nl/kennis/bibliotheek-verkeer-en-vervoer/kennisdocumenten/sumo-effectcalculator. [Accessed 28 04 2020].

[73] FEBIAC for Transport & Mobility Leuven, “Pendelen per motorfiets: een impactanalyse,” 2011.

[74] Car Republic, “Carpoolen is stuk veiliger dan alleen rijden,” 2015. [Online]. Available: Retrieved from http://www.carrepublic.nl/verwondering/carpoolen-is-stuk-veiliger-dan-alleen-rijden-infographic. [Accessed 29 4 2018].

[75] Le Figaro , “Le covoiturage bénéfique pour le comportement des conducteurs,” 2015. [Online]. Available: https://www.lefigaro.fr/actualite-france/2015/04/16/01016-20150416-ARTFIG00171-le-covoiturage-benefique-pour-le-comportement-des-conducteurs.php. [Accessed 23 1 2020].

[76] CHUMS, “Match, Motivate, Mentor. Three steps for a successful carpool scheme,” 2016.

[77] Stars, “The influence of socioeconomic factors in the diffusion of car sharing, D4.1,” 2018.

[78] A. Cohen, “Worldwide carsharing approach and experiences: research results and indicators to watch,” Bremen, 2020.

[79] S. Sørensen, “Making MaaS work. Overcoming the issue of governance,” 2018. [Online]. Available: https://www.intelligenttransport.com/transport-articles/65230/improving-mobility-service-maas/. [Accessed 21 2 2020].

[80] Mobipunt vzw, “What is a mobihub,” [Online]. Available: www.mobihubs.eu. [Accessed 15 3 2020].

[81] SEStran, “Mobility hubs. A strategic study for the South East of Scotland/SEStran region,” 2020.

[82] Departement Mobiliteit en Openbare Werken, “Vlaamse beleidsvisie mobipunten,” 2019.

[83] S. Heikkilä, “Mobility as a Service. A proposal for action for the public administration. Case Helsinki,” 2014.

[84] Ministry of Infrastructure and Water Management, “Blueprint for an API. From Transport Operator to MaaS Provider, version 1.2,” 2020. [Online]. Available: https://github.com/TOMP-WG/TOMP-API/blob/master/documents/200301%20-%20Blueprint%20for%20a%20TOMP%20API%20v1.2.pdf. [Accessed 02 06 2020].

[85] F. Metz et al., “Mobility as a Service is pas SMART als het gedeeld wordt. Bijdrage aan het Colloquium Vervoersplanologisch Speurwerk,” Zwolle, 2016.

[86] Autodelen.net, “Autodelen structureel integreren in woningbouwprojecten. Inspiratiesessie 20 juni 2019,” 2019.

[87] K. Frenken, “Autodelen verspreidt zich over heel Nederland,” 2012. [Online]. Available: https://www.mejudice.nl/artikelen/detail/autodelen-verspreidt-zich-over-heel-nederland. [Accessed 02 06 2020].

[88] F. Metz, “Hoe start je een beweging?,” 2017. [Online]. Available: https://www.crow.nl/mobiliteit-en-gedrag/weblog/februari-2017/hoe-start-je-een-beweging.aspx. [Accessed 26 2 2020].

[89] Stars, “Overall assessment of the drivers for behavioural change. D4.3,” 2019.

[90] F. Metz, “From ownership to access. What behavioural economists teach us about sharing,” 2018. [Online]. Available: https://share-north.eu/2017/01/from-ownership-to-access-what-behavioural-economists-teach-us-about-sharing/. [Accessed 20 05 2020].

[91] The Behavioural Insights Team, “EAST. Four simple ways to apply behavioural insights,” 2014.

[92] TNS-NIPO, “Monitor autodelen,” 2014.

[93] NACTO, “136 million trips in 2019,” 2020.

[94] T. Ratinho, “E-scooters, bikes and urban mobility. Lessons from the streets of Paris,” 2019. [Online]. Available: https://theconversation.com/e-scooters-bikes-and-urban-mobility-lessons-from-the-streets-of-paris-125619. [Accessed 2 6 2020].

[95] B. Kock, “Privacy must come first. Let’s reset the conversation on data sharing,” 2019. [Online]. Available: https://medium.com/@ridespin/privacy-must-come-first-lets-reset-the-conversation-on-data-sharing-b0a211721256. [Accessed 14 5 2020].

[96] H. Jeekel, “De auto-afhankelijke samenleving,” Eburon, 2011.

[97] Stars, “Learning from the stars. The future of Car sharing in Europe,” Bremen, 2020.

[98] F. Wefering, S. Rupprecht, S. Bührmann and S. BöhlerBaedeker, “Guidelines developing and implementing a Sustainable Urban Mobility Plan,” 2014.

[99] ELTIS, “What is a sustainable urban mobility plan?,” 2015. [Online]. Available: https://www.eltis.org/guidelines/what-sustainable-urban-mobility-plan. [Accessed 7 5 2020].

[100] ELTIS, “The SUMP concept and guidelines,” 2018. [Online]. Available: http://www.eltis.org/mobility-plans/sump-concept#sthash.gy5RUDn3.dpuf. [Accessed 06 05 2020].

[101] European Platform on Sustainable Urban Mobility Plans, “Integration of shared mobility approaches in sustainable urban mobility planning,” 2019.

[102] Freie Hansestadt Bremen, Der Sentor für Umwelt, Bau und Verkehr, “Bremen Declaration on Sustainable Urban Mobility Planning in Europe,” Bremen, 2016.

[103] France24, “Vélibgate: The rise and fall of Paris’s bike-sharing program,” 04 05 2018. [Online]. Available: https://www.france24.com/en/20180504-paris-velib-hidalgo-fiasco-velibgate-rise-fall-bike-sharing-program-green-transport. [Accessed 3 6 2020].

[104] A. Gauquelin, “Learning lessons from Vélib’ Métropole difficulties,” 2019. [Online]. Available: https://shared-micromobility.com/learning-lessons-from-velib-metropole-difficulties/ . [Accessed 3 6 2020].

[105] Green Deal Autodelen, “Rode loper voor autodelen,” 2017.

[106] UITP & ECF , “Unlicensed dockless bike-sharing. Common position paper,” 2017.

[107] Green Deal Autodelen, “Rode loper autodelen voor de rijksoverheid,” 2018.

[108] CROW-KpVV, “Micromobiliteit, disruptive in de mobiliteitsmarkt met grote gevolgen?,” 2020.

[109] Autodelen.net , “Beleidsaanbevelingen autodelen voor de nieuwe regeringen,” 2019.

[110] POLIS, “Macro managing micro mobility, taking the long view on short trips. Discussion paper,” 2019.

[111] European Parliament, committee on Transport and Tourism, “Infrastructure funding challenges in the sharing economy. Research for the TRAN committee,” 2017.

[112] Stars, “Policy brief on car sharing, version 1. D7.4,” 2018.

[113] Civity, “Urban mobility in transition?,” 2014. [Online]. [Accessed 04 05 2018].

[114] SnappCar, “Keyless,” [Online]. Available: https://keyless.snappcar.nl/. [Accessed 5 11 2019].

[115] T. Dillema, “Peer-to-peer autodelen: wel of niet stimuleren,” Advier/NHL, 2016.

[116] “Het succes van Swapfiets. Van 40 naar 180.000 fietsen met blauwe voorbanden,” Algemeen Dagblad, no. 13-12-2019, 2019.

[117] Blue-bike, “Recordjaar voor Blue-bike,” 2020. [Online]. Available: https://www.blue-bike.be/nl/nieuws-en-acties/recordjaar-voor-blue-bike. [Accessed 2020 3 16].

[118] National League of Cities, “Micromobility in cities, a history and policy overview,” 2019.

[119] B. Fogg, “A behavior model for persuasive design,” 2009.

[120] NS, “Nieuw record gebruik OV-fiets,” 2019. [Online]. Available: https://nieuws.ns.nl/nieuw-record-gebruik-ov-fiets/. [Accessed 12 6 2020].

[121] BNA, “De stad van de toekomst,” 2019.

[122] Ministerie van Verkeer en Waterstaat, “Kansen voor carpoolen. Successen en mislukkingen van 8 jaar carpoolbeleid,” 2020.

[123] City of Amsterdam, “Effectmeting introductie Car2Go in Amsterdam. NVC paper,” 2013.

[124] E. Martin and S. Shaheen, “Impacts of Car2go on vehicle ownership, modal shift, vehicle miles travelled, and greenhouse gas emissions. An analysis of five North American cities,” 2016.


©Bremen

Annex 1: Types of Shared Mobility

Carsharing

»» Chapter 4.3 -> General Information
Chapter 5.2 -> Impacts of Carsharing

Roundtrip Carsharing

Station-based and homezone-based variant

Characteristics

Station-based variant

- Carsharing provider owns a fleet of vehicles
- Fixed carsharing stations
- Vehicles must be returned to the same station
- Cars must be booked in advance (can be done minutes, hours, days or weeks in advance)
- Pay per hour of usage [22]
- Tariff based on time travelled and distance travelled
- 23 to 45 users per car
- Relatively cheap

Homezone-based variant

- No fixed carsharing stations but fixed pick-up zones
- Vehicles must be returned to the same zone
- Tariff may be based on time travelled only

Examples of Providers

- GreenWheels (NL/DE)
- Cambio (BE/DE)
- SunFleet (SE)
- Zipcar (UK, USA)
- Co-Wheels (UK/Scotland)
- Enterprise Car Club (UK)
- MyWheels (NL), also homezone-based
- Partago (BE), homezone-based

Where

Medium-sized cities to large metropolitan areas but mostly in dense neighbourhoods

Usage

- Incidental car trips
- Mostly planned trips longer than 5 kilometres
- Destinations often out of town
- Average trip length: 6 hours
- 57% of users use it less than once a month

- 4% uses it more than three times a month
- 80% of the users is (very) satisfied with the availability of vehicles
- 70% of users is (very) satisfied with the accessibility/distance to the booked vehicles
- 62% of the users is satisfied with the price [23]

Impacts

- Replace 5-16 privately owned vehicles
- High impact per vehicle, but relatively few vehicles available
- For 63% of users, carsharing is a viable alternative to owning a private car [21]

Advantages

- Complementary to public transport, walking and cycling
- Helps cities reduce number of privately-owned cars
- Reduces greenhouse gas emissions through supporting sustainable travel behaviour
- Contributes to regaining public street space for other purposes
- 24-hour availability
- Cost savings for users who drive less than 10,000 km a year compared to owning a car
- Users know where to find the vehicles (only station-based)
- Low barrier to entry in a neighbourhood (homezone-based)

Disadvantages

Cars have to be returned to the place or area of origin. Potential users may find this unattractive

Requirements

Station-based variant

- Fixed parking places in public or private areas
- Municipalities have to allow for on-street parking space
- Signage makes clear that these parking places are for carsharing
- Illegally parked vehicles should be fined and towed away
- Operators should be informed about road works, events and other street closures

Homezone-based variant

- Citywide parking permission required
- No dedicated parking places needed

Free-Floating Carsharing

Operational area and station-based variant

Characteristics

Operational area variant

- Used for one-way trips
- Large fleet of vehicles
- No fixed parking places
- No reservation required or only a few minutes beforehand
- Strong appeal to car-oriented persons [23]
- Most expensive carsharing form
- Pay by the minute of usage [22]
- Average trip distance: 5 km or less [113]
- Tariff based on time travelled
- On average 71 users per car [23]

Station-based variant

- Fixed parking places
- Pay per minute of usage [22]
- Tariff based on time travelled + distance travelled

Examples of Providers

Operational area variant

- ShareNow (DE, NL)
- Poppy (BE)
- Zipcar (UK - London)
- GreenMobility (DK - Copenhagen)
- Vy Din Bybil (NO - Oslo)

Station-based variant

- Book ‘n Drive (DE)
- Communauto (FR - Paris)

Where

- Mainly limited number of megacities for free-floating services linked to operational areas
- Some medium-sized cities have station-based variations

Usage

- Spontaneous one-way trips within the city
- Average trip length: 30 minutes [23]
- 76% of customers uses it less than once a month
- 2% uses it more than three times a month
- 30% of the users is (very) satisfied with the availability of vehicles
- 47% of users is (very) satisfied with the accessibility and the distance to the vehicles
- Only 40% of the users is (very) satisfied with the price [21]

Impacts

- Impacts on car ownership are generally low [24]
- Competes with public transport unless there are gaps in the network
- For 33% of users, carsharing is a full replacement of the own car [21]
- Car ownership in Milan and Turin did not drop, but it limited the number of new car purchases [77]

Advantages

- Perceived as flexible because vehicle may be left at any destination within the operating area
- 24-hour availability
- Creates high awareness of carsharing due to typically more visible branding on vehicles [77]

Disadvantages

- Can counteract a city's sustainable transport goals because car trips may replace trips by public transport, walking, cycling and taxi
- Providers have withdrawn from many cities because of very difficult business case, leaving the city without a major carsharing offer
- Users need to find the vehicle and cannot rely on their availability nearby if they need to plan ahead
- Car distribution in operation area does not always reflect supply and demand: redistribution required regularly by operator. This may have a negative impact on the carbon footprint of the service
- Cities might prefer bikesharing are shared micromobility for short trips within the city

Requirements

Operational area variant

- Citywide parking permission
- For electric schemes: sufficient charging stations

Station-based variant

Designated parking areas

Peer-to-Peer Carsharing

Characteristics

- Private car owners rent out their cars to other private users when they don't need them
- Online platforms link supply with demand
- Relies on trust
- Owner hands over the keys to the renter
- Keyless entry is developing [114]
- Pay per day of usage [22]
- Contract for every transaction
- Tariff based on time travelled or time+ distance travelled
- 3 users per car [23]

Examples of Providers

- SnappCar (NL, DE, DK, SE)
- GetAround (previously named Drivy, BE/UK/DE)

Where

Possible everywhere, but more widely available in cities

Usage

- Rental periods vary from a (half) day to a few weeks e.g. for holidays [22]
- 68% of the users is satisfied/very satisfied with the price [21]

Impacts

- Equal impacts on usage and ownership [24]
- Limited impact per vehicle, but many vehicles available [115]
- 55% view it as a suitable replacement for a privately-owned car [21]

Advantages

- No extra cars required
- Provider invests only in platform, not in cars
- Rapid growth is possible
- Longer rental terms possible, e.g. for holidays
- Also feasible in rural areas
- Keyless offer is easy to combine with (private) car lease

Disadvantages

- Key swap often required
- Not available 24 hours a day (except keyless offers)
- Supply and demand are not always in balance

Requirements

- No additional infrastructure or licensing required
- National insurance systems must support Peer-to-Peer carsharing

Community-Based Carsharing

Characteristics

- Closed user groups, e.g. neighbours or apartment owners
- Users share all costs
- Often non-commercial and self-organised
- Already works with 2 households
- BE: average group size 4-8 households sharing 1 or 2 cars
- Groups determinate rules
- Groups select vehicles
- Groups can grow to any size

Examples of Providers

- CozyCar (BE)
- Association for Carsharing (NL)
- OnzeAuto (NL)

Where

- Can be implemented anywhere
- Group members have to live close to each other

Advantages

- Cheapest type of carsharing
- Works great in rural areas
- Users can choose the type of cars themselves
- Local carsharing groups form voluntarily
- Strengthens social inclusion and neighbourhood cohesion
- Powerful solution for new housing developments (see chapter 6.5)
- No technology required

Disadvantages

- Users have to form a group, define the rules, and to take care of maintenance, insurance etc.
- Finding group members may be hard

Usage

Also works well for carsharers that need a car on a regular (but not daily) basis

Impacts

- Unknown, but overall may be lower than roundtrip carsharing, since car driving becomes cheaper, or higher when embedded in new housing developments (see chapter 6.5)
- The car replacement factor and emissions reductions are not expected to be as high as with roundtrip carsharing, except in new housing developments
- In new housing developments, offering community-based carsharing may increase the acceptance of the carsharing concept by a large public

Requirements

- None, but cities could provide dedicated parking places to privately shared vehicle as the benefits outweigh private vehicles that are not shared
- Groups must make a customised contract with rules about payments, reservations, accidents, key swapping, etc.

Bikesharing

»» Chapter 4.4 -> General Information
Chapter 5.3 -> Impacts of Bikesharing

Roundtrip bikesharing

Characteristics

- Bicycles retrieved from and returned to same location
- Mainly for last-mile trips
- Often located at a network of public transport hubs in many cities
- Train and bus stations, P+R facilities, ferry docks

Examples of Providers

- OV-fiets (NL)
- Blue-bike (BE)
- Call-a-bike (DE, UK, ES; AT, PL, CH and HR)

Where

- Transit hubs, train stations, long-distance bus stations, park-and-ride locations
- Networks of cities, towns and villages

Advantages

- Longer rental periods give users flexibility
- Users dispose of a bike while visiting different locations within a city destination
- Integration possibilities with public transport ticketing

Disadvantages

- Bikes must be returned to the same station
- Annual membership may be required
- More bikes required, as each bike is unavailable to other users for longer periods of time

Usage

- Business travellers, tourists and short-term visitors from different cities
- Occasional rides
- Rental period: half-day or longer

Impacts

Last mile connector enables more people to choose trains and park-and-ride for city visits. This supports more sustainable travel behaviour, emissions reductions and positive health impacts

Requirements

- Sufficient public space for the shared bikes, particularly at railway hubs and park-and-ride facilities
- Safe cycling infrastructure
- Software integration with public transport ticketing

Free-Floating Bikesharing

Station-based and operational area variants

	Station-based	Operational Area
Characteristics	- Network of docking stations - Users can drop bike at every docking station - Technology is in the docking station - Rental can range from a few minutes to an entire day - Reservation in advance is not possible	- Users can drop bikes anywhere within the operational area - No docking stations - Technology is in the bike - Rental can range from a few minutes to an entire day - Reservation in advance is not possible
Examples of Providers	- Santander Bikes (UK) - Vélo (BE) - Bycyclen (DK) - Nextbike (DE, UK) - Vélib (FR) - Next Bike (DE) - Lime (UK, USA, DE, etc.)	- Mobit (BE) - LimeBike (UK, USA, DE) - Jump (UK) - Next Bike (DE)
Where	Over 1,400 cities worldwide [51], typically in medium-sized to large cities	
Advantages	- Cooperation with local authorities - Coordinated expansion - Allows cities to influence location of bike parking and prevent chaotic parking situations - Short-term usage is very cheap - Lowers the hurdle to cycling and encourages bicycle use amoung new target groups	- Low investment - Forces action from public sector - Competition leads to higher quality - Solution to final destination - Short-term usage is very cheap - Lowers the hurdle to cycling and encourages bicycle use amoung new target groups

	Station-based	Operational Area
Disadvantages	- Big upfront investment for provider and/or city - Higher operational costs than operational variant due to docking station maintenance - Users must find a station near their destination where they can leave the bike – this means extra effort and reduced flexibility - Redistribution required if bikes distribution at stations does not reflect supply and demand - Longer rentals are more expensive	- Focus on profitable areas - Concerns over use of data - Sustainability of business model - Hard to find bikes if they are stored in a place without GPS connectivity - Bicycle availability may not be as reliable - Irresponsibly parked bikes on pavement can lead to barriers for pedestrians - Redistribution required if bikes distribution does not reflect supply and demand - Longer rentals are more expensive
Usage	- Last mile trips by commuters - For multimodal journeys and for closing gaps in public transport network - Can supplement public transport [25]	
Impacts	- Car use decreases by 5-22% (see chapter 5.3) - Positive impacts on road safety because it increases the visibility of cyclists and reduces the number of cars on the road - Positive health impacts because it encourages active travel and reduces transport emissions	
Requirements	- Public space for docking stations - Network of stations - Reliable availability of bikes - Long-term funding that treats stations as part of transport infrastructure	- Regulatory framework for bike parking - Ability of cities to enforce an optimal number of bikes - Operator must ensure orderly streets and reliably locate bikes (24h availability)

Peer-to-Peer Bikesharing

Characteristics

- Bike owners and bike shops rent out their bikes when they don't need them
- Works with online platforms that link supply and demand

Examples of Providers

- Spinlister (worldwide)
- Cycle.Land (several countries)
- Dégage (BE)

Where

- Mostly in cities
- Bridges the bikeshare gap in places where public funds are limited, population density is low, or the number of users is too small to attract commercial bikeshare providers

Advantages

- Cheapest type of bikesharing
- No extra bikes required
- No investment in bikes required by a bikesharing provider
- Independent of regulations, so rapid growth is possible
- Longer rental terms possible, e.g. for holidays
- Bike helmets etc. may also be available as part of the rental

Disadvantages

- Must be returned to the same place (GPS-enabled smart bikes may overcome this limitation)
- Key swap/lock-code moment required for bikes without smart locks
- Bikes are not available 24 hours a day
- Owners are not always available for issues arising during the rental period

Usage

- Riders looking for a personalised and/or cheaper alternative to traditional bike-rental services, including tourists, visitors and university students
- Owners looking for a way to make extra money with their otherwise idle bikes

Impacts

- New, decentralised alternative transportation networks
- Potential to increase access for low-income users

Requirements

- None for municipalities
- Mechanisms for covering liability and damage
- Critical mass of listers in a given area
- Responsiveness of listers

Shared Micromobility

»» Chapter 4.5 -> General Information
Chapter 5.4 -> Impacts of Micromobility

	E-scootersharing	E-mopedsharing
Characteristics 	- Easy access by connected devices (smartphone) - Strong appeal to fun and freedom - Small vehicles for individual use - Flexibility in routes - Huge popularity since launch in 2018	- Easy access by connected devices (smartphone) - Strong appeal to fun and freedom - Vehicles for individual use - Flexibility in routes - Huge popularity since launch in 2016
Examples of Providers 	- Lime (USA, DE, BE, NO) - Bird (USA, DE) - Jump (USA) - VOI (DE) - Wetrott, station-based (FR)	- Felyx (NL, BE) - eCooltra (SP, IT)
Where 	- Large and medium-sized cities - Tourist cities - Campuses	Large and medium-sized cities
Advantages 	- Part of the urban mobility mix - First/last mile solution where there are gaps in the public transport network - 'Cool' factor - More suited for short trips than free-floating carsharing	- Part of the urban mobility mix - First/last mile solution - 'Cool' factor - More suited for short trips than free-floating carsharing
Disadvantages 	- Competes with active and sustainable travel modes: walking, cycling and public transport - (Illegal) use of sidewalks for riding and dropping e-scooters leads to safety concerns for more vulnerable citizens (children, the elderly, pedestrians) - Problems of 'dumping' e-scooters and vandalism ›››	- (Illegal) use of sidewalks for dropping e-scooters leads to safety concerns - Data concerns

	E-scootersharing	E-mopedsharing
	>>> - Safety risks for users due to high speeds and small wheels - Short lifetime of vehicles (especially the batteries) is unsustainable - Data concerns	
Usage	- Short rides in cities: on average between 1 and 3 km per trip - Usage has a high season peak, possibly related to the holiday season and the weather - The average user is male and between the ages of 18 and 25	- Trips within urban regions - Trips in conjunction with public transport
Impacts	- Impacts on transport emissions are linked to the type of trips they replace - Shared e-scooters can lead to a reduction of car trips in cities where public transport use is uncommon and car use is high, like many North American cities - In Europe, shared e-scooters often compete with mores sustainable travel modes and do not demonstrate a reduction of car use	Not clear yet
Requirements	- E-scooters have to be allowed in public space - Regulatory framework for shared e-scooter use and parking - Operator must ensure orderly streets and reliably locate e-scooters (24h availability) - Proper infrastructure for driving comfort and safety.	- City permit - In some cases, the use of a helmet may be obligated

Ridesharing

»» Chapter 4.6 -> General Information
Chapter 5.5 -> Impacts of Ridesharing

Formalised ridesharing schemes

Characteristics

Variant with payment

- Individuals using a rideshare service to find rideshare partners
- No financial gain for the driver
- Passengers pay a fixed kilometre price

Variant without payment

- If the driving is shared equally, no payments are needed

Examples

- TripshareSEStran.com (Southeast of Scotland, UK)
- Faxi (UK)
- Liftshare.co.uk (UK)
- Carpool.be (BE)
- Toogethr (NL)
- Blablacar (throughout Europe)

Where

In cities as well as less urbanised areas

Advantages

- Formalised ridesharing is more credible as a valid and reliable transport option
- Potential delays in travel times, high fuel prices and expensive parking places may increase interest in ridesharing
- Launching a rideshare scheme is cost-effective and straightforward

Disadvantages

- Critical mass of users is needed
- Low awareness for ridesharing
- Finding rideshare matches may be hard
- Detour to pick up passengers increases travel time

Usage

- Commuter trips
- Trips between cities
- User groups include employees of large companies, governments, health boards, colleges, universities, and business parks, event attendees, tourists and long-distance commuters

Impacts

- Ridesharing leads to significant emissions reductions and reduced fuel consumption through better use of vehicle capacities and by reducing nearly empty car trips
- Reduction in congestion and traffic, especially during peak travel times
- Cost savings for commuters
- Cost savings by reduced need for parking facilities at destination sites (business parks, large employers, etc.)

Requirements

- If there are already informal ridesharers in the area, these persons should be incentivised to register to the local rideshare scheme
- Performance monitoring helps to improve the service
- Monitoring allows to calculate the impact on monetary savings, mileage reductions, network effects (how/where/when people are sharing trips) and CO_2 reductions

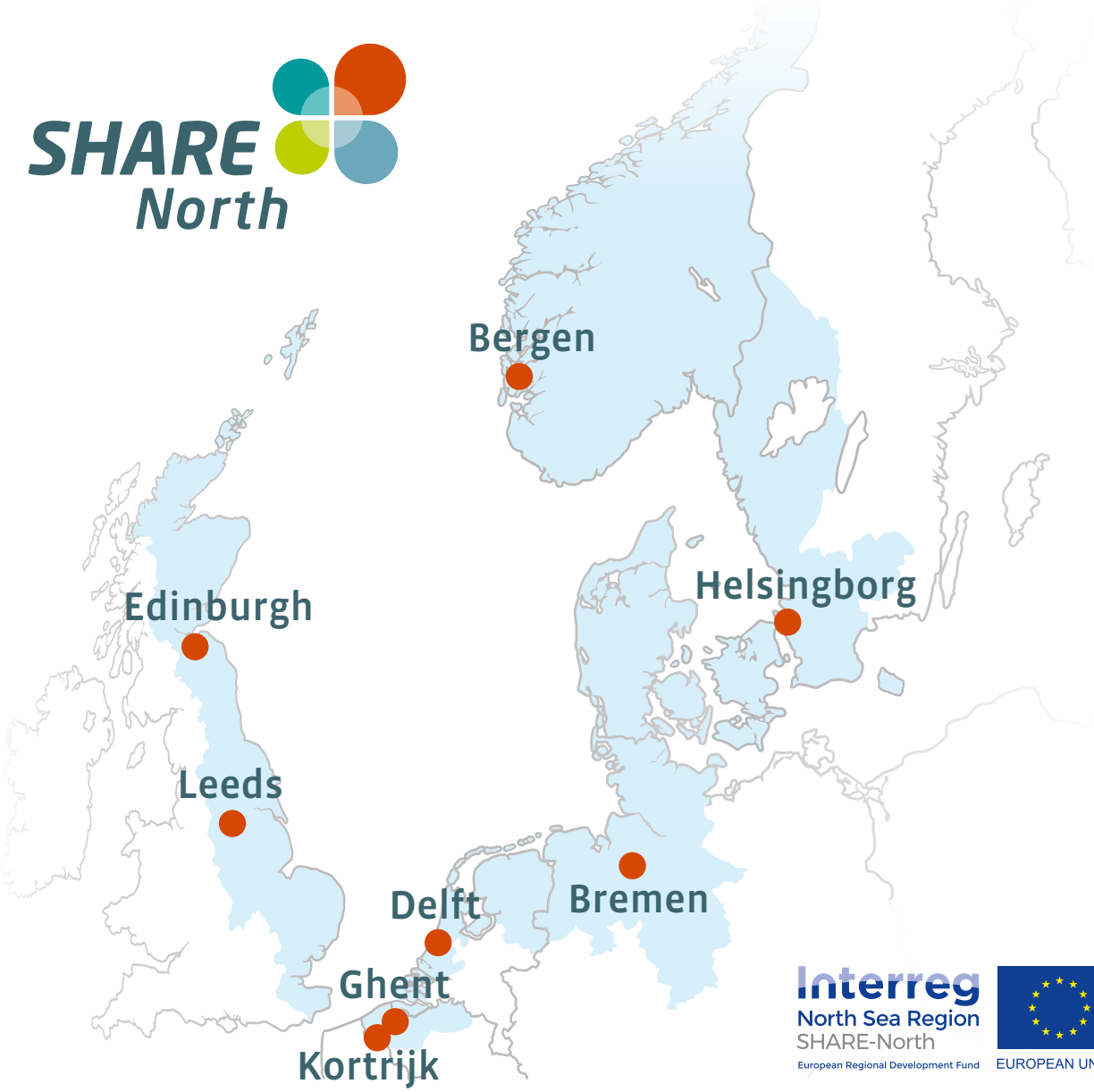
Annex 2: Overview of Case Studies

Chapter	Case study	Country	Topics	Urban	Rural	Trip Generator	National
Target Group: Residents							
4.2	Living Streets	BE	Shared space	✔			
4.3	Enterprise Car Club	UK	Carsharing	✔		✔	
4.3	Carsharing amongst neighbours	BE	Carsharing	✔	✔		
4.3	AVIRA Wheelchair Friendly Carsharing	BE	Carsharing	✔	✔		
4.4	Bergen City Bike	NO	Bikesharing	✔			
4.4	Dockless, privately Led Bikeshare	UK	Bikesharing	✔			
4.4	Op Wielekes, A Libary for Children's Bikes	BE	Bikesharing	✔			
4.4	E-cargo Bikesharing Scheme	NO	Bikesharing	✔			
4.5	E-mopedsharing Felyx	NL	Micromobility	✔			
4.6	Schoolpool	BE	Ridesharing,	✔	✔		
4.7	Less Mobile Service Mobitwin	BE	On-demand Ride Services	✔	✔		✔
6.3	Expansion of Mobihubs in Bremen	DE	Mobihubs	✔			
6.3	Mobihubs in Bergen	NO	Mobihubs	✔			
6.3	Developing a Mobihub Network in North-Holland	NL	Mobihubs		✔	✔	
6.5	Integrating Carsharing into Housing Developments	DE	Real Estate Deve-lopment, policy	✔			
6.5	Slachthuishof Mobility as a Real Estate Service	NL	Real Estate Development, MaaS	✔			
7.5	Carsharing Campaign "Use It, Don't Own It"	DE	Carsharing, campaigns	✔			
7.5	(Car)Sharefest	BE	Carsharing, campaigns	✔	✔		
9.8	Vélibgate	FR	Bikesharing	✔			

Chapter	Case study	Country	Topics	Urban	Rural	Trip Generator	National
Target Group: Employees and Students							
4.3	Advier Company Car	NL	Carsharing, mobility management			✔	
4.4	Blue-bike	BE	Bikesharing	✔			✔
4.4	eCycle Scheme for Schools	UK	Bikesharing	✔	✔	✔	
4.4	Bikesharing at Evolis Business Park	BE	Bikesharing	✔		✔	
4.6	Ridesharing Service Carpool	BE	Ridesharing	✔	✔	✔	
4.6	Congestion Charge and HOV Lanes Boost Ridesharing	NO	Ridesharing	✔		✔	
4.6	Vanpooling Keeps the Rotterdam Harbour Area Accessible	NL	Ridesharing, mobility management			✔	
6.6	Paleiskwartier Company Carsharing	NL	Carsharing, mobility management	✔		✔	
6.6	Calder Park Travel Plan	UK	Ridesharing, mobility management	✔		✔	
7.5	National Liftshare Week	UK	Ridesharing, campaigns	✔	✔	✔	✔
Target Group: Policy Makers							
4.2	Ecological Impacts of Carsharing	SE	Shared space, policy	✔			
4.3	Introducing Carsharing in Small and Medium-Sized Municipalities	BE	Carsharing, policy	✔	✔		
4.5	Regulations for e-scootersharing	DE	Micromobility, policy	✔			
6.3	Flemish Policy Vision on Mobihubs	BE	Mobihubs, policy	✔	✔	✔	✔
9.10	Green Deal on Carsharing in The Netherlands	NL	Carsharing, policy	✔	✔		✔
9.10	Green Deal on Shared Mobility in Flanders	BE	Policy	✔	✔		✔
9.6	Sustainable Urban Mobility Plan Bremen 2025	DE	Policy	✔			
9.6	SEStran's Regional Transport Strategy	UK	Policy	✔	✔		
9.7	Bremen's Carsharing Action Plan	DE	Carsharing, policy	✔			
9.7	Shared Mobility Action Plan Zemst	BE	Policy,		✔		
9.9	Accreditation for Carsharing and Bikesharing	UK	Carsharing, bikesharing, policy	✔		✔	✔

About the SHARE-North Project

This Guide was developed as part of the Interreg North Sea Region Project 'SHARE-North' – Shared Mobility Solutions for a Liveable and Low Carbon North Sea Region (January 2016 - July 2022). The project includes activities for developing, implementing, promoting and assessing carsharing, bikesharing, ridesharing and other shared mobility modes in urban and rural areas and employment clusters. The main objectives of the project are: improving resource efficiency and accessibility for and in cities, rural areas and conglomerations; increased efficiency in the use of transport infrastructure; reduction of space consumption for transport; improving quality of life; and low carbon transport. The partnership consists of public authorities, NGOs, a small enterprise and a research institution from the North Sea Region. The partnership stands for transnational cooperation dedicated to implementing concrete actions around shared mobility as well as creating political support for the incorporation of shared mobility into integrated transport strategies.



Shout Out

This rockin' Guide to Shared Mobility was a collaborative effort of the SHARE-North shared mobility rock stars. They brought their expertise from the field and practical experiences into the development of this guide. A special thanks goes to the following persons:

Executive Producers & Lyrics

Friso Metz (Advier)
Rebecca Karbaumer (City of Bremen)

Collaborating Artists

Angelo Meuleman (Mpact)
Antonia Roberts (CoMoUK)
Arne Stoffels (Mpact)
Aurelie Van Obbergen (Intercommunale Leiedal)
Bram Seeuws (Autodelen.net)
Dominiek Vanderwiele (Intercommunale Leiedal)
Einar Grieg (City of Bergen)
Elke Kroft (Advier)
Elke Vandenbroucke (Mpact)
Jeffrey Matthijs (Autodelen.net)
Jos Mens (VIPRE)
Julie Cunningham (West Yorkshire Combined Authority)
Julie Vinders (SEStran)
Lars Ove Kvalbein (City of Bergen)
Lisa Freeman (SEStran)
Marco van Burgsteden (CROW)
Marilyn Healy (West Yorkshire Combined Authority)
Marina Magerøy (City of Bergen)
Maurice van de Meché (Advier)
Melissa Liburd (West Yorkshire Combined Authority)
Michael Glotz-Richter (City of Bremen)
Michael Johansson (Lund University)
Minze Walvius (Advier)
Torleif Bramryd (Lund University)

KEEP'ON ROCKIN'!


P
B


bildeleringen.no