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A PLANNER'S GUIDE TO THE SHARED MOBILITY GALAXY

Interreg
North Sea Region
SHARE-North
European Regional Development Fund
EUROPEAN UNION

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
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 of road user. 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

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

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

Queen

2. We Need to Rock

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

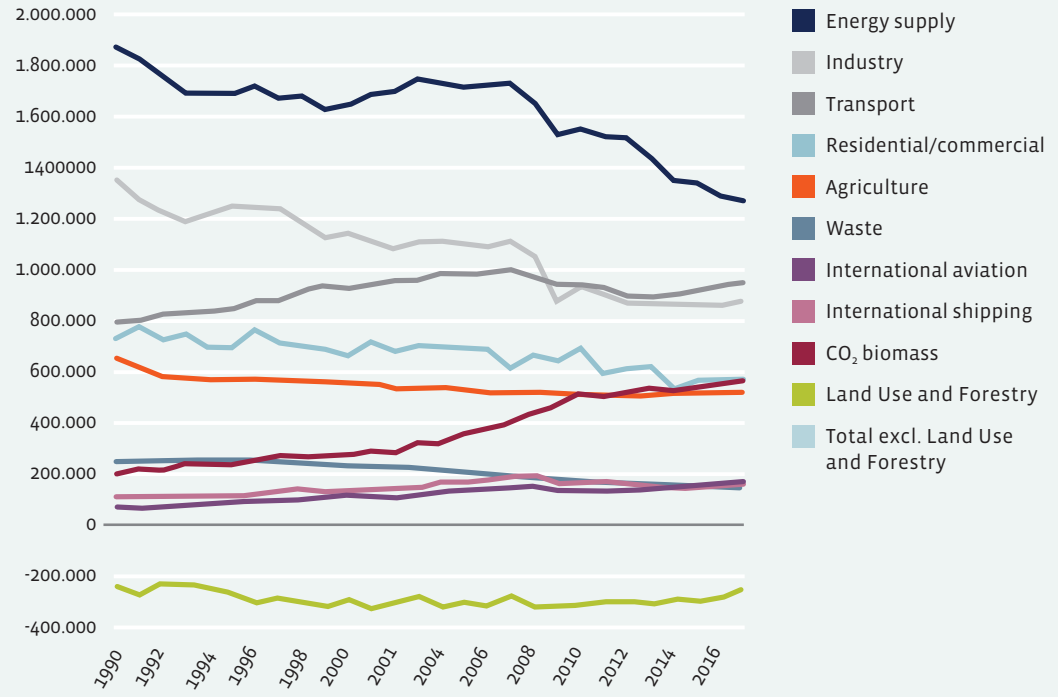
Climate Threats

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.

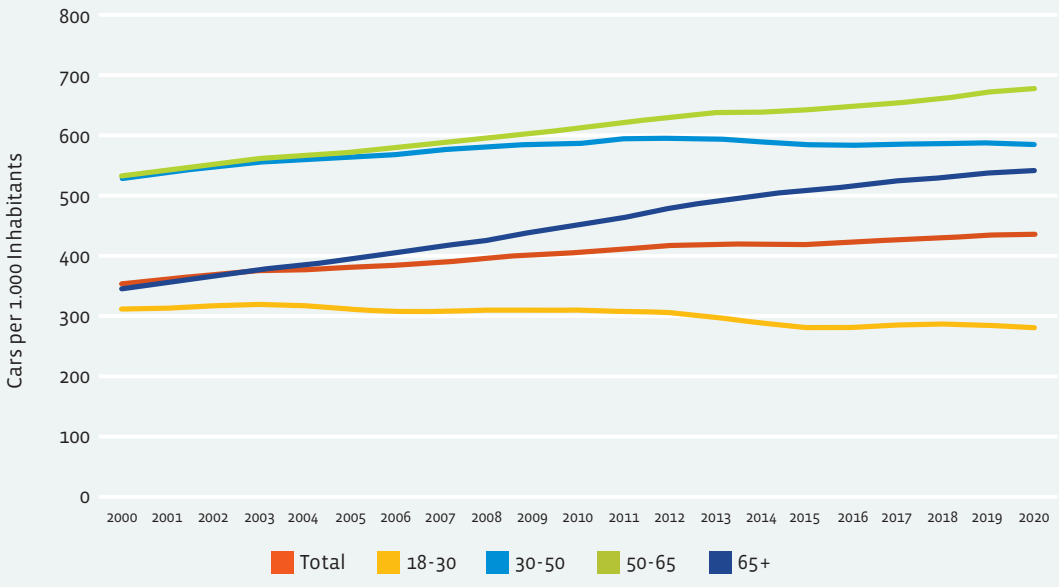
2.6 Use It, Don't Own It – The Transition from Ownership to Use

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].


30
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