Report

Effectiveness of Mobility Concepts

Evaluation of mobility management measures within the scope of Bremen's Parking Regulation for Housing Developments *(Stellplatzortsgesetz)*

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A note on terminology:

The term 'car-sharing' in British usage is synonymous with 'ride-sharing, carpooling, or lift-sharing' in US usage. The term 'car-sharing' in US usage is synonymous with 'car clubs' in the UK. In the present study, which is otherwise in British English, the term 'car-sharing' is used in the American sense, which is also prevalent in mainland Europe.

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Foreword

Fundamentals of successful, intelligent mobility concepts

René Waßmer, VCD Project Director 'Bundesweites Netzwerk Wohnen und Mobilität' ('Germany-wide Network Housing and Mobility')

We have moderated dialogues between municipalities, housing companies, mobility service providers, and transport and urban planners within the framework of the VCD's *Bundesweites Netzwerk Wohnen und Mobilität* for four years, currently in 16 cities. The goal is to arrive at a shared understanding of necessary, innovative mobility concepts in urban planning and the development of new residential neighbourhoods. We ensure the necessary transfer of knowledge, present good-practice examples, and support local actors in planning and implementing intelligent mobility solutions in urban and residential neighbourhoods.

We have learned four key lessons in the process:

1. The elements of innovative mobility concepts have been known for many years. Efforts are being made in the same fields of action at all locations to achieve a reduction of individual car transport. In most cities, the problems do not concern knowledge, but rather putting it into practice. Investments in infrastructure for pedestrian and bicycle transport, public transport, measures for low-car housing developments, etc. are the only way to create the conditions that make alternatives to private car ownership attractive.
2. Innovative mobility concepts are not accepted in the absence of an accompanying marketing concepts, information campaigns, and opportunities for the resident participation.
3. Timely, shared, and integrated planning by housing companies, investors, municipalities, and urban and transport planning authorities is the basis for successful execution and implementation of a comprehensive mobility concept. Talking helps – a platitude ignored all too often by actors on the ground. The municipality should organise the responsibilities for such integrated planning processes.
4. Time and again, people demand uniform interpretation and application of legal and regulatory instruments. Local statutes regulating parking spaces play an important role here. In combination with systematic parking space management, they are a key management tool for creating the underlying conditions for new mobility concepts.

In 2018, we invited the City of Bremen to present its innovative parking space statute in our dialogue forums '*Wohnen leitet Mobilität*' ('Housing guides mobility'). This statute enables developers to implement mobility concepts instead of building parking spaces or paying compensation in their place. German municipalities still consider this approach innovative and only rarely put it into practice. In the past seven years, Bremen has been able to gain experience with it. I am very pleased that *team red* has prepared a scientific study of the experiences of the Municipality and all the actors involved – not least those of the users of the mobility concept. The study makes clear that some aspects related to transparent management and communication of these concepts are yet to be optimised. However, it is also clear that these concepts work overall, and that they reduce car ownership and use. For this reason, it certainly makes sense not only to retain the option 'mobility concept instead of compensation in place of building parking spaces', but to expand it.

The process of amending Bremen's *Stellplatzortsgesetz* (StellplOG, local law on parking spaces) is already well under way. It makes sense to take this opportunity to build on the positive experiences with mobility concepts, to iron out unclear points in the process, and to exploit the full potential of this type of legislation.

I am very happy that our experiences are confirmed in the present study prepared by *team red*. The evaluation data provide outstanding arguments for everyone promoting changes in mobility behaviour. Innovative mobility concepts can work if all important actors are involved in planning skillfully combined mobility options that reduce car ownership (e. g. car-sharing, public transport, cargo bike-sharing), and if these concepts are supported through marketing and communication measures.

I can only support the study's recommendations for action to the client. I hope that the findings of the study bring about wise and bold political decisions.

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1. Summary of the most important findings and recommendations for action

1.1 The most important findings

The evaluation established that the mobility concepts are effective. Residents who live in properties with mobility concepts own fewer cars than residents in comparable properties without such concepts. For this reason, it is **advisable to retain and continue the mechanism** established which provides for reducing the number of parking spaces to be built if a coherent **mobility concept** has been developed.

The most important impacts determined in the study concern both the **number of cars available in the households** and the **usage of** motorised individual transport as well as environmentally friendly **modes of transport** (which include non-motorised means of transport, public transport, car-sharing, and carpooling services). Compared with the control group surveyed, the share of households without a car is approx. 18 percentage points higher in the properties with mobility concepts. In addition to this, respondents from properties with a mobility concept were significantly more likely to have public transit passes than respondents from properties without a mobility concept.

Clear **impacts on the use of the various means of transport** correspond to the lower number of cars available in the household. These households use cars significantly less frequently and correspondingly use bicycles and/or public transport significantly more often. These impacts are based on statistical evidence and confirm the effects of the evaluated mobility concepts.

These effects are remarkable against the background that only about one-third of residents of the residential properties studied were aware of the existence of a mobility concept and, thus, of special mobility options before moving in. Moreover, the residents' assessments of the information provided in the residential properties are unenthusiastic. The analyses show that the positive impacts observed are strengthened significantly if the residents are aware of the measures and if the rules relevant to their use are explained. On the basis of these results of the analysis, it should be assumed that increased **communication measures**, which should be obligatory, can significantly increase the impact of measures put into practice.

Both the users and the developers interviewed emphasise that **good public transport access** is an important precondition for mobility concepts to be implemented and accepted. When assessing the mobility options implemented, respondents thought most highly of public transit passes. This has to do with their easy access: a public transit pass naturally re-

quires less explaining than do other mobility options, for example car-sharing. In addition, it reflects the major relevance of public transport for everyday trips.

Car-sharing options play a lesser role than public transport, but they are nonetheless an important factor in the decision to no longer own a car. The interviews show that car-sharing is mostly used for infrequently occurring purposes, such as transporting things or going on outings with several people; thus, it is unnecessary to have a car of one's own for such purposes. This corresponds to the findings of the Analysis of the Impacts of Car-Sharing in Bremen[1] conducted in 2017, in which both reductions of car ownership and shifts towards environmentally friendly modes of transport as as result of car-sharing use were established.

Respondents gave e-car-sharing options as implemented to date distinctly poorer assessments than conventional car-sharing options. It remains to be seen whether hesitations still observable today will decrease if availability is improved and users gain more experience with e-car-sharing.

The surveyed developers and mobility service providers fundamentally consider the option to **reduce the number of parking spaces required by establishing a mobility concept** to be an **important instrument that should be retained**. The developers see the options provided by the *Stellplatzortsgesetz* (StellplOG, local law on parking spaces) as an opportunity to access additional target groups, especially through cheaper apartments and attractive mobility options.

However, they do request **modifications** and express the **need for optimisation** in various areas. This refers to reducing the number of parking spaces required as far as possible and it being differentiated spatially and adapted to the specifics of the residential environment as well as clearer determination of possible measures and how they are counted towards the number of parking spaces required. Contradictions between the parking spaces to be built for residents and those for visitors should also be resolved.

In terms of organisation, the respondents desired a **clearer and more uniform structure** on the part of the Municipality of Bremen, especially a **central contact person** for negotiating and permitting the number of parking spaces for newly built properties. From the developers' perspective, the permitting process in place to date requires **considerable time and effort for negotiating** with various contacts within the municipality. The developers believe that there is **potential to increase efficiency** through clearer guidelines and other measures.

Completely abolishing requirements to build parking spaces, i. e. repealing the local law on parking spaces, is not recommended on the basis of this evaluation since this would entail relinquishing important management options and shifting the problem of 'storing' private vehicles to public spaces. In addition, the local law on parking spaces provides a framework that enables both private and public housing companies to build more profitably by reducing costs through less required parking while simultaneously requiring the actors to make a contribution to urban society.

1 See https://northsearegion.eu/media/5724/analysis-of-the-impact-of-car-sharing-in-bremen-2018_team-red_final-report_english_compressed.pdf

1.2 Overview of the recommendations for action

The study shows that the success or failure of the concepts depends, above all, on the various facets of communication, integration, and easy use. If most everyday trips are covered by public transport and bicycles, if information is available about additional elements of a mobility mix, and these elements are available and convenient, then this increases the likelihood that people will either refrain from buying a car or will decide to do away with the one they have.

Potentials for optimisation were also identified in the course of the evaluation. The **recommendations** presented in the following table **aim to optimise the processes for the actors involved and to strengthen the impacts of mobility concepts**. The recommendations are derived both from the developers' and users' observations and from the best-practice examples. They are structured along the sequence *planning and permitting*, *implementation*, *use and accompanying measures*. The recommended measures are derived and described in detail in Chapter 7.

	Recommendation	Description	Actors
1	**Improve external communication and optimisation of the process**	At present, developers must negotiate with various municipal actors. The sequence for doing so and the municipal actors' responsibilities must be communicated clearly in order to optimise the process for developers.	**Municipality:** Prepare a fact sheet for developers
2	**Integrate mobility concepts into early phases of neighbourhood development**	When new neighbourhoods are planned, mobility concepts should be developed, with professional support, at a scale encompassing multiple properties. This makes it possible to avoid uncoordinated, detached solutions and to generate synergies.	**Municipality:** Involve investors/developers and mobility service providers early on. **Developers:** Establish cooperation arrangements and planning consortia
3	**Compile a list of mobility concept elements**	To date no overview of measures that can be included in a mobility concept is available to developers.	**Municipality**: Compile an overview of the elements

	Recommendation	Description	Actors
4	**Define all elements of a mobility concept**	Various elements of a mobility concept have different effects. Whereas car-sharing, for example, has direct impacts, other ones, such as cargo bikes, are impactful only in combination.	**Municipality:** Develop a clear structure and hierarchy of all possible elements of mobility concepts.
5	**Apply uniform requirements regarding parking spaces for visitors**	There have been cases in which the number of parking spaces required on the basis of a mobility concept was reduced, but more parking spaces for visitors had to be built as 'compensation'. This should be avoided in the future.	**Municipality:** Adapt and apply the rules
6	**Establish a central office for advice and monitoring regarding mobility concepts**	Implementation of the permitted mobility concepts is a component of the permission and must, therefore, be monitored. A central contact person for the residents of properties with mobility concepts can provide support if mobility options fail, cause problems, or are terminated.	**Municipality:** Establish a fund to finance such an office **Developers:** Review potential mechanisms to sanction unreliable service providers
7	**Improve communication about the mobility options to residents before they move in**	A majority of residents are unaware of the mobility concepts when they select a new place to live. A property with mobility options can attract the 'right' residents.	**Developers:** Include the mobility concept in marketing
8	**Improve communication to residents about the mobility options as and after they move in**	Many residents are unaware of the mobility concept or do not know how to use its elements. Communication strategies about the mobility concepts should help them overcome this obstacle; they should be implemented as and after residents move in.	**Developers/mobility service providers:** Develop and implement suitable communication strategies **Municipality:** Make communication strategies a mandatory element of mobility concepts

	Recommendation	Description	Actors
9	**Duration and orientation of mobility concepts**	Compensation payments are invested in infrastructure, car-sharing memberships, or public transit passes for different periods of time. These investments must be evaluated with respect to their long-term impact on residents' permanent behavioural changes – especially after a measure has been terminated.	**Municipality:** Introduce evaluations of measures implemented at regular intervals **Developers:** Courage to implement infrastructure measures
10	**Strengthen public transport infrastructure and services and simultaneously implement mobility concepts**	The importance of public transport for the success of mobility concepts should not be underestimated. Only if public transport is the functioning backbone of everyday mobility can mobility concepts develop their full impact.	**Municipality and BSAG (Bremen's public transport service):** Expand public transport connections in new residential neighbourhoods. **BSAG:** Integrate other mobility options in the app long-term.
11	**Support through public parking space management**	The impact of the mobility concepts can be strengthened by introducing parking space management in the public areas surrounding the properties.	**Municipality:** Review the opportunities to expand parking space management

Table 1: Overview of recommendations for action

2. Background of and reason for the study

Bremen's amended *Stellplatzortsgesetz* (StellplOG, local law on parking spaces for real-estate development) went into effect at the beginning of 2013. It regulates developers' duty to build parking spaces for motor vehicles and bicycle parking facilities or to provide monetary compensation for those they do not build.

In the 2013 amendment, an additional element was integrated in the StellplOG which enables developers to use the amount of the compensation previously to be paid within the framework of a mobility concept (§ 9 StellplOG). This approach enables them to target their investment of the compensation funds in mobility options.

The goal of the mobility options is to make sustainable means of transport and alternatives to car ownership more accessible to new residents of a property in a phase of life in which individuals may be more willing to change their mobility behaviour, e. g. after relocating.

The present study, commissioned by the *Senatorin für Klimaschutz, Umwelt, Mobilität, Stadtentwicklung und Wohnungsbau* (SKUMS, Ministry of Climate Protection, the Environment, Mobility, Urban and Housing Development of the City-State of Bremen), examines the **effectiveness of the mobility concepts** implemented within the scope of the StellplOG. The focus is on examining the impact of the mobility options on the behaviour of residents of the relevant buildings, identifying factors influencing their acceptance or rejection of a measure, and deriving approaches for improvement.

The study also looks into how developers assess the requirements laid down in the local law on parking spaces and the opportunities it presents.

Surveys of the residents of relevant properties, developers, and mobility service providers were conducted in order to answer the research questions in a scientifically sound way. Residents of a total of 18 properties for which mobility concepts had been prepared and already implemented on the basis of the local law on parking spaces were surveyed. Residents of nearby buildings in which no mobility concept had been implemented were surveyed as a control group.

The locations of the properties studied are shown in Figure 1[2]. Table 4 in the Appendix provides an overview of the properties. The most commonly applied implementation strategies were the provision of car-sharing memberships, public transit passes, and the integration of car-sharing stations on the site of the residential buildings themselves. In principle, other opportunities exist as well if they contribute to reducing the demand for parking spaces in combination with other measures.

2 A detailed presentation of the spatial and social structures of the areas studied is to be found in the supplemental volume on methods and data (in German only).

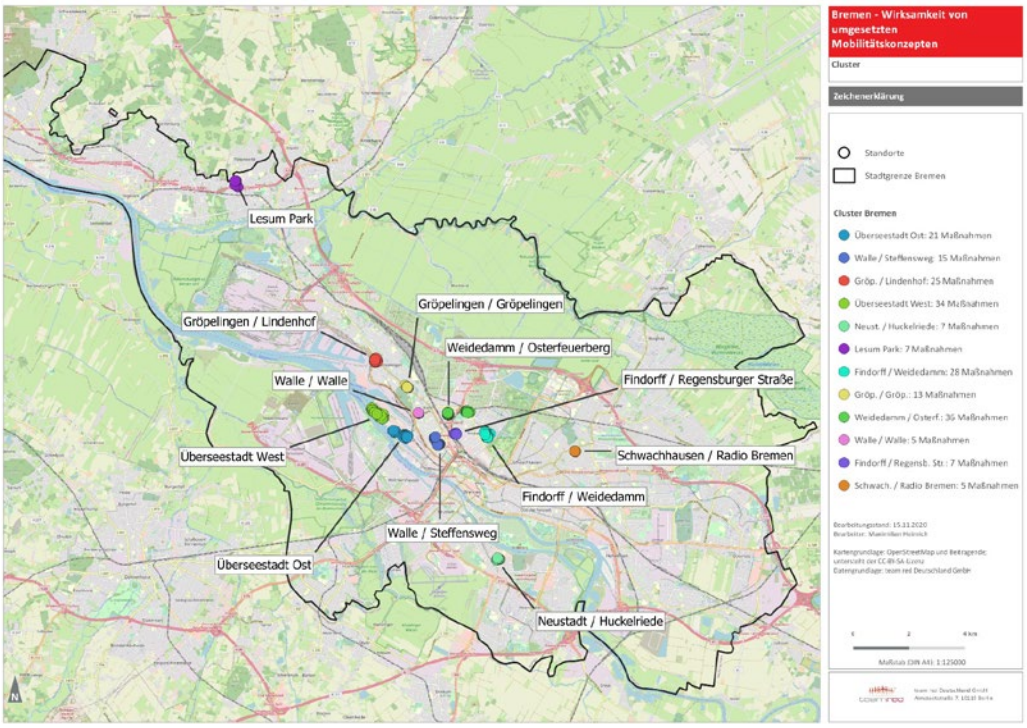

Figure 1: Overview of the locations studied

The evaluation included all properties that were built, completed, and which residents had moved into since 2013, when the opportunity to reduce the number of parking spaces in the course of implementing a mobility concept was introduced, provided such measures had been established. Many of these properties are located in the newly built Überseestadt neighbourhood. Compared with the other locations, this neighbourhood has poorer public transport access, which was taken into account in the analyses and interpretations. The other locations are in built-up areas in which the Municipality of Bremen is pursuing a policy of densification in its *Stadtentwicklungsleitbild* (Urban Development Policy) and *Flächennutzungsplan* (Preparatory Land-Use Plan).

It must also be taken into consideration that other mobility concepts are currently being planned or implemented for a growing number of properties but that they have not been included in the evaluation. The planning for these properties' mobility concepts already takes up experiences gained from previously realised concepts as well as additional mobility options which could not be taken into account in the present evaluation and should be analysed in a future evaluation, as appropriate.

The present report summarises the most important findings of the surveys and analyses. The surveys of the residents are discussed in Chapter 3, the in-depth individual interviews with residents in Chapter 4. Chapter 5 deals with the individual interviews with developers and mobility service providers. The residents' needs are contrasted with the developers' as-

sessments of their needs in Chapter 6. Finally, recommendations for action are derived from the findings of the analysis in Chapter 7.

Examples of mobility concepts in other cities are documented in Chapter 8 to provide more background. The method and analyses are described in detail in the supplemental volume on methods and data (in German only).

3. Summary of findings from the user and control group survey

The following analyses are based on surveys conducted in buildings with and without mobility concepts. Residents of buildings with a mobility concept are called 'users' in the following, residents of buildings without a mobility concept are referred to as the 'control group'.

3.1 Impacts regarding existing means of transport

There is a significant difference between the surveyed households of residents with implemented mobility concepts (users) and the control group in terms of the availability of a car: a car was **not** available to 34 % of the user households, but only 16 % of the control group households. Thus, the share of 'car-free households' among users is roughly twice as high as in the control group.

Two things are striking when the users are differentiated according to whether or not they knew about the available mobility options before moving into the residential complex: 44 % of the users who knew about the mobility options before moving in do not have a car available to their household. In the group that did not know about the mobility options before moving in, that share is 30 %, which is significantly lower, but still far higher than the car-free 16 % in the control group.

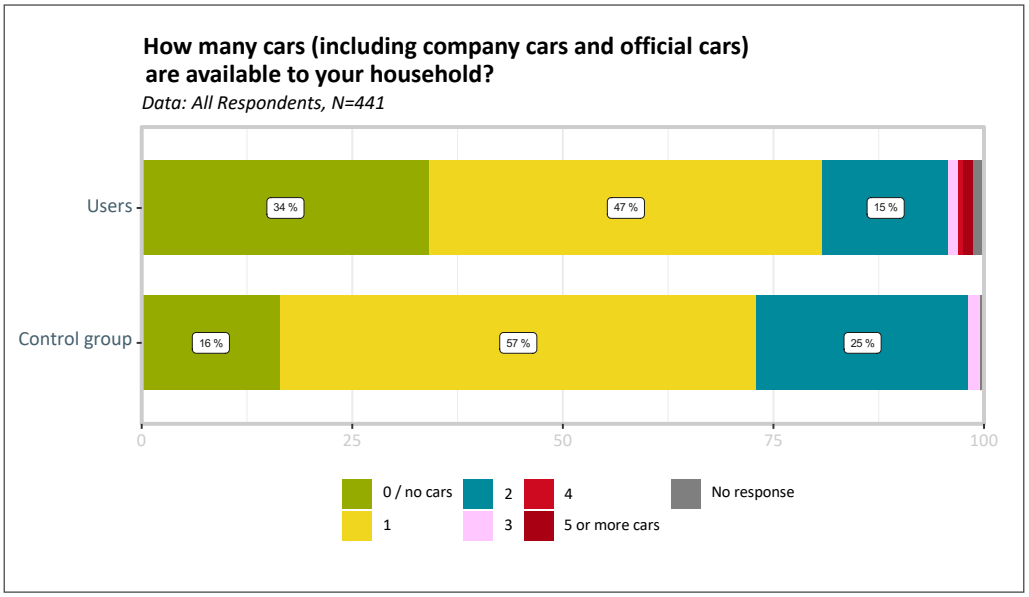

Figure 2: Number of cars available to the household

There are significant differences between respondents in the control group and the users with respect to having a public transit pass. Whereas approx. 46 % of the control group have a public transit pass, approx. 56 % of the users do. It must be considered in this context that if a mobility concept involves offering a public transit pass, then generally only one per household.

Nonetheless, among the users in residential complexes where public transit passes are offered, the share of pass holders is especially high (67 %), whereas it is only approx. 40 % in the absence of such an offer, which is even lower than in the control group. Hence, it can be concluded that including public transit passes in a mobility concept does not (only) replace existing passes, but also significantly increases their availability.

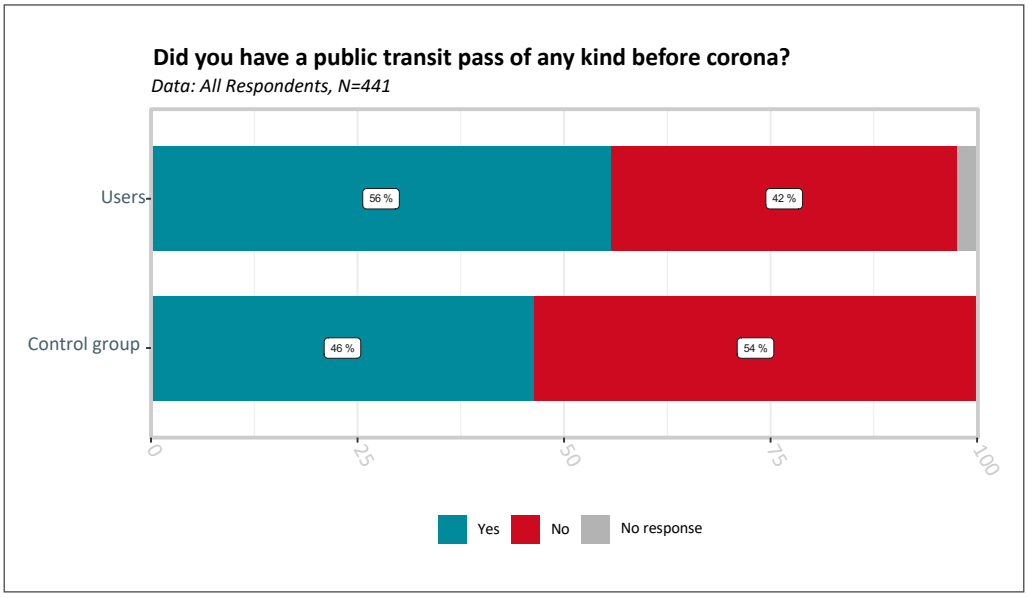

Figure 3: Possession of public transit passes prior to the outbreak of the Covid-19 pandemic

79 % of users and 82 % of control group members surveyed have a roadworthy bicycle. E-bikes are also somewhat more common among the control group (11 %) than among users (9 %). It can be derived from these figures that potential for bike-sharing options within the framework of mobility concepts exists since bicycle use in the form of bike-sharing could be an option for those users who do not have a roadworthy bicycle.

3.2 Impacts on the use of various means of transport

Clear differences become apparent with regard to the use of the individual means of transport. A comparison of the category 'daily use' makes clear that significantly more members of the control group (43 %) than users (32 %) drive a car every day.

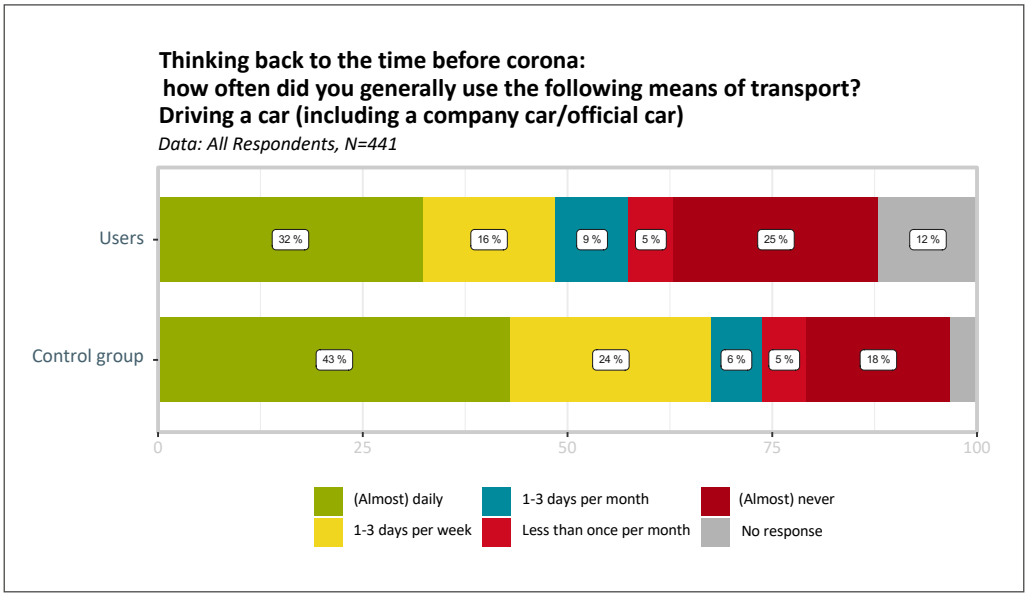

Figure 4: Use of means of transport: driving a car

In addition, it is clear that users use both public transport (+14 percentage points) and bicycles (+13) much more than do members of the control group.

Applying the findings regarding use of various means of transport to the modal split, which reflects the percentages of use of means of transport for all trips, produces the following image:

Means of transport / modal split	Users	Control group	Bremen total [3]
Motorised individual transport as a driver/passenger	29 %	**40 %**	36 %
Public transport	**17 %**	10 %	15 %
Bicycle / e-bike / cargo bike	**30 %**	23 %	25 %
Walking	24 %	27 %	25 %

Table 2: Modal split comparison

3 Source: Freie Hansestadt Bremen, Mobilität in Städten, SrV, 2018

Differentiating between those respondents who knew about the mobility options available before moving into the residential complex and those who did not shows that the shift away from motorised individual transport is strengthened once again: those who did know about them use motorised individual transport for approx. 21 % of trips (vs. 34 % who did not know about them), but walk (27 % vs. 22 %) and ride a bicycle (35 % vs. 24 %) more often.

3.3 Level of knowledge about the existing mobility options

Only about one-third of the users surveyed indicated that they already knew about the mobility options available at the residential complex before signing the rental or purchase agreement.

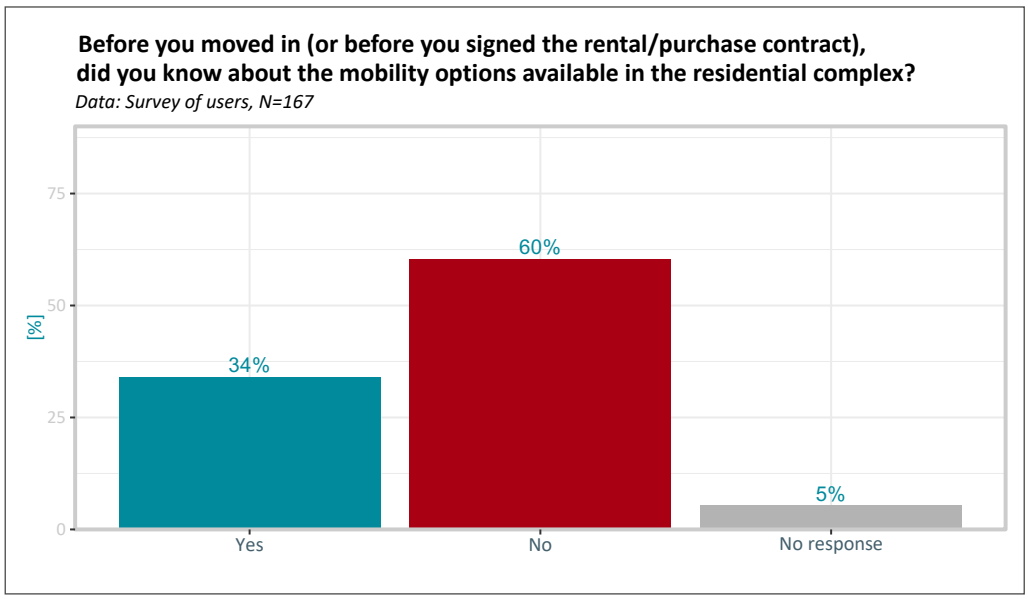

Figure 5: Knowledge about mobility options before moving in

Against this background, it is not surprising that the existing mobility options significantly influenced only a minority of residents' decisions about renting or purchasing their apartments: they had at least a 'large' impact for just 31 %, whereas roughly two-thirds of residents in total stated their impact was 'not so large' (26 %), it had 'hardly any impact' (12 %), or 'no impact at all' (26 %).

3.4 Assessment of mobility concepts

The fundamental idea to provide alternative mobility options in place of parking spaces was mostly considered to be positive. Users were asked to assess the availability of alternative mobility options in place of parking spaces. 37 % responded with 'very good' as a matter of principle, and an additional 17 % with 'good'. A total of 14 % assigned the idea the marks 'satisfactory' or 'sufficient', and only about one in five 'poor' or 'insufficient'.

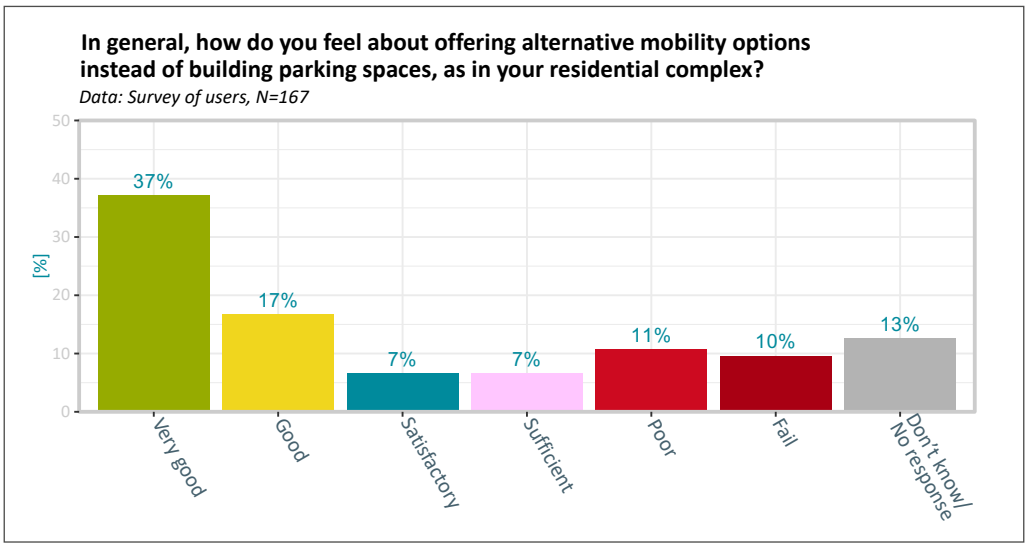

Figure 6: General assessment of mobility options in place of parking spaces

Regardless of the actually available mobility options, 60 % of the residents of residential complexes with mobility options are interested in public transit passes, with 38 % indicating they are 'very interesting' and an additional 22 % 'fairly interesting'. The various sharing options are ranked next as most attractive: bike-sharing (WK-Bike) and e-car-sharing are 'very interesting' or 'fairly interesting' for 43 % each, and e-bike-sharing for 41 %. 35 % are generally interested in *station-based* conventional car-sharing, and 33 % in *free-floating* car-sharing. An additional 31 % are interested in cargo-bike-sharing.

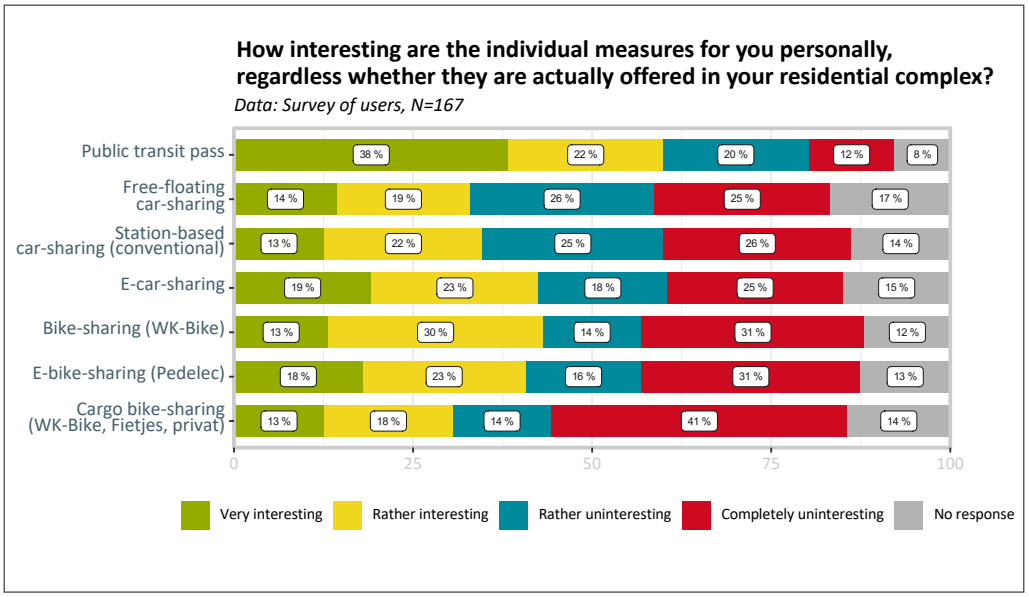

Figure 7: General interest in individual options

4. Summary of findings from the interviews with individual users

The insights gained from the individual interviews underscore the findings of the online survey: good access to public transport is a priority when people **choose where to live**. Public transport is considered important especially for everyday trips, which is why good access is a priority. Car-sharing is also significant as a complement, but is not given as much weight in the interviews.

The interplay of public transport and car-sharing is also mentioned with a view to potentially or possibly **no longer owning a car**. In other words, whereas public transport is seen as the more important means of transport for everyday trips, car-sharing is an important additional aspect when it comes to doing away with one's car. The purposes mentioned for using car-sharing tend to be non-everyday uses such as transporting things or going on outings with several people. The availability of other means of transport, not being sure whether the options are available, and their specific rules are mentioned as **limiting factors** of sharing options.

Analogous to the findings of the online survey, respondents in the individual interviews gave the idea of **mobility concepts a positive assessment**, but the majority of interviewees also criticised **insufficient information** about the options. Opinions differed about the sustainability of the mobility concepts. For example, respondents reported that when public transit passes were offered for a limited period of time, people switched back to driving a car once the free passes were no longer available.

Three groups of drivers were identified in the interviews with respect to the **relevance of the availability of parking spaces**:

- Individuals who have a parking space and consider it a necessity
- Individuals who have a parking space, but consider it a luxury
- Individuals who do not have a parking space

The most common reason given by those individuals who do not have a rented parking space for their cars is the cost, which they consider too expensive or unaffordable in relation to their income. At the same time, many of them mention that it is (still) possible to park on public land free of charge, even if it means having to walk 100 to 200 metres from their residence.

Despite the reduced number of parking spaces required for the properties where the respondents live, they have **not perceived strong pressure on parking spaces** to date. On the contrary, some of the interviewees stated that there was plenty of space to park that had not been rented out.

The **desires for improvement** mentioned by the interviewees often relate to transportation infrastructure, in particular to public transport accessibility in the residential area. In addition, they expressed their desire for better communication about the existing options.

5. Summary of findings from the interviews with developers, planning firms, and mobility service providers

The aim of the qualitative analysis of the interviews with developers, planning firms, and mobility service providers was to explore the opportunity to **reduce the number of parking spaces required by implementing mobility concepts** in accordance with § 9 StellplOG and how the various actors perceive this opportunity. The key questions were:

- Which aspects motivated them to put mobility concepts into practice?
- What were the opportunities and challenges?
- How do the relevant decision-making processes work?
- What improvements do the interviewees desire?

In summary, four **factors for introducing mobility concepts** were identified on the basis of the interviews; they were given different relevance in each interview. The factors are:

- the situation, especially in the city centre, that little space is available for – or should be wasted on – ground-level parking spaces on individual properties,
- since street parking is available free of charge, it is unrealistic to allocate the enormous costs of underground parking spaces to users,
- (expected) good public transport infrastructure in the area,
- and the anticipation or idealism that fewer private cars will or should be owned in the future.

Whereas the first three points concern economic assessments, the final point is the decisive criterion for the interviewees anticipating the economic situation of parking in the coming decades. From this perspective, the developers consider the mobility concepts not only as a way to reduce the amount of compensation to be paid or the number of parking spaces to be built; they often offer options for more sustainable mobility above and beyond the mobility concept or independent of the local law on parking spaces.

In this context, developers imagine extremely heterogeneous groups of users as generally owning fewer cars (now or in the future). That is why they do not consider a reduction of the number of parking spaces required as excluding interesting target groups, but rather as an opportunity to access additional ones.

The **Municipality's requirement to build parking spaces is mentioned as the greatest obstacle to implementing a mobility concept** for rental apartments in centrally located areas or neighbourhoods with good public transport access. Outside of these areas and regarding

owner-occupied apartments, the greatest obstacle mentioned is the assumption that users expect a parking space to be available. Most mention problems related to planning and implementing mobility concepts in this order:

1. Inconsistent statements from various agencies and lack of transparency in communication,
2. Difficulties when planning car-sharing, and
3. The overly strong focus on car-sharing when compensating for parking spaces.

The developers seek the following improvements, ranked by how often they were mentioned:

1. Cargo bikes and cargo Pedelecs as equivalent replacements for cars,
2. Setting the number of parking spaces required according to needs, depending on the user group and the residential complex,
3. More efficient cooperation with the Municipality by bundling competencies,
4. Giving priority to mobility concepts in the StellplOG and granting developers a right to a mobility concept,
5. Regulating public land (parking space management), and
6. Joint mobility concepts of various developers and the Municipality in neighbourhood development.

Overall, it emerged in the interviews that the respondents consider bicycles to be the priority in everyday mobility today and in the future.

6. Comparison of users' actual needs and developers' assumptions about users' needs

For the realised mobility concepts to be accepted, it is important that, to the greatest extent possible, **the users' future mobility needs assumed by the developers and mobility service providers actually match those of the users themselves**. On the basis of the surveys, the following overview compares the users' needs concerning selected aspects with the developers' assumptions.

Topic	Developers' assumptions	Users' requirements
Future mobility	Mobility must be sustainable and multimodal in the future. Important to increase density in the city (city of short distances / compact city).	Agreement in principle, but priority for access of everyday destinations. City of short distances very important for this reason.
Need for parking spaces	From the developers' perspective, differentiated according to location and target group; low demand overall, construction of parking spaces not economically viable. Availability of parking on public land free of charge as the cause of low demand.	Different assessments ranging from 'absolutely necessary' to 'a luxury' to 'unnecessary'. Parking on public land attractive to many because of the difference in cost.
Significance of public transport	Good access to public transport is considered the basic precondition for a mobility concept to work and, thus, for developing and applying for one.	Public transport as a priority criterion when selecting where to live and of the highest importance for everyday trips.

Topic	Developers' assumptions	Users' requirements
Significance of car-sharing	Important for comprehensive mobility concepts for medium-sized and larger properties. Providers think that financial support is important especially in the outskirts (poor public transport access).	Important esp. for non-everyday trips and needs. Spatial proximity and knowledge of the relevant rules are important. Concerns about availability. Car-sharing important esp. where public transport access is poorer.
Significance of e-car-sharing	Developers consider it very desirable. Providers believe it makes sense only in combination with combustion vehicles in order to be able to meet all mobility needs.	Fundamentally strong interest in e-vehicles. Little concrete experience and assessment of use to date. Concerns about reliability and reach.
Significance of bicycles	Privately owned bicycles as the most important means of transport; bike-sharing less important for this reason. Pedelecs and cargo bikes very interesting.	Strong availability and use of private bicycles. No informative experiences of using bike-sharing to date. Desire for Pedelecs and cargo bikes.
Communication about the mobility concepts	Not mentioned by the developers in the interviews.	Of key importance to residents.

Table 3: Comparison of developers' assumptions about users' needs and users' actual needs

7. Recommendations for action

In general, Bremen's local law on parking spaces provides a very good basis for redirecting investments in parking spaces for cars towards sustainable mobility concepts. Nonetheless, the surveys revealed that the positive effects visible today can be strengthened further by improvements in the process, standardised and clear conditions for permissions, and improved mobility options for users. Across all the topics studied, **communication** between those involved and in particular providing information to the target group were identified as very important topics with considerable potential for optimisation.

The following eleven measures, which aim to optimise the processes for those involved and to reinforce the effects of the mobility concepts, can be derived from the surveys. The measures are presented following the steps *planning and administrative approval*, *implementation*, *use*, and *accompanying measures*.

1. Improved external communication and optimisation of the process

Status quo: The current process for negotiating and gaining administrative approval which a developer must follow to secure a mobility concept and the corresponding reduction in parking spaces involves various contact persons and agencies (Building Authority, Authority for Roads and Transport, and the Transport Division of SKUMS (the Ministry for Climate Protection, the Environment, Mobility, Urban and Housing Development)). However, their specific jurisdictions are difficult for applicants to ascertain and their statements often contradict each other.

Recommendation: The internal structure is not easy for developers to comprehend. For this reason, there should be clear communication or a fact sheet explaining the order in which agreements are to be reached, which also involves transparent communication of the concrete contact persons for each topic.

Potential: The process for negotiating and permitting can be accelerated and will not have to go around in circles; various diverging messages can be avoided. In addition, the Municipality can enhance its reliability and improve its public image in this regard.

2. Integration of mobility concepts into early phases of neighbourhood development

Status quo: Mobility concepts are not planned across multiple neighbourhoods. Therefore, mobility planning remains part of the following permitting process for each individual property.

Recommendation: Including the planning of mobility concepts in the development phases of neighbourhoods can both simplify planning processes and improve mobility options for the later users. If the municipality provides professional support for developing comprehensive mobility concepts prior to the application for planning permission, this can avoid the need for individual negotiating processes. Uncoordinated mobility options can be avoided if car-sharing options, for example, are planned across neighbourhoods from the outset.

Potential: Mobility concepts are devised that have the potential to be effective long-term. An overarching mobility concept for an entire neighbourhood can generate synergies, thereby ultimately improving service. For example, a mobility hub may not be economically feasible for an individual property, but it may be a profitable solution for an entire neighbourhood because the target group is larger.

3. Compilation of a list of possible elements for mobility concepts

Status quo: Developers who find out about the opportunities for reducing the number of parking spaces for the first time have no location-specific sources of information about the elements of the mobility mix and their positive impacts that could be integrated in a concept.

Recommendation: The Municipality of Bremen should publish an information brochure in which these elements are presented in an easily comprehensible way.

Alternatively, a portal could recommend other information sources that already exist, for example, 'Intelligent mobil im Wohnquartier' ('Intelligently mobile in residential neighbourhoods') by the VCD, the 'Leitfaden Mobilität für Bauvorhaben' ('Manual on mobility for construction projects') by the Division for Transportation Planning of the Municipality of Graz, or the 'Leitfaden zur Musterstellplatzsatzung NRW' ('Manual on the Model Local Parking Space Regulation North Rhine-Westphalia', all in German only) by the Zukunftsnetz Mobilität NRW.

Potential: Developers can gather the relevant information themselves using a catalogue of sources and can use this qualified support to devise concepts for workable and sustainable mobility concepts. Recognition of the most varied elements of mobility increases the options available to residents and enables them to select the right means of transport for each trip.

4. Definition of all elements of a mobility concept

Status quo: The Transport Division currently accepts the following options as mobility concepts: public transit passes, car-sharing memberships, car-sharing stations, bike-sharing, cargo bikes, bike repair cafés, charging infrastructure for sharing options, and additional bicycle parking facilities. In practice, many developers have focussed on the options car-sharing memberships and public transit passes.

Recommendation: In order to reach the goal of the Municipality of Bremen that fewer private cars are purchased, it is important to conceptualise the mobility building blocks in such a way that they intertwine effectively to achieve the desired effect. This may include both absolutely essential and complementary measures. The elements of the mobility concept should be mentioned in § 9 StellplOG and assessed during the permitting process in terms of their potential performance. An exchange of views with the Transport Division on this matter is recommended.

On the basis of the car-sharing evaluation from 2018, car-sharing should still play an important role. Yet car-sharing should not necessarily exclusively involve e-vehicles since users do not yet accept them in an optimal way and providers do not yet have the necessary competence.

Public transit passes also show the desired effect; that is why this measure is considered a core element.

Communication measures as mentioned under point 7 are an important component that contributes to the success or failure of the mobility concept and should be requested in all cases in the future.

Cargo bikes, bike trailers, opportunities for bike-sharing, and purchasing bicycles and/or e-bikes (depending on the location) for residential complexes are not stand-alone solutions – but they do contribute to significantly reducing automobile use, and in *combination* with car-sharing can make it unnecessary for residents to own a car.

Services such as bike repair cafés, parcel stations, or information boards alone cannot have major impacts – but they can complement other elements.

Potential: Provision of a differentiated range of mobility options including efficient communication about it creates alternatives to owning a car, making private cars superfluous.

5. Application of uniform requirements regarding parking spaces for visitors

Status quo: It has been determined that in practice, a smaller number of parking spaces was allowed in accordance with § 9 StellplOG if mobility management measures were planned, but that the Municipality's Authority for Roads and Transport required a larger number of parking spaces for visitors at the same time. This course of action counteracts the intention of § 9 StellplOG. A rule was issued in November 2020 that specifies the number of parking spaces for visitors as well as the minimum number of apartments for requiring such parking spaces.

Recommendation: Parking spaces for visitors should not be a condition for reducing parking spaces since they too are costly to build. For this reason, the Municipality should decide on a clear and uniform course of action to be followed by all administrative departments and stipulate it in the StellplOG.

Potential: Fewer parking spaces send a clear signal to the general public that excessive amounts of space will no longer be available to private cars. A smaller number of parking spaces for visitors can reinforce an existing mobility concept.

6. Establishment of a central office for advice and monitoring regarding mobility concepts

Status quo: In some residential neighbourhoods, the mobility service providers did not actually offer the options that had been promised. Some residents are aware of the situation and regret it, others delayed selling their cars as planned since they had no alternative.

Recommendation: Actual implementation of the concept, i. e. offering mobility options, must be monitored because it is part of the planning permission. An office responsible for such monitoring must be established and funded. Besides monitoring, this office could also fulfil further functions, for example providing advice for mobility concepts or serving as a point of contact for users.

In addition, the further process must be clarified in case it is determined that mobility options are lacking. Practical alternatives that can be implemented quickly should have preference over payment of compensation for parking spaces not built in accordance with § 7 StellplOG. For example, if electric car-sharing vehicles are not delivered, then they should at least be replaced by conventional vehicles. Using formal commitments could provide additional legal certainty.

Potential: Users who keep their own cars until the mobility options are realised would then sell their cars and thereby no longer need their parking spaces; they would finally use more sustainable mobility options.

7. Improving communication about the mobility options to residents before they move in

Status quo: There is insufficient communication about existing mobility concepts to people interested in apartments in the residential complexes. Many respondents stated that they were never informed about the available mobility options, neither before nor after moving in.

Recommendation: A mobility concept can be a strong argument in favour of a particular apartment. For this reason, such communication should take place when apartments are marketed or shown to prospective residents. The developers should communicate the details of the concept to them from the beginning.

Potential: Communication and information create the connection between the mobility option and the user. A neighbourhood or a residential complex whose mobility concept is communicated attracts interested residents who are willing to participate in it, thereby automatically contributing to its success.

8. Improving communication about the mobility options to residents as and after they move in

Status quo: The majority of respondents indicated that they had not received any information about the mobility concept – even after moving in. What is lacking in particular is information about how the mobility concept works ('user manuals'); options promised, but not realised; and costs. In addition, the surveys conducted show a significant correlation between the degree of information and the impact of the measures. Respondents aware of the mobility concepts have significantly fewer cars of their own and instead use environmentally friendly modes of transport significantly more often for their trips.

Recommendation: Providing information about existing mobility options is an essential component decisive for their acceptance and usage rates. That is why communication to residents should be required as an obligatory component of every mobility concept. The details of such communication may be many and varied, and they may include the following options, for example:

- Leaflets and brochures as 'welcome packages'
- Integration of the mobility options in neighbourhood apps
- Availability of personal advice in mobility hubs
- Mobility day / 'open house' events on the occasion of the official opening
- Consultations to provide information and guidance on how to use the mobility offers
- Displays in building entrances indicating departure times and availability of the options

Potential: If all residents have sufficient information and support, this increases the probability that they will make use of the options. Better communication of the options can significantly improve the exploitation of existing potentials for reducing and shifting modes of transport.

9. Duration and orientation of mobility concepts

Status quo: Following the principle of equivalence, the amount of the investment in mobility management measures equals the amount of the compensation payment. This approach, which was established in 2013, can be used to determine the amount to be invested in implementing one or more measures. In practice, approximately 60 % of applications for planning permission included public transit passes for some of the residents for a certain period of time (normally 3–5 years), and one-third of them in combination with car-sharing.

Recommendation: The impacts of making public transit passes available for a certain period of time and making car-sharing spaces available have different 'lifespans'. Whereas free passes have no impact after the agreed period, infrastructure measures remain for a long

time. No clear indication of mobility behaviour after the period of subsidised public transit passes could be determined in the interviews. Some households purchased a car again after using the public transit passes for 3 years – others continued to use public transport. As a matter of principle, long-term impact should be taken into account when making the investment.

Another approach to evaluating the quality of the mobility options is the amount of the compensation payment and thus of the investment amount, which depends on the costs of building parking spaces. Since 2015 alone, their building costs have increased by approx. 17 % (source: destatis.de). Against this background, the amount of the compensation payment should be reconsidered and adapted, as appropriate.

This matter should be re-examined at a suitable point in time to gain further evidence of the impact after the period during which public transit passes were subsidised.

Potential: The goal of all measures should be to change users' mobility behaviour for the long-term since parking spaces will not be available long-term, either. That is why it must be ensured that the measures are available on a permanent basis.

10. Strengthen public transport infrastructure and services and simultaneously implement mobility concepts

Status quo: The analysis of the individual interviews shows that public transport is the most important transportation option for everyday mobility in the urban space. Strong criticism of public transport options (routes, travel times, frequency of service, convenience) was expressed especially for the Überseestadt, which indicates how important it is. As the interviews show, the dissatisfaction is proven to cause increased automobile use. At the same time, people who use their cars every day have less interest in newer mobility options. Only a single person commented that they desired other mobility options near home specifically because of the insufficient public transport access.

Recommendation: If mobility concepts are to be successful, then infrastructure and public transport services must be strengthened. Sufficient public transport access is necessary if people are to refrain from driving their cars long-term. Besides their own bicycles, public transport is the only means of transport that users recognise as an everyday means of transport (because of cost, among other reasons). Only if public transport ensures everyday mobility can people accept newer means of transport long-term. Car-sharing has a special role in this context. Many respondents emphasised that they wished to have the option to use car-sharing for rare or special occasions (for example, for transporting large amounts of goods or going on outings). Importantly however, car-sharing is largely not considered to be an alternative for everyday mobility, but an important complement to public transport.

Potential: If public transport and mobility concepts are conceptualised together, then it may be possible to successfully attract users to newer and sustainable mobility long-term. Well-developed public transport infrastructure guarantees everyday mobility independent of private cars and bicycles. On this basis, car-sharing is the final building block towards discontinuing private car use.

11. Support through public parking space management

Status quo: Bremen is currently focusing mostly on creating new mobility options and reducing parking spaces on private land. However, there are still many neighbourhoods in which residents can park their cars in the public real or which 'attract' commuters specifically by failing to implement parking space management and/or (paid) residential parking permits. As a result, public spaces largely reduced to a space for parking only.

Recommendation: Public parking space management complements joint conceptualisation of the mobility concept and ensures that renters actually use the parking spaces provided by developers, making it possible to free up public space, which can then be used for cycling and sharing options, as appropriate.

Potential: Successful mobility policies must link measures that provide mobility options with restrictive measures in order to reach its full potential. As long as it is easy and cheap for people to park their first or second cars anywhere on public land, mobility options will not be able to gain a high acceptance.

8. Examples from other cities

Since about 2012, cities in Germany and other European countries have been providing the opportunity to integrate mobility concepts in residential projects in order to reduce the number of parking spaces required. These measures, which were initially governed through special contracts, were later increasingly incorporated in the relevant regulations on parking spaces, for example in the cities of Bremen, Munich, and Darmstadt.

Accordingly, innovative residential projects following this approach have been developed for approximately 5 years. The potential leverage of these measures to change residents' mobility behaviour and to reduce household car ownership has been recognised – but has not yet been documented sufficiently. Hardly any existing evaluations concerning the actual impacts could be found despite extensive research. The reason for this is that the period of implementation, i. e., residents living in the neighbourhoods, is still brief.

Parallel to the mobility concepts already put into practice, a number of manuals have been prepared to help interested developers better understand, plan, and implement the idea.

In the following, we present four housing estates in different cities; they differ in terms of their size, their basic situation, and the details of their mobility concepts. What they all share is high acceptance on the part of residents and landlords.

8.1 Profiles of the real-life examples

8.1.1 Domagkpark, Munich

Residential units / Residents	1600 4000	**Existing housing or new construction**	New construction Completed in 2016	**Completion of mobility measures**	
Residential units with reduced numbers of parking spaces	180	**Actors involved**	Neighbourhood cooperative Domagkpark and partners, Green City, TUM	**Evaluation**	2017 (after 10 months) as a master's thesis at TUM. Planned for 2020
Number of parking spaces required per residential unit	0.5	**Flexible local parking space statute**	No, not at the time of planning approval	**Prerequisite**	Formal commitment

Measures

Spatial design	Parking space management	Mobility management
The neighbourhood was developed with multiple uses: residential, daycare, school, commercial, restaurants	Parking spaces in joint ownership	Integrated booking platform via Stattauto car-sharing Mobility hub. Key safe.
Public transport	**Sharing options**	**E-mobility**
2 bus lines, tram station (approx. 750 m), metro station (approx. 1 km) Transferable public transit passes	6 conventional station-based car-sharing vehicles, cooperation with ShareNow (free-floating car-sharing), Peer-to-Peer car-sharing via Flinc	Photovoltaics in the residential building 3 charging points in the neighbourhood 3 electric car-sharing vehicles 4 Pedelecs 3 e-cargo bikes, 2 e-mopeds
Services	**Communication**	**Access system**
Bicycle repair service Parcel service (concierge)	Mobility brochure 'Vielfältig mobil', neighbourhood portal, cooperation with Munich's marketing for new residents, extensive press reporting	Registration (at the office) Contract – ID card with PIN – 24-hour access; access medium: PIN that opens a key box

Observations/Insights

- According to the initial evaluation, car ownership dropped from 0.85 (prior to moving in) to 0.55 cars per household, sharpest drop among residents of the housing cooperative.
- Mobility concept is part of planning permission as part of proof of parking spaces
- Rule of thumb: Half of the savings should be spent on the mobility concept (at least € 5,000 per parking space eliminated)

Problems

- Underground car park in common ownership vs. deed of partition difficult for developer to accept
- Legal certainty of the formal commitment currently unclear

8.1.2 Perfektastrasse 58, Vienna

Residential units / Residents	115	**Existing housing or new construction**	New construction Completed in 2016	**Completion of mobility measures**	
Residential units with reduced numbers of parking spaces	All units	**Actors involved**	Österreichisches Siedlungswerk, MO.Point	**Evaluation**	No
Number of parking spaces required per residential unit	0.7	**Flexible local parking space statute**	Yes	**Prerequisite**	

Measures

Spatial design	**Parking space management**	**Mobility management**
Bicycle room on the ground floor		Integrated platform by operator MO.Point – Mobilitätsservices GmbH
Public transport	**Sharing options**	**E-mobility**
Bus, metro station (approx. 100 m) 1 public transit pass per household	1 conventional car-sharing vehicle	1 e-car 5 e-bikes 1 e-cargo bike Charging point for e-vehicles, conventional power points for e-bikes
Services	**Communication**	**Access system**
Delivery boxes Bicycle repair shops	Guiding system with signs in the neighbourhood and uniform branding of the vehicles	Registration – contract – ID card – 24-hour access; access medium: RFID card for locks and vehicles Options available for external users too

Observations/Insights

- Professional operator MO.Point responsible for operation on the basis of an agreement with the developer.
- All measures planned during the building design phase, making complete integration in the residential complex possible.

8.1.3 Gartenstadt Farmsen, Hamburg

Residential units/ Residents	2610 4800	**Existing housing or new construction**	Existing housing under heritage protection	**Completion of mobility measures**	2015
Residential units with reduced numbers of parking spaces	All units	**Actors involved**	Gartenstadt Farmsen eG, Cambio	**Evaluation**	No
Number of parking spaces required per residential unit	0.4	**Flexible local parking space statute**	No	**Prerequisite**	

Measures

Spatial design	**Parking space management**	**Mobility management**
Reconstruction of the housing estate with few/low barriers (lifts, paths, ramps), expansion of walkways, attractive open space design with playgrounds and adventure trails	Central management of 845 parking spaces for cars; heritage protection limits parking to this number Increase of bike parking options: Bike sheds in tenants' gardens, bike racks near entrances, bike garages, for a total of approx. 1800 bikes	Mobility advice in the housing cooperative office
Public transport	**Sharing options**	**E-mobility**
Metro station Farmsen up to 1.2 km away	Cambio car-sharing station 1 bicycle cargo trailer 1 child bicycle trailer	4 e-bikes free of charge
Services	**Communication**	**Access system**
Mobile bicycle repair shop free of charge	Periodic information in magazine for tenants, information events for residents on mobility, information leaflet for Cambio	

Observations/Insights

- Increased need for parking spaces due to change in the tenants' age distribution – measures needed as building more parking spaces impossible (heritage protection).
- Concept development and investments by the housing cooperative.

Problems

- Start-up phase for car-sharing took 1 year despite comprehensive communication

8.1.4 Lincoln housing estate, Darmstadt

Residential units / Residents	2000 5000	**Existing housing or new construction**	New construction, conversion	**Completion**	2021
Residential units with reduced numbers of parking spaces	All units	**Actors involved**	Town planning authority, StetePlanung, BVD New Living / Bauverein AG, municipal authority and city council, HEAGmobilo, Entega, Book-n-drive, Calla-Bike, Solar-Parker, residential groups for the disabled, citizens' initiative 'Wir auf Lincoln'	**Evaluation**	First qualitative survey in 2020 (with renters living in approx. 500 units) Complete evaluation planned for 2021 and then every 5 years
Number of parking spaces required per residential unit	0.65	**Flexible local parking space statute**	No, not at the time of planning approval	**Prerequisite**	Urban development contract and statute limiting parking spaces

Spatial design	Parking space management	Mobility management
Car access using traffic calming and minimising space; dense network for foot and bicycle traffic. Connection of the pedestrian and bike paths with surrounding neighbourhoods	Central allocation of parking spaces for cars, management of all parking spaces. Increased provision of high-quality bicycle parking facilities (2.4 per unit), some with bicycle lifts	Mobility hub coordinates and optimises the various mobility options, is the contact point for stakeholders, monitors the market, provides individual mobility advice
Public transport	**Sharing options**	**E-mobility**
2 tram stops with a total of 3 lines already in operation when first residents moved in Ticket sharing system	Book-n-drive car-sharing station, 2 Call-a-Bike stations (including e-bikes), 1 cargo bike stationed at the DIY store	Creation of charging infrastructure for electric vehicles, 3 e-vehicles (Zoe) as a sharing option for residents only
Services	**Communication**	**Access system**
Bicycle service 3 times per year	Periodic information events and workshops Mobility brochure and leaflet Mobility advice	

Observations/Insights

- The number of parking spaces required per unit (0.65) corresponds to the real parking needs in comparable neighbourhoods.
- Permitted prior to the new parking space statute, so statute limiting parking spaces applied.
- No need for residents to declare they will not own a car as the neighbourhood is too large.
- Mixed residential population (social housing, owner-occupied flats, residential groups for the disabled, assisted living, student housing)

Problems

- As the housing estate was completed in various phases, the small number of parking spaces was not 'taken seriously' at first.
- Fairly long start-up phase for using the various options despite comprehensive communication

8.2 Conclusions from the profiles of the details of mobility concepts

8.2.1 Parking space statute

The opportunity to reduce the number of parking spaces by making parking space statutes more flexible expands cities' scope for action to create a win-win-win situation. This is possible in the following cities, among others: Munich, Darmstadt, Rüsselsheim, Vienna.

The examples above require 0.4 to 0.7 parking spaces per residential unit, which is far below the 'usual' figure of 1.0 to 2.0 in other German cities.

Parking space requirements can be reduced incrementally with various conditions. For example, Munich defines two steps of a 'mobility factor' (MF):

- If MF = 0.8: more bicycle parking spaces (1 per 30 m² instead of 40 m²), space for sharing options, cargo bike
- If MF < 0.8: 20 % of the space gained is to be invested in space for sharing, more bicycle parking spaces (1 per 25 m²), rental bicycles, central parcel delivery, etc.

The number of parking spaces required per unit can be oriented towards a city's real and measured parking needs and can take up special features in terms of subsidies for housing construction, household sizes, or additional agreements, e. g. requirements not to own a car.

8.2.2 Other possible agreements

A formal commitment can require developers to fulfil certain conditions, e. g. communication by the landlord to the tenants, maintaining the mobility options for a certain number of years, etc.

8.2.3 Use of a mobility mix

Many of the examples mentioned offer the most varied forms of mobility. The underlying logic is to be able to conduct as many trips as possible in different ways and without a car. Making it more pleasant to use one's own bicycle through optimised bicycle parking facilities or bicycle repair shops contributes to long-term behavioural change, as do shared cargo bikes, workshops, or car-sharing.

8.2.4 Optimal spatial conditions

Mobility options in the examples mentioned can be located outdoors as well as indoors. Each variant has its advantages and disadvantages. In any case, access must be easy and barrier-free. It is essential for the option itself to be clearly visible or for signage to provide easy orientation.

8.2.5 Financing and operation

Various structures for financing and operating shared mobility options are imaginable, depending on the ownership structure.

Non-commercial operation organised by the residents themselves (e. g. associations, joint building ventures) are suitable for low-density estates if the residents are willing to do so, e. g. mgf Farmsen. Depending on the operational model selected, ownership of the vehicles can be either in the hands of the operator, the developer, or the owners of the units. The latter alternative often refers only to vehicles such as e-bikes or cargo bikes. Car-sharing vehicles are usually provided by professional operators.

8.2.6 Mobility management and communication

Active mobility management and extensive communication measures are essential components of all the mobility concepts studied. The order in which the following aspects are listed corresponds to the decision-making process of (future) residents – ideally by a (physical) mobility hub.

- Information about the options, including organisation of attractive mobility day / 'open house' events
- Individual mobility advice
- Contact point for all stakeholders, e. g. also mobility providers, residents, etc. for support in operational matters (e. g. registering for options, interfaces to architectural integration, etc.)
- Parking space management or allocation of parking spaces
- Coordination and ongoing optimisation of all options
- Market monitoring
- Gathering feedback from users and tasks in preparation for evaluations

It can be assumed that the neighbourhood development projects select 'their residents' through proactive information and communication.

Successful examples are often to be found among housing cooperatives; it can be assumed that their members' basic attitudes towards shared property are easily transferable to shared mobility facilities. Yet the tenants of municipal housing companies are also often sympathetic towards sustainable measures to reduce traffic, especially if they lower rental and mobility costs.

8.2.7 Conceptualisation and implementation

It is striking that conceptualisation and implementation were not very standardised in any of the projects presented, neither in the planning phase nor in the implementation phase. In the current phase, where mobility concepts still signify innovation, the developers and the owners of existing properties dealt with this topic for the first time. This process is very personnel-intensive for developers, who must first acquaint themselves with the legal, planning, and operational topics, then prepare them for the permitting process, and finally implement them through complex negotiations and processes with numerous providers.

The project Perfektastrasse in Vienna was the only one planned and operated in cooperation with a single provider.

9. Appendix and lists of figures and tables

9.1 Properties analysed in the evaluation

Address of the property	Zone according to StellplOG	Number of residential units	Number of stores/offices/spaces other than housing	Number of parking spaces ordinarily required	Number of parking spaces actually built	Number of parking spaces not built; instead compensation paid in accordance with § 9 StellplOG through a mobility concept	Number of car-sharing spaces built	Cooperation partners
Gröpelinger Heerstrasse 246	2	25	1	Un-known	Un-known	19	0	BSAG
Lange Reihe 28	1	13	0	3	0	2	0	cambio
Bersestrasse 4	2	23	0	19	7	12	0	BSAG
Waltjenstr. 109–115	2	20	0	16	11	5	0	BSAG
Buntentors-deich 21	2	21	0	13	6	7	0	BSAG
Gröpelinger Heerstrasse 9–13	2	28	10	Un-known	Un-known	25	0	BSAG
Scharnhorst-str. 177	1	2	0	Un-known	0	2	0	BSAG
Kommodore-Johnsen-Boulevard/ Hafenkante	2	118	6	Un-known	Un-known	16	3	Move About
Dresdener Str. 2–8 / Leipziger Str. 21–25 / Halbstädter Str. 45–49	1	30	0	22	13	9	0	BSAG/ Cam-bio
Holsteiner Strasse 82–88, Theodorstr.	2	11	0	9	1	8	2	Cam-bio and BSAG

Address of the property	Zone according to StellplOG	Number of residential units	Number of stores/offices/spaces other than housing	Number of parking spaces ordinarily required	Number of parking spaces actually built	Number of parking spaces not built; instead compensation paid in accordance with § 9 StellplOG through a mobility concept	Number of car-sharing spaces built	Cooperation partners
Kommodore-Johnsen-Boulevard 28, 30, 32, 34	2	Unknown	Unknown	Unknown	Unknown	11	2	Move About
Kissinger Strasse 3	1	28	0	15	3	12	2	Move About
Kissinger Strasse 5	1	16	0	25	3	21	2	cambio and WK Bike
Münchener Str. 9–13	1	4	1	5	0	5	0	BSAG
Konsul-Smidt-Str. 54	2	58	2	49	2	30	2	Move about
Arndtstrasse 2, 4 und 6	1	15	0	14	7	7	1	PMC
Hafenstraße 50–52 A, Konsul-Smidt-Str. 33–37 ('Hafen-passage')	2	203	?	Unknown	Unknown	Unknown	0	BSAG and cam-bio
Herzogin-Cicilie-Allee 10 and Ehrenfelsstrasse 5, 7, 9, 11, 13	2	84	1	Unknown	0	49	4	PMC

Table 4: Overview of projects analysed

9.2 Figures and Tables