

# Possibilities and Constraints for Mobility Management in Small Urban and Rural Communities

(Workshop 1e Framework conditions)

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## ***Mobility Management, an approach developed and successfully applied in urban areas***

In the past years mobility management (MM) in Germany has experienced a fresh impetus amongst other things due to the official German research program “Mobility in Metropolitan Areas“ financed by the Ministry of Research.

Next to the existing approaches such as mobility centres, car-sharing and job-ticket, new methods have been developed and implemented up to now. These new approaches pointed out new research fields whilst also strengthening the overall trend to MM-measures. In the following some examples for MM related measures in the metropolitan area of Munich developed within the project “MOBINET” are shown.

- The shopping-box-concept was developed and implemented in the context of “MOBINET”. The shopping-box-concept enables a customer to order goods via the internet whilst these goods are then delivered to a so called “shopping-box” close to the workplace. It was shown that this project lessened and to a great extent avoided shopping-traffic. The organisational side of the project was successful but when implementing this concept the customer demand was much lower than expected. Nevertheless the enterprise is convinced of the potential economic gain and plans to introduce a greater variety of goods and services to increase customer numbers in the future. (see RÖMMELT, 2002)
- Intermodal mobility education in schools has been introduced in the EU-projects “MOST” and “SUN,” but also in national projects such as “MOBIKIDS” in Germany. As part of the “MOBINET” project, “MOBIKIDS” was introduced to sensitise children, parents and teachers to traffic and mobility problems. A primary school in Munich started a model scheme establishing a collective meeting place for school children enabling them to go to school together. Furthermore there were lessons on alternative mobility possibilities such as bicycles and public transport, whilst bicycle parking spaces in schools were upgraded and extended. On the whole “MOBIKIDS” managed to reduce the number of children driven to school by their parents to 20-30 per cent. At the moment the City of Munich is attempting to implement these projects in other schools as well. (see ZÄNGLER 2002).
- In addition to new mobility concepts established in the metropolitan area of Munich one could use modern telecommunication infrastructure to expand information distribution methods. In Germany different information dissemination methods are used including internet and mobile phone (WAP) services.
- In addition to this project – which is mainly finished by now – there are several other projects which intend to promote MM in Munich in the future. These include the project “IMBUS” which aims at integrating different MM-measures and information systems. The goal is to introduce a “local mobility consultant” and an “interactive mobility centre” to improve and enhance the information on MM-measures. (SCHREINER, 2002).

On the whole one can find a large number of MM-measures in German metropolitan areas. These measures do not only include classical ones such as Job-Ticket, Car-Sharing or Mobility Centres but also innovative ones such as the already mentioned shopping box, new forms of traffic education, and local mobility services. The interaction between all these measures shows that mobility measures have become very common in German metropolitan areas.

### ***The Project “IMAGO” as a Chance to Transfer Mobility Management Methods in Rural Areas***

In opposition to the widespread presence of MM in urban areas, up to now the matter has almost been neglected in rural areas. It has to be pointed out that the possibilities of implementing MM-measures are quite restricted, due to the overall lower public transport service quality in rural areas. However, there are rural areas with good public transport systems which are able to offer a real alternative to daily car-use. Examples are small and middle-sized towns with a high quality of bus transportation systems, such as Detmold or Lemgo in North-Rhine-Westphalia, and also other flexible transportation forms such as “taxi-bus” in Minden-Lübbecke (STOLZ, 2002). Though even these market leaders in the “urban-bus” sector, these are small cities in rural areas with a very high quality standard within their public transport systems – have so far not introduced MM-measures. The research project “IMAGO” financed by the German Ministry of Research focuses on small and middle-sized towns with a high quality public transport system (The abbreviation IMAGO stands for: “Innovative concepts for transport systems and their marketing in small towns and rural communities with exististing local busses”).



Fig. 1: „IMAGO“-Logo

This project deals with the following issues:

- the question of how it is possible to transfer the high quality systems within these small cities to the surrounding areas, resulting in the development of a better regional public transport system
- developing ways to promote these inner city transport systems by integrating mobility management measures.

In the following, the focus will be set on the second approach of “IMAGO” – under the special aspect of implementing MM in these small and middle-sized towns with a high quality public transport system. “IMAGO” refers to measures which have already been successfully introduced in urban areas and tries to identify the preconditions needed for their introduction in rural areas. The project tries to identify the chances and possible methods for the adaptation and implementation of MM in rural areas whilst also seeking adequate solutions.

In this context the project deals with the following concepts:

- job-ticket
- car-sharing
- mobility-centres

These specific measures were chosen because of the current situation in the case study region East-Westphalia (North-Rhine-Westphalia).

- 1) Up-to-date the smaller cities with a high quality public transport system were not able to shift a large proportion of commuter-traffic to the public-transport-system as it is the case in large cities. Aim of the project is to reveal possible causes for the low utilisation of these systems during commuter-traffic and to possibly provide options of how to increase the percentage of job-traffic within the public-transport-system, as well.
- 2) In urban areas there are certain spatiotemporal transportation requirements which cannot be dealt with satisfactorily by public transport infrastructure. Within the case study areas it was also found that the demand for public transportation in the surrounding villages of cities could not be satisfied by existing communal based systems and therefore cars are needed to travel to the surrounding areas. As an additional motive for car sharing services (building up on experiences from urban areas) one can take the improving effect to the customers’ loyalty to the public transport system.

- 3) In rural areas the awareness for alternative mobility systems to the private car is not as widespread as it is in urban areas. Raising the awareness of consumers in this field by disseminating information and enhancing consulting should thus be the first priority of measures promoting the development of public transport in rural areas. This could be done by supplying information and raising awareness about mobility alternatives in local mobility centres as suggested in the mobility centre concept.

### ***The Framework Conditions for Mobility Management Measures in Urban and Rural Areas***

When trying to transfer and adapt MM-measures from urban to rural areas one should first assess the framework for the introduction of such measures. In the following section the differences between the framework conditions of both spatial contexts will be pointed out.

Furthermore, solutions and implementations developed in the project “IMAGO” will be presented.

#### **Job Ticket:**

Different aspects are important where the job ticket is concerned:

- one has to consider the varying costs for parking lots. From a solely economical point of view high parking costs and a general scarcity of urban parking space areas favour the introduction of job tickets by companies. Furthermore, the accessibility rate in the rush hour can be better guaranteed by a good urban public transportation system than by cars.
- in rural areas the parking costs are only marginal and normally companies lying on the outskirts can be easily accessed by car.
- in urban areas there is usually a strong agglomeration of big companies leading to a strongly focused spatial demand. There are fewer big companies to be found in small rural towns and these are usually spatially widespread.
- this is an important issue when one considers the much lower density of the public transport system in a rural area. Problems are also created by low population densities accounting for a lower demand.

Exactly these framework conditions were detected during the project work of “IMAGO” in Lemgo, a case study town with a population of about 40.000 inhabitants.

The survey showed that public transport infrastructure covered only a minute part of the small and widely scattered industrial estates on the outskirts of the city. Due to the current public finance situation, possibilities to upgrade and enhance public transport infrastructure are rather small. This means that other target groups for the job ticket scheme had to be identified.

Moreover, it has been detected that – as in many smaller towns – the public transport capacities are strongly orientated at the demand of school traffic (fig 2).

Figure 2 shows the passenger numbers of one of the four public bus lines in Lemgo in the course of a day.

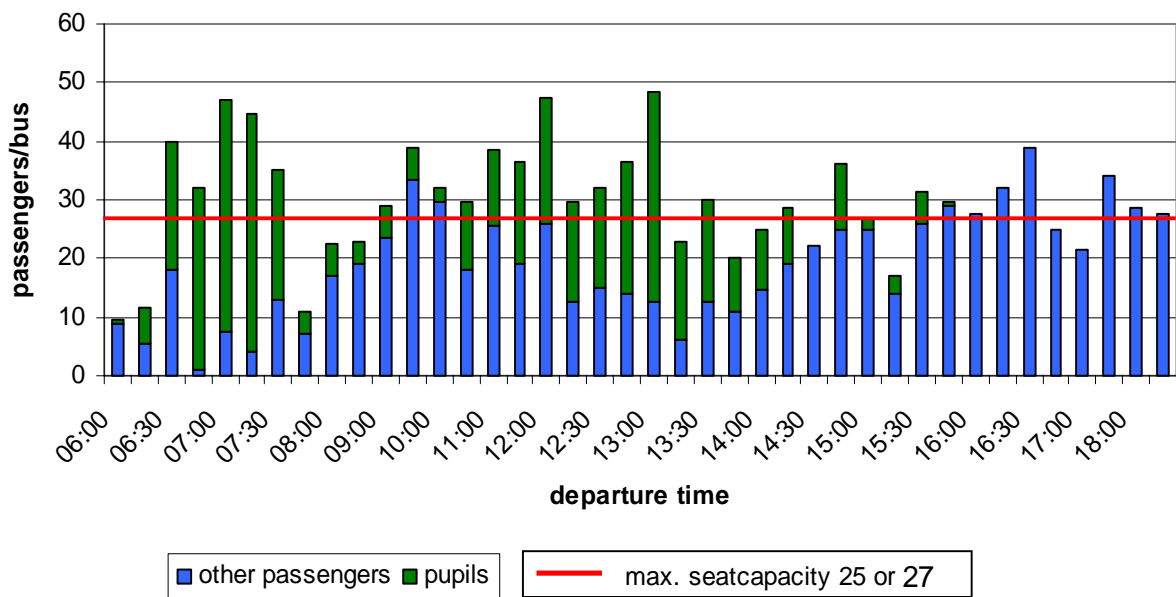


Fig. 2: Passengers of the bus-line 883 in Lemgo during the course of a day

Here we see that the “ordinary” passengers are “pushed out” of the buses in the rush hour by the high number of school children. This means that during the peak traffic hours in the morning there are nearly no capacities for commuter traffic, in other words the working people are discouraged from using the buses due to the large numbers of school children.

The low capacity at rush hours is characteristic for most public transport systems in rural areas which have developed purely out of school transport needs and for the greatest part are still aligning themselves with these needs. It is hardly possible to generate further demands from other groups in the peak traffic hours without introducing parallel systems and capacities; this is very seldom an economically feasible alternative. Whilst trying to introduce a job ticket concept for Lemgo one also has to consider the strong orientation to the city centre of the transport system, which meant utilising the good accessibility of the inner city area especially the pedestrian zone. In Lemgo all four bus lines pass through the old inner city and the pedestrian zone (see fig 3). The consideration of the general framework lead to the introduction of a job ticket designed especially for people working in the retail and service sector; most of these sectors start work after 9:00 am and are also situated in the city centre. Higher accessibility of the inner city area with public transport can be seen as an advantage of the system which can be used to balance out capacity and infrastructure deficits.



Fig. 3: Public Transport Network in Lemgo

The strongly structured retail system in Germany and the strong involvement of the local umbrella association enables the introduction of a broad and diversified job ticket system.

Since the project has only just been started it is hard to assess the quantitative results – up to now, the response is very encouraging.

This example clearly points out the importance of establishing new co-operations and of finding solutions for small structures when trying to apply MM-measures in rural areas. Whereas in urban areas the big companies constitute the main customers for the job tickets, – public transport enterprises usually do not consider companies with less than 100 employees – in rural areas it is often necessary to find new co-operation partners in smaller companies. Besides it is harder to convince companies in rural areas to buy job tickets, especially at the edge of the town as they do not face major parking space problems.

### Car Sharing

In the past years the concept of car-sharing developed positively. However, car-sharing is mainly restricted to large cities and urban areas. Up to today there are hardly any car-sharing services in cities with a population of less than 50,000; these cities represent 43% of German national population. Considering the proportion of cars used for car sharing purposes, it is noticeable that that 87% of these cars are accessible to only 35% of the population living in cities with more than 100,000 inhabitants.

Community Size	Up to 10.000 in.	Up to 50.000 in.	Up to 100.000 in.	Up to 200.000 in.	More than 200.000 in.
Communities with Car-Sharing Services	0,01%	7%	30%	71%	100%
Proportion of Cars deployed for Sharing Car in Germany	0,4%	6,5%	6,2%	11%	75,9%
Population Proportion per Community Size	17%	26%	22%	35%	

Tab. 1: Distribution of Car-Sharing Services According to the Community Size

This phenomenon can be explained by the following conditions:

- high quality public transport systems in urban areas facilitate good accessibility for car sharing centres even on weekends and holidays. In contrast to that public transport systems in rural areas offer less frequent service in these days which results in a low accessibility of the centres. The main aim for the introduction of car sharing – which was to provide better services on weekends and holidays – cannot be reached because of the low accessibility of the car sharing centres.
- The greater car density per resident in rural areas notably decreases the demand for car sharing services.
- The low demand for car-sharing services in rural areas is even reinforced by the low population densities.
- Both aspects are the cause for a low cost-effectiveness of each single car sharing locations, when supposing that the catchments area can not exceed several hundred meters.
- Different surveys have shown that there is a greater number of people prone to car sharing activities in urban areas than in rural areas; this has had a further disadvantageous effect on the demand side in rural areas. These mentioned framework conditions also formed the starting situation for the project in Lemgo. The first priority of the project was to introduce long-lasting and economically feasible solutions, thus in this case it was necessary to develop a cost effective alternative. The precondition for an economically feasible venue includes finding locations for car-sharing-vehicles with a sufficient demand in a given catchment area.

In a household survey performed in this context it was constituted that due to the high car disposal in rural areas the demand for car-sharing services is only moderate.

- Car sharing services were only requested for the seldom case where an additional car was needed to the existing family cars. Furthermore, it was not possible to detect a spatial pattern in these requests.
- Another problem in this case was that due to financial and organisational deficits it was not possible to offer these services at more than one location; the potential demand in all suggested locations was found to be insufficient to guarantee an economic feasible solution (see fig 4).

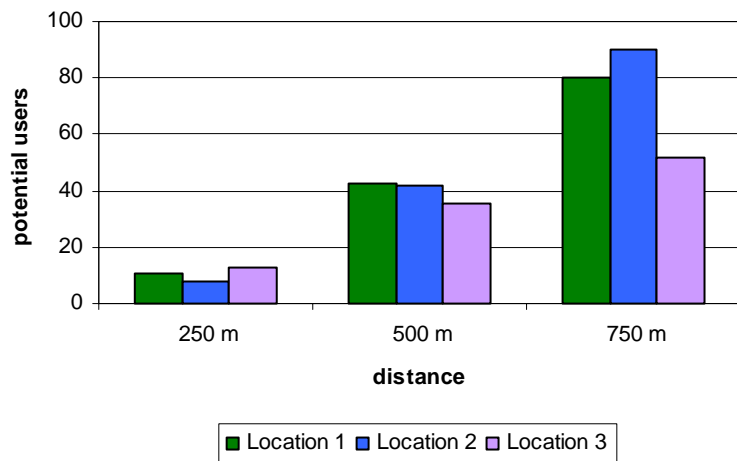
The potential demand was determined using the population figures of the surrounding radii and the average potential use per resident which was calculated based on the results of the household survey. These figures corresponded to other research studies performed in this field (see *BMBF* 2001).

Taking the previously mentioned conditions into account, it was impossible – in this case – to recommend any of the suggested locations for the introduction of car sharing.

The low population densities characteristic for rural areas and the low demand for car sharing services can mainly be held responsible for the failure of the project in the case study area. These two reasons lead to very large catchment areas when trying to introduce car sharing locations. Unfortunately, in rural areas these are necessary to achieve sufficient demand for the service. Large catchment areas, however, combined with a deficient public transport system outside the peak traffic hours, lead to unacceptably long travel distances for the customers. In addition to private customers it would be necessary to include companies and local administration to ensure a cost covering use of the cars. In the project “IMAGO” this cooperation failed due to the different interests of the parties involved.

The project “aufdemlandmobil” – like “IMAGO” also part of the research-network “Mobility in rural areas” – shows that it is by all means possible to find adequate solutions if there is a will to compromise.

At first the project was faced with similar problems. However, in this case problems were solved because car salesmen offered the cars to favourable conditions and the chamber of commerce guaranteed a minimum use of the service by its members. Future projects should focus on the complementary company use of these systems in order to compensate for the low demand in the private household sector. The introduction of a cost-effective car-sharing project in rural areas is only feasible when combining different demand groups.



**Fig 4:** The Potential Demand of Possible Car-Sharing Locations in Lemgo

## Mobility Centres

In the following there will be shown the framework conditions for the introduction of mobility centres in rural and urban areas:

- There is a fundamental difference in perception of public transport in urban areas and public transport in rural areas. In opposition to rural areas public transport in urban areas is perceived as a transport alternative even by non-users. The main problem of public transport in urban areas is the lack of information about the system, whilst in rural areas there is a basic lack of acceptance for this alternative. The first priority when introducing mobility centres in rural areas would thus be to try to establish public transport as a perceived transport alternative and the second priority to disseminate information on the structure of the system.
- The already existing demanding preconditions for mobility centres in rural areas are further enhanced by the bad financial resources of public transport in these areas. Problems also arise because services offered in rural public transport are mostly shared by different companies. Public transport regionalisation laws issued by the European Union in the 90ies resulted in a strongly varied constellation of administrative responsibility structures, especially in German rural areas.
- The cooperation needed for the introduction of mobility centres in rural areas is harder to achieve because of the large number of small and very small enterprises which offer public transport and consequently are responsible for the financing of these centres.
- Low population densities and the resulting low demand are often reason for doubts concerning the necessity of such services.

All these constraints had to be taken into account when developing a mobility centre concept for rural areas. The high degree of dispersion of the population has been the reason to look for new solutions instead of adopting the already existing ones within the metropolitan areas, i.e. in form of great mobility-centres at one central location. To achieve an optimal perception of public transport it is necessary to develop small decentralised mobility centres which offer the maximum vicinity to the potential customers. The cost framework for these small centres has to be realistic. To keep costs low it is essential that running costs such as personnel and rent are kept at a minimum level whilst still offering customer friendly services and also guaranteeing the perception of these services.

According to these framework conditions two different new types of mobility centres have been designed:

- 1) In the region of Paderborn, which is characterised by a large number of small villages, a concept of mainly self-explanatory information offers was chosen for the mobility centres. This concept mainly used digital and audio-visual communication-channels to lower the need for individual guidance by staff. These computer-terminals have been integrated within the so called “citizen centres” which offer a great variety of public services to their citizens. These institutions are part of the local administration and are to be found in the municipalities. This integration ensures a



**Fig 5:** Computer Terminal within a Mobility Centre in the Municipality of Salzkotten (Paderborn)

high frequency of customers and at the same time enables these customers to ask for guidance in using the information terminals. The aspect that the citizens are already familiar with these “citizen centres” as source of important communal information makes these centres a very good platform for new information services. In detail, these terminals offer the possibility to get:

- an audio-visual presentation of the local public transport system
- schedules and leaflets of actual public transport-system services,
- individualised schedules for their place of residence and also digital schedule-information.
- very detailed information about the local public transport system via integrated telephone-hotline.

- 2) In the second regional context – which is characterised by a more compact settlement structure and a higher population density – there was the possibility to use a concept which is pretty similar to the concepts used in urban areas. In an intensive co-operation with a local bank the mobility centre was implemented as a real information agency with a specialised staff. In other words the concept worked right the other way round than it did in Paderborn. In this case the mobility centre was not integrated in an already existing bank agency, but bank services were integrated into the new mobility centre. This co-operation is necessary to ensure the needed customer frequency. The co-operation is based mainly on the aspect that the bank pays the rent for the agency and can therefore be sure that if any problems should arise whilst customers are using these computer terminals, the staff of the agency will be present to offer some guidance and at the same time “look after” the terminal. This procedure also protects the bank terminals from possible vandalism. A travel agency is also part of the centre to ensure a more efficient use of the mobility centre staff. Beside classical tourist services the agency also offers tickets for the German railway system and a ticket service for local events. This multifunctional use of the centre staff ensures long opening-hours with a quite low cost level. Apart from these financial advantages, the multifunctional concept guarantees a great number of customers, which also helps to improve the perception of the public transport system and stress its existence to the citizens.

These two different successful implementations show the principal possibility of transferring the concept of mobility centres developed in urban areas to the spatial context of rural areas. However, they also stress the need for cooperation between different partners and institutions which is necessary to ensure the needed customer frequency and to establish a solid financial base for such services.

### ***Conclusion:***

The small budget for public transport systems in rural areas leads to financial disadvantages in the implementation of MM-measures in rural areas. This small budget is the result of a low population density and common political opinion that high quality public transport systems are just not necessary in rural areas. The disadvantageous financial situation for public transport in rural areas is enhanced by the complicated structure of responsibilities in this spatial context. This means that the small budget has to be divided between a great number of institutions and communities. As a result, the small budget becomes even smaller! Furthermore the public transport systems in rural areas have to deal with a quite low population density, which means they have to serve large areas with only a very small number of potential users. In the end, all these different problems lead to a very high pressure on the financial sector for public transport systems in rural areas. In this situation there is little chance for any innovative projects which are not able to assure a financial improvement for the systems.



Under normal circumstances however, improving the financial situation is only possible by raising the passenger figures within the systems. Unfortunately, this aim is extremely hard to reach because of the strong focus of rural population on private car-use. This means that all projects which are planned to be implemented have to work without any extra costs. This means that in everyday life, it is not the perfect offer to aim for, but the best one possible with a certain budget. The presented examples may give an idea of possible solutions under these framework conditions. They prove that despite great financial problems, innovative projects can be developed. The most important aspect is to find innovative partners, which are interested in improving the situation of public transport systems in rural areas.

The developed projects have to deal with the local situation and find appropriate solutions for the regional context. By implementing new solutions the perception of public transport systems as well as the local knowledge of alternative mobility measures can be improved in the long-run. These aspects will help to improve the overall situation of public transport in rural areas.

Otherwise, this paper also wants to stress that there are certain constraints in rural areas which are very hard to cope with. Not all of the MM-measures which are used in urban areas can also be transferred to rural regions. Furthermore, the project shows that the possibilities of MM-measures in rural areas are not as promising as they are in urban areas. If so, they would have to be used in a much more creative manner and solutions would have to focus on the local situation. This means that MM-measures in rural areas cannot be as highly standardised as they are in urban areas. The implementation of MM-methods in rural areas goes hand in hand with a lot of work when adjusting them to the local situation and offers a comparatively lower potential to the use in urban areas. Nevertheless, MM-measures developed under the quite unfavourable conditions in rural areas might one day become a model for optimizing the nowadays existing solutions in the metropolitan areas towards a higher degree of effectiveness.

### ***Bibliography:***

- *BMBF (=Bundesministerium für Bildung und Forschung)* (ed.): Car-Sharing in der Fläche. Oldenburg 2001
- *ILS (=Institut für Landes- und Stadtentwicklungsforschung des Landes Nordrhein-Westfalen)* (ed.): Maßnahmen zur Akzeptanzsteigerung von mobilÉ –Wahrnehmung und Bewertung der Mobilitätszentrale in Münster. Dortmund 2000
- *ILS (=Institut für Landes- und Stadtentwicklungsforschung des Landes Nordrhein-Westfalen)* (ed.): Qualitätsgeprüft. Standards für Mobilitätszentralen. Dortmund 2001
- KIPP, T.: Mobilitätszentralen in Deutschland. München 2000 (*unpublished Master Thesis*)
- RÖMMELT, Sybille (2002): Online-Shopping und Mobilitätsverhalten am Beispiel der Shopping Box. . In: KAGERMEIER, A., T.J. MAGER & T.W. ZÄGLER (eds.): Mobilitätskonzepte in Ballungsräumen. Mannheim 2002, pp. 61-72 (=Studien zur Mobilitäts- und Verkehrsforschung, 2)
- SCHREINER, Martin (2002): IMBUS – Information, Marketing, Beratung und Service .. der Schlüssel zu mehr nachhaltiger Mobilität in München. In: KAGERMEIER, A., T.J. MAGER & T.W. ZÄGLER (eds.): Mobilitätskonzepte in Ballungsräumen. Mannheim 2002, pp. 61-72 (=Studien zur Mobilitäts- und Verkehrsforschung, 2)
- STOLZ, Thomas (2002): Optimierter ÖPNV im ländlichen Raum am Beispiel der TaxiBusse in Preußisch Oldendorf und Stemwede. Köln 2002 (*unpublished Master Thesis*)
- ZÄGLER, Thomas W. (2002): Innovative Konzepte für die mobile Gesellschaft: Ansatz und Wirkungsanalyse des MOBINET-Arbeitsbereich D. In: KAGERMEIER, A., T.J. MAGER & T.W. ZÄGLER (eds.): Mobilitätskonzepte in Ballungsräumen. Mannheim 2002, pp. 61-72 (=Studien zur Mobilitäts- und Verkehrsforschung, 2)