



## **SUCCESSFUL INITIATION AND COORDINATION OF MOBILITY MANAGEMENT – EXPERIENCE OF THE GERMAN ACTION PROGRAMME "EFFICIENT MOBIL"**

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### **Abstract**

Even though Mobility Management is more and more seen as a suitable approach to meet the challenges of mobility and transport, a nationwide and top down strategy has been missing in Germany so far. The action programme “effizient.mobil” of the German Energy Agency (dena) (runtime 01/2009 – 12/2010) funded by the Federal Ministry for the Environment (BMU) is the first attempt to go a more systematic way to foster Mobility Management strategies and implementations. So far more than 100 municipalities and companies got free of charge consulting that led to a specific concept taking the framework conditions into account. The ILS-Research Institutes for Regional and Urban Development and the ISB-Institute for Urban and Transport Planning are assigned with both the evaluation of processes and the estimation of effects.

The evaluation concentrated on all relevant processes in both of the action levels of the program, namely the level of regional initiation, application and coordination of mobility management measures and the level of individual consulted cases. A mix of qualitative and quantitative methods was used for this. Firstly, ongoing project activities could be documented and analysed. Though it was possible to follow developments and to discuss them with all stakeholders in the current process. This offered the possibility to optimize certain parts of the program. Secondly, success and inhibition factors could be derived for the different programme levels.

An assessment tool for effectiveness of the internal mobility management concept was developed to estimate the CO<sub>2</sub> reduction of the planned measures based on extensive surveys and concepts. The programme offered the possibility to display the traffic-related benefits of mobility management to the consulted cases for consulting the traffic-related cases for the benefits of internal mobility management by uniformly collected basic data.

So the motives for a confrontation with the issue of mobility management can be explained better. For example it can be stated that the worse the quality of location,

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the more specific mobility related motives lead to participate in the programme “effizient mobil”. Otherwise the car share at the journey to work is lower, the greater the prior experience with the subject of mobility management is. Based on these results evidence for action and influence factors for implementation of mobility management in companies can be derived. The results show that e.g. especially cycling and public transport are considered because here the enterprises have the largest existing knowledge and experience. Measures that affect the working time regulations were rarely observed and not internally designated. Especially in combination with the location of the sites and the existing accessibility the question is, what does this mean for the willingness of implementation.

## **1. Introduction**

Even though Mobility Management is more and more seen as a suitable approach to meet the challenges of mobility and transport, a nationwide and top down strategy has been missing in Germany so far. The action programme “effizient.mobil” of the German Energy Agency (dena) (present runtime 01/2009 – 12/2010) is the first attempt to go a more systematic way to foster Mobility Management strategies and implementations.

It is funded by the Federal Ministry for the Environment (BMU). It aims for a further dissemination of Mobility Management, as this concept is so far mainly implemented on an ad hoc basis. The programme supports the uptake and the effective implementation of Mobility Management, both within the municipalities and for different sites and organisations. Effective structures shall be established which support a better institutional anchoring and a better integration into suitable strategies and programmes. So far more than 100 municipalities and companies got free of charge consulting that leads to a specific concept taking the framework conditions into account.

As examples prove, Mobility Management is effective. To help this instrument to its breakthrough, however resilient and comparable data is needed. Therefore an important aim of the Action Programme was, to accurately evaluate the effects. On the one hand, the outcomes of as much of the 100 Mobility Consultations as possible were to be analysed quantitatively: Which potentials for traffic relocation and CO<sub>2</sub> reduction do the drafted measures hold? Realistic description after all influences the counseled company’s and municipalities’ willingness to implement the concepts. As the whole Action Programme also Mobility Management is based essentially on communication, coordination and networking between relevant actors, on the other hand it was important to study the quality of the corresponding processes: which steps had been taken to activate multipliers and possible users of Mobility Management and how did it work?

Table 1. Definition of Mobility Management

**Definition Mobility Management**

Mobility Management (MM) is a concept to promote sustainable transport and manage the demand for car use by changing travellers' attitudes and behaviour. At the core of Mobility Management are "soft" measures like information and communication, organising services and coordinating activities of different partners. "Soft" measures most often enhance the effectiveness of "hard" measures within urban transport (e.g., new tram lines, new roads and new bike lanes). Mobility Management measures (in comparison to "hard" measures) do not necessarily require large financial investments and may have a high benefit-cost ratio.

*Source: European Platform on Mobility Management (EPOMM), developed by the EU Project MAX: Successful Travel Awareness Campaigns and Mobility Management Strategies*

A special focus is laid on possible CO<sub>2</sub>-reduction of these measures. It is estimated by analyzing the mobility concepts and data about the staff's mobility behaviour and the current site characteristics and quality of available mobility options.

In detail the programme aims at the following:

- Initialisation and encouragement of conceptual design and implementation in order to support concrete Mobility Management strategies and measures on the municipalities' level as well as on the site level.
- Creation of a nationwide network of stakeholders to concentrate the knowledge and to use it for an area-wide implementation of Mobility Management.
- Anchoring of the subject in politics and the public
- Evaluation of the effects on a structural and organisational level and development of a standardised method and tools to estimate the expected CO<sub>2</sub>-reduction of the programme.

The ISB-Institute for Urban and Transport Planning and the ILS-Research Institutes for Regional and Urban Development are assigned with both the evaluation of processes (mainly ILS) and the estimation of effects (mainly ISB). The evaluation concentrated on all relevant processes in both of the action levels of the program, namely the level of regional initiation, application and coordination of mobility management measures and the level of individual consulted cases. A mix of qualitative and quantitative methods was used for this. Firstly, ongoing project activities could be documented and analysed. Though it was possible to follow developments and to discuss them with all stakeholders in the current process. This offered the possibility to optimize certain parts of the program. Secondly, success and inhibition factors could be derived for the different programme levels.

## **2. General Approach of the Evaluation of the processes**

The main subject of the evaluation which takes place throughout the whole project duration are the processes on the scale of regional coordination and individual consultation. The aim is to analyse and document the according activities in the Action Programme as well as the anchoring on-site. Building on that, success and inhibition factors for a successful implementation, promotion and distribution of Mobility Management have to be derived and clues for the transfer into permanent structures have to be developed. A mix of qualitative and quantitative methods was used for the evaluation of the counseling. On the scale of the 15 regional networks, the effectiveness of the coordination offices for the regional networks in regards to their networking capabilities and the dissemination of the concept of Mobility Management is analysed. On the scale of the 100 consultations an emphasis lies on the analysis of the collaboration between counselors and counseled companies. A survey of all mobility advisors and beneficiaries will generate findings about factors of success in the consultation processes.

On several events for information potential Mobility Management actors could be approached and activated. In total about 2,200 actors could be reached on 80 events during the action period. Particularly city councils, transportation companies and chambers of industry and trade turned out to be important supporters.

As other important subjects for a promotion of internal Mobility Management the companies name their employee's mobility as the most important field of work, followed by business trips. Regarding municipal Mobility Management the priority lies at the intra-administrative anchoring.

## **3. Motivation of companies for taking part in the Action Programme "*effizient mobil*"**

The recipients are asked to provide information about their most important reasons or their motives for an application for „effizient mobil“. The response categories were derived from the previous guided interviews. Additionally further motives could be named in the category „Other“ (see Fig.1).

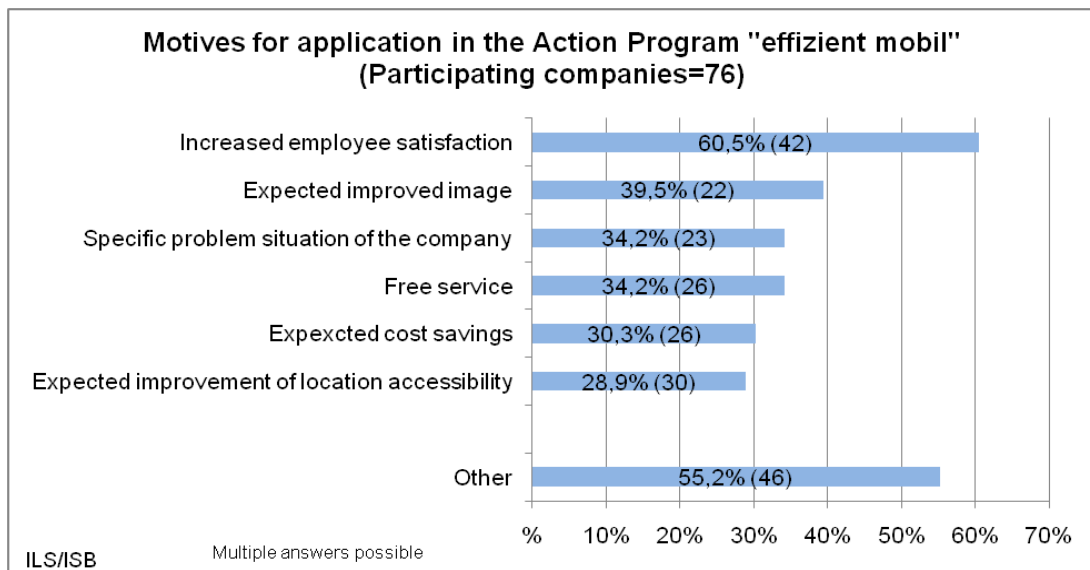


Figure 1. Motives for the application in the Action Programme "effizient mobil"

The most common answer is the increase of employee satisfaction. Of altogether 76 recipients 46 companies or organisations name this motive. This is a result, that can be retrieved from other studies as well (ILS et. al 2007: 11 f.). Second comes the expected improvement of the image. So companies focus on two motives that are not directly in connection to the subject of mobility. Another important role belongs to the specific problem situation of the company and hereby indicates a mobility-related motivation. In more than 55 % of the cases further motives were named in the category „Other“. It turned out that Mobility Management is a contribution to the protection of climate and environment – and with it also CO<sub>2</sub> – are further important aspects. In the municipalities mobility-related motives like specific problem situations and a positive influence on modal split clearly dominate the answers.

### 3.1 Estimation of need for action

Looking at the question how high the need for action regarding Mobility Management in the companies is estimated, it becomes clear that consultants estimate the need for action explicitly higher than the recipients.

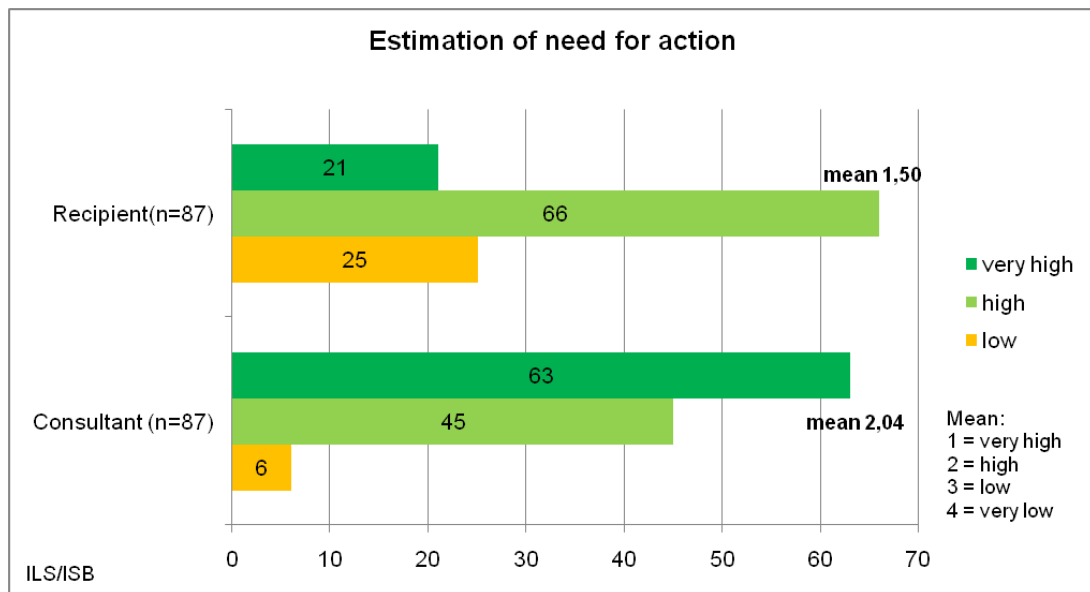


Figure 2. Estimation of need for action

Thereby generally need for action is seen in multiple fields of action. In particular cycling and public transport are named quite often by the consultants as well as the recipients. They consider the introduction of a jobticket as a particularly important task. The consultants consider the subjects parking space, employee traffic and optimising service trips as fields with a high need for action (see Fig. 2).

This different estimation can be also explained by the low or even non existing experience of many companies regarding Mobility Management at the beginning of the Action Programme „*effizient mobil*“. So 29 % of the companies said that they were widely unfamiliar with Mobility Management. In 58 % of the cases at least a basic understanding existed.

A standardised survey addressed the companies as the receivers of initial consultation. 82 % of the addressed evaluated the quality of consultations as very good (1) or good (2). The average result was at 1,97 which meant „good“.

Even though the majority of the recipients – according to their own statement - had already taken single measures before the beginning of “*effizient mobil*”. Mostly named here were measures regarding public transport. Especially jobtickets were widely spread among the companies. But also measures in cycling like building parking areas played an important role.

Asked for the willingness for implementation of the suggested measures, more than 60 % of the answering companies named a very high or a high willingness. In connection to that, 71 % - among them every single municipality – that also during implementing the concept additional consultation is needed.

#### 4. Estimation of the potential of CO<sub>2</sub> reduction

Mobility management is a concept to promote sustainable transport by the use of "soft" measures like information, communication, organisation and coordination, as well as an accompanying marketing. Thereby different fields are distinguished. Mobility management for cities and regions is mainly strategically. At this level measures aim to create the basis for further mobility management measures, linking the policy level with the management level in order to ensure the support of the responsible authorities or management and create new offers like car sharing or new public transport tickets. Mobility centres offer intermodal information about travel options. Mobility management for target groups or locations develops concepts based on the individual demands and conditions of the group or location, e.g. mobility packages for new citizens. Accordingly mobility management in companies focuses mainly on employees. Measures aim at the promotion of environment friendly transport modes such as adjusting the public transport schedules to the working time at companies, establishing job tickets or participate in action programmes such as "Cycling to work"<sup>3</sup>.

Within the framework of the project the development of a method to estimate the CO<sub>2</sub> reduction focuses on mobility management in companies, because most of the mobility management concepts within the programme are made for companies. Due to the strategically focus of mobility management for cities and regions the benefit of these concepts cannot be estimated by the reduction of CO<sub>2</sub>.

The base for the development of a standardized assessment of soft measures and the estimation of CO<sub>2</sub> reduction for these measures is complex. On one hand mobility management combines many different measures, which have different effects and can be combined in different ways in concepts in order to adapt the services to the specific individual needs and demands. On the other hand there are just a few mobility management measures or concepts which have been verified due to their effect on modal shift. Examples for scientific evaluated measures are the Dialogue Marketing Campaigns for New Citizens<sup>4</sup> or the mobility management for companies at Infineon in Dresden<sup>5</sup>.

Mobility management measures have effects on different target fields (see Fig. 3). With the aim to promote the environment friendly transport modes and an efficient use of the existing transport systems mobility management provides an important effect on the environment. By shifting trips from cars to environment friendly transport modes noise exposure, pollutant emission, land consumption and separating effects on people's living space can be reduced. Also health serves as another target field of mobility management. The modal shift from car use to non-motorized transport leads to more exercise and therefore to a better health. By the number of

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<sup>3</sup> ILS, ISB (2000)

<sup>4</sup> ISB (2009)

<sup>5</sup> PGN, BiP (2003)

accidents due to transport modes it is possible to describe the safety of transport. As each mode has a different accident rate modal shift has an impact on safety. In addition mobility management has an influence on costs. If trips are shifted from car to environment friendly transport modes, on the one hand the measures can lead to decrease mobility costs of people. On the other hand companies or authorities need to carry the costs of the measures.

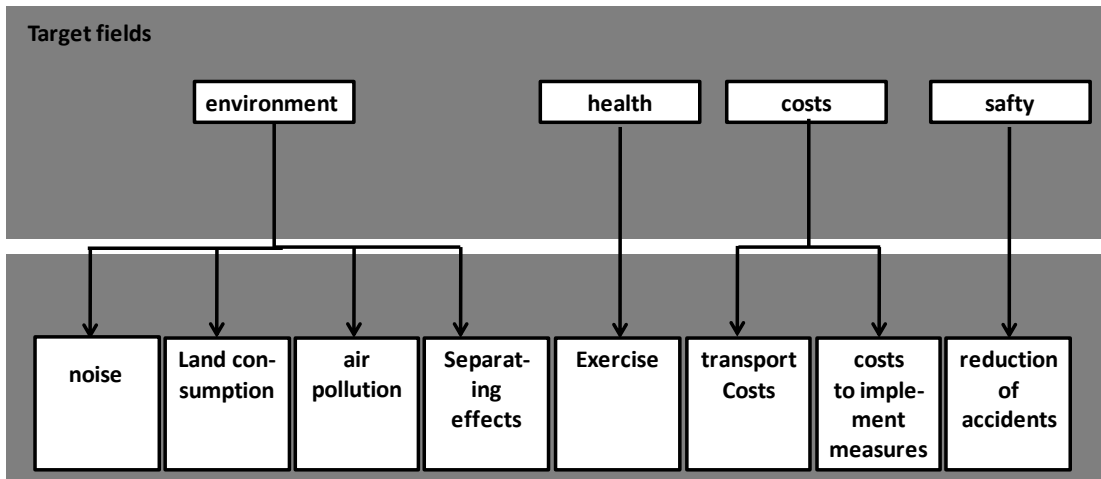


Figure 3. Target fields of Mobility management

In order to point out the positive outcome of mobility management on the climate within the framework of the project the focus is on the estimation of CO<sub>2</sub> reduction.

#### 4.1 Method to estimate the CO<sub>2</sub> reduction of mobility management measures

The estimation of the potential of CO<sub>2</sub> reduction of trips to and from work is based on the reduced distance travelled by motorized private transport. The kilometres of motorized private transport are calculated by today's distance travelled and the estimated distance travelled after the implementation of the measures proposed in the concept. The change in CO<sub>2</sub> emissions by public transport is more difficult to calculate because there is no information about the occupancy rate in public transport in the different regions. Therefore it has been neglected in this method.

Today's distance travelled by motorized private transport is calculated by the distance between residence and workplace of the employees and their use of motorized private transport. The estimation of the distance travelled made by motorized private transport after the implementation of mobility management measures is based on the collected data of conditions of location and surroundings and the travel behaviour and opportunities of the employees. Figure 4 shows an overview of the steps of the estimation. In a first step a theoretical potential is determined. This is defined by the proportion of car-users that could be shifted to different modes of transport, based on their personal conditions. The conditions of

the location determine the level of this potential which can be obtained by the measures proposed in the concept.

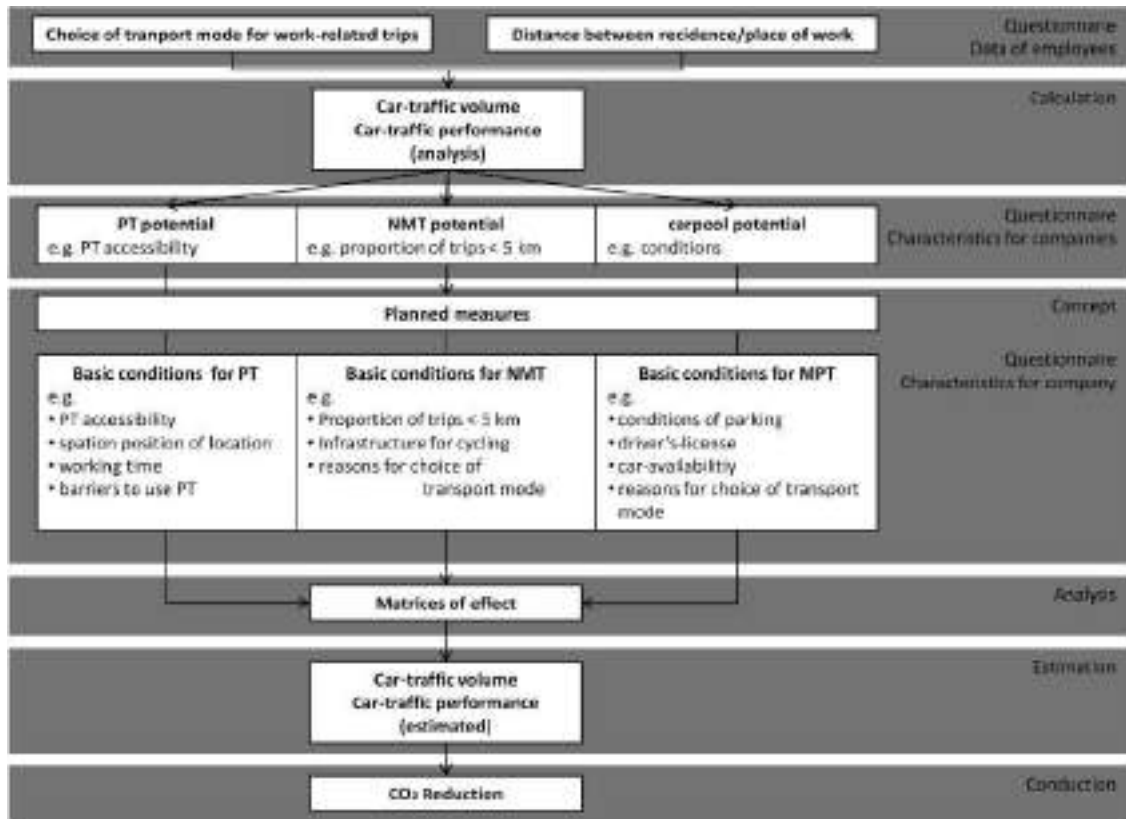


Figure 4. Overview of the estimation

## 5. Results of the theoretical potential

Based on the employee survey about 53,000 people can be identified, who use a car for their trip to and from work each day. About 28% of these people cannot be shifted to either environment friendly transport modes or car pooling due to their individual circumstances. The majority of the remaining car users, 33%, could be shifted to public transport. In addition about 13% could be shifted to public transport if the travel time with public transport could be reduced due to measures improving the public transport supply (additional PT potential). The theoretical potential of non-motorized transport is about 6%, this seems to be relatively low compared to today's car-users (cf. Fig. 5). But it shall be taken into account that the potential of non-motorized transport is based on a distance of max. 5 kilometres between residence and workplace. This distance may be considered to be, manageable by bike especially for those who are used to go by car to and from work each day.

The theoretical potential of those people, who use a car between one and three times a week for their trips to work, is rather similar. But in comparison to the high proportion of daily car users only a small number of people drive to work 1-3 times a week by car, therefore only daily car users are depict in the following analysis.

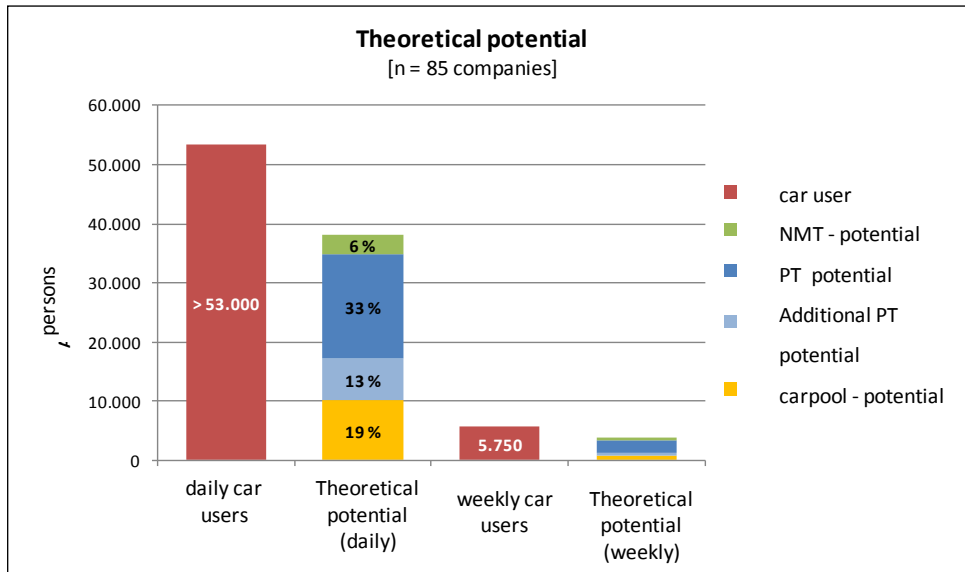


Figure 5. Results of the theoretical potential

Car-drivers who are employed at a company in an urban area or in the periphery could be easier shifted to non-motorized transport than those who are employed in rural areas. Due to the lack of public transport offer, in rural areas only few car-users could be shifted to public transport, however they could be shifted to car pooling (cf. Fig. 6).

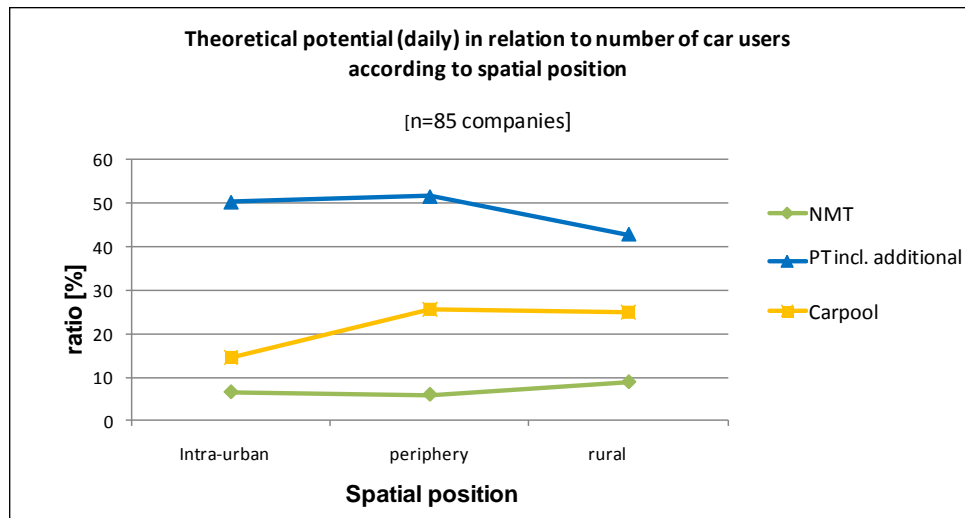


Figure 6. Results of the theoretical potential – acc. to the location

The level of the theoretical potential which can be obtained by the proposed measures depends on the quality of location for each transport mode. The better the public transport quality of a location and the higher the restriction of motorized private transport is, the higher is the proportion of the theoretical potential that can be obtained. The calibration of this method is made on basis of evaluated examples.

Since there are just few examples available which have been evaluated it is necessary that the calibration continues with further empirical data.

The analysis of the 85 concepts shows that on an average 26% of the theoretical potential can be obtained (see Fig.7). Averaged 119 daily and 17 weekly car users of each type of location are shifted.

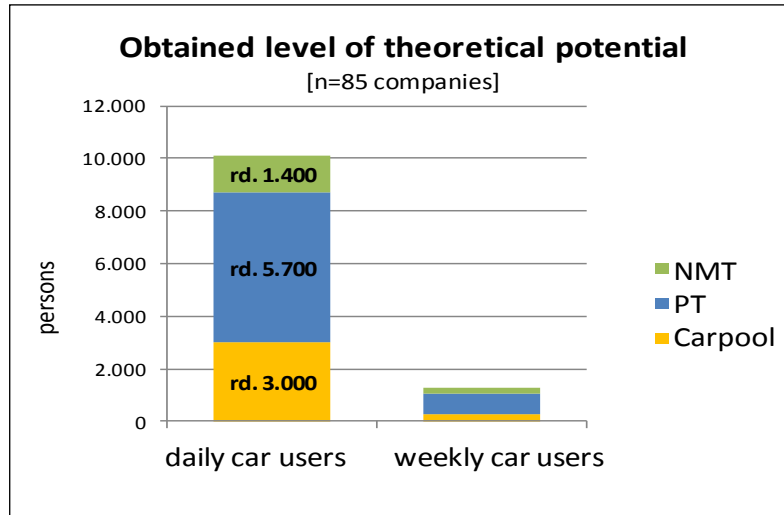


Figure 7. Part of the theoretical potential which can be obtained

To determine the reduction of CO<sub>2</sub> the estimated reduction of car distance travelled is multiplied by an average CO<sub>2</sub> value for cars (177 g/km).

A full implementation of the concepts of these 85 evaluated companies would lead to an average CO<sub>2</sub> reduction of 0.19 t/a for each employee and an average reduction of 248 t/a for each company. The total CO<sub>2</sub> reduction of these 45 companies is about 23.000 t/a (see Fig. 8).

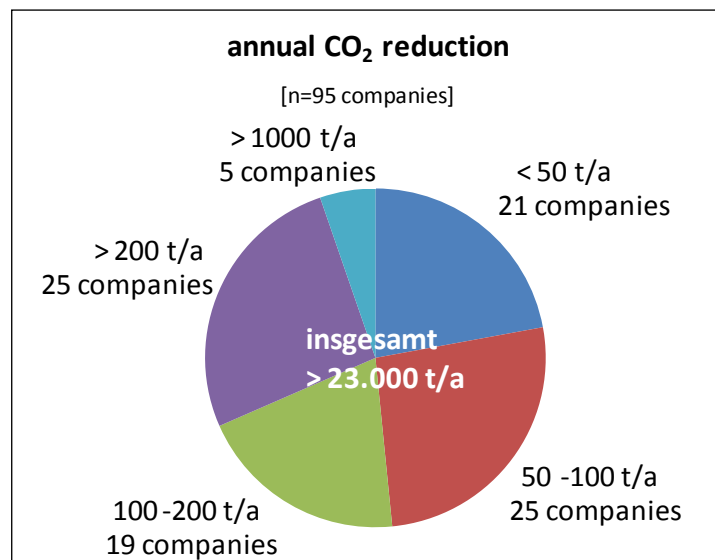


Figure 8. Annual CO<sub>2</sub> reduction

More than half of the recipients declare a high willingness to implement the measures proposed in the concept (see Fig. 9). Because among them are companies with a high potential of cutting down CO<sub>2</sub>, 70 % of the cumulative CO<sub>2</sub>-reduction potential (which means over 16.000 t) could be achieved with a “very high” or “high” possibility according to the recipients’ data. In about 22% of the cases (according to the recipients) the willingness for implementation is “low” to “very low”. In these companies there is a reduction potential of a little less than 3.000 t. Anyway attention should be paid to the fact that almost one quarter of the recipients did not provide any data to this topic.

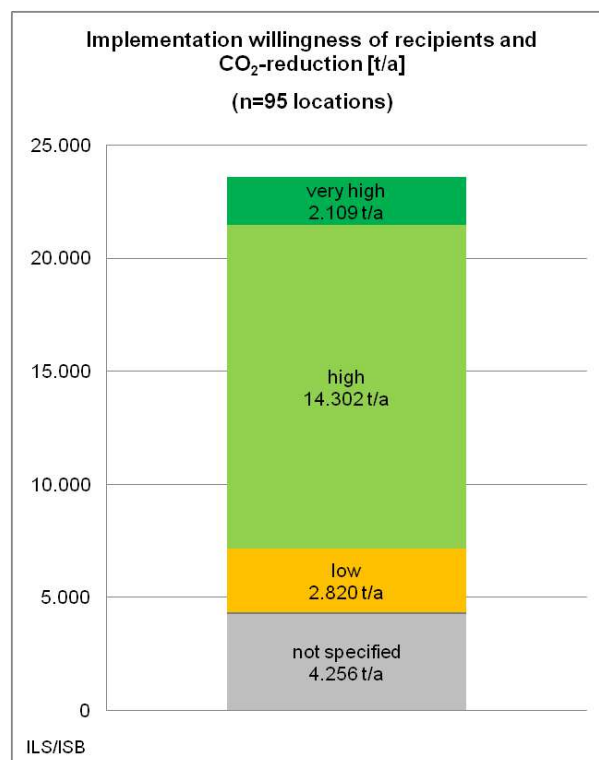


Figure 9. Implementation willingness of recipients and CO<sub>2</sub>-reduction

## 6. Conclusion and Perspective

By extrapolating the data obtained it can be seen that there are, in the companies surveyed, in all some 53.000 people driving to work by car. Some 28 % of these cannot use other forms (public transport / car pools) due to their individual circumstances. However, 72 % could, at least in theory, shift to other means of transport. To what extent this potential is tapped is dependent on the proposed measures and on the locational quality of the alternative means of transport. An analysis of the 85 concepts showed that on average 26 % of the theoretical potential is being tapped.

As mentioned at the beginning it is not possible to calibrate all possible combinations of locations and measures with existing examples, since there is only little

knowledge about the effects of mobility management measures so far. Therefore the different combinations of measures may, with regard to their potential of shift, only be classified roughly. In general it may be said that there is only little empirical data available, so that the presented method needs to be developed with additional data. This data needs to be generated.

As a result it can be stated, that through the Action Programme „effizient mobil“ a number of actors could be activated, regional structures were successfully initiated or rather strengthened and new incentives for Mobility Management in Germany were given. Anyhow at stabilising and implementing support is still needed.

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