

Europäische Mobilitätsmanagement-Konferenz ECOMM 21. - 23. Mai 2003

Die 7. Europäische Mobilitätsmanagement-Konferenz ECOMM vom 21. – 23. Mai 2003 in Karlstad (Schweden) stand im Zeichen einer grossen Vielfalt neuer Angebote und Produkte im Bereich des Mobilitätsmanagements aus ganz Europa. Die Konferenz legte zudem ein Schwergewicht auf die Themen Information, Kommunikation, Organisation und Koordination als wichtigste Instrumente eines erfolgreichen Mobilitätsmanagements.

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A joint paper to: ECOMM conference, May 2003, Karlstad Sweden

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ROAD PRICING AND PARKING RESTRICTIONS - BREAKING THE LINK?

INTRODUCTION

Road pricing has been in place in Oslo since 1989 and was introduced in central London in February 2003. Though the two capitals vary greatly in scale and the scope of possible measures, they share substantially many of the same challenges.

In this paper, produced jointly by Colin Buchanan & Partners, London and Asplan Viak, Oslo, we consider and compare developments over recent years, focussing particularly on road-pricing and parking as means for break the link between economic growth and traffic growth.

Road pricing

Increases in disposable income give travellers have more choice. The cost structure of transport is changing – fuel, tickets, traffic flows and travel times, parking fees etc. – but travellers in European cities generally have more choice between travel modes today that they did 15 years ago.

Much effort is currently being put into understanding and adapting road pricing for use in Europe. The economics are relatively clear. If the charge is set high enough and the price structure is communicated effectively, road pricing will influence individuals' travel choices. At some point, additional costs will outweigh the benefits of car usage for most people. However, as a proportion of car-users find other, cheaper means of transport and leave more space on the roads, this will result in giving road travel a higher value than before. A proportion of motorists will subsequently find that they can travel faster and will be willing to pay the price. The initial effects in traffic reduction can then be expected to be partly outweighed by new additional traffic.

Visibility is important. Use charging with toll booths creates a visible cost for road users providing more of a physical barrier than hidden electronic devices that charge the same. The success of road pricing in influencing travel choice is at the same time dependent on reliable and appropriate information, so that travellers can make decisions about the choice of route and travel mode *before* the start of their journey. As an example, we have suggested developing an information service for cell-phone subscribers, to provide travellers with up-to-date and route-specific information on possible transport delays, which could be accessed prior to departure.

ROAD CHARGING AND PARKING IN THE OSLO REGION – A COMPROMISE WITH LITTLE EFFECT ON TRAFFIC

Introduction

The Oslo Toll Ring was introduced in 1990. The Oslo toll system is similar in principle to road tolls elsewhere, enabling the government and the main road users to share the costs of new infrastructure. In Oslo however the entire city was cordoned with toll booths on all access roads.



The Oslo toll-ring, showing manual toll booths and automatic gates on the E-6 motorway.

Income generated from the Oslo toll ring has been used to fund infrastructure projects, including motorways, tunnels, a light rail extension and bus facilities. In 2000 the charge was increased to raise additional funds for suburban rail investments. The toll booths will, according to the original plan, be removed in 2007.

In view of their success in generating income, together with increasing concern at traffic growth in the city, the transport authorities are now considering a replacement scheme after 2007, both to fund additional infrastructure as well as to regulate traffic in the busiest periods.

Increasing the toll ring charges is however very controversial. Widening the scope of parking restrictions in central and edge-of-centre areas is therefore also seen as necessary to counteract traffic growth. To achieve this however, conflicts of interest need to be resolved between policy makers and the major parking companies.

We will describe and evaluate the present developments in road pricing and parking in the Oslo-region, with a look into the future: what is possible and what is likely to happen.

The Oslo toll-ring

The Oslo toll-ring was introduced as a means of funding investment in an urban highway programme. Regulating traffic was not an objective of the toll ring. The tollbooths were operational in February 1990, at the same time as the new city-centre bypass tunnel was opened (the “Oslo-tunnel”). The charge was NOK 10 (about €2.00 at current prices) for each vehicle heading towards the city centre. Bulk purchase of magnetic-strip subscriptions or punch cards was also possible, enabling automatic passing for regular users.

There was an initial drop in the number of cars and lorries that passed after the toll-ring was introduced. The initial reduction in traffic was however due at least as much to the slump in economic activity in the early 1990's as to the introduction of the toll-ring. Since the first years, the flat charge has kept pace with inflation and road traffic has increased, though less proportionately than employment growth in Oslo.

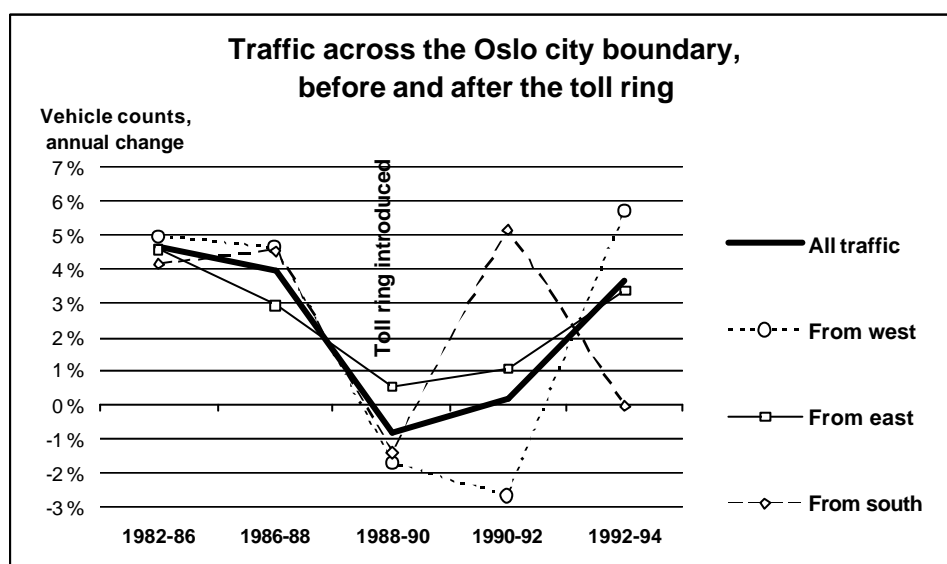


Figure 1
Reductions in traffic
at the time of the
toll ring

Effects on traffic

Following the first two years of the toll-ring, road traffic has increased substantially along all the main suburban highways. Much of this increase in traffic has been stimulated by large-scale road improvements, which have been achieved precisely through the funding mechanism provided by the toll-ring. The present toll-ring cannot be seen as a means to reduce or contain traffic-flows; not only is the charge too low, but the income generated has been invested in more road space, leading to increased traffic.

Political consensus and popularity

The toll ring was introduced in Oslo on the basis of a broad consensus between the main political groupings and between Oslo city, the surrounding county and the national government. As a fund-raising project the scheme has been widely accepted by the general public, following initial

scepticism from road-user organizations. Increased charges by 20% in 2001 were also generally accepted, although attitudes to the scheme have become more negative in most recent years.

To achieve the local political support that was needed, the toll-ring was planned to have a lifespan of 18 years, from 1989 to 2007. We are now however at the stage of defining the next generation of the Oslo toll-ring. There is now tentative political support for extending the toll-ring in principle. We are currently seeking new and less intrusive technology and may be asked to review which areas should be included within the toll-zone.

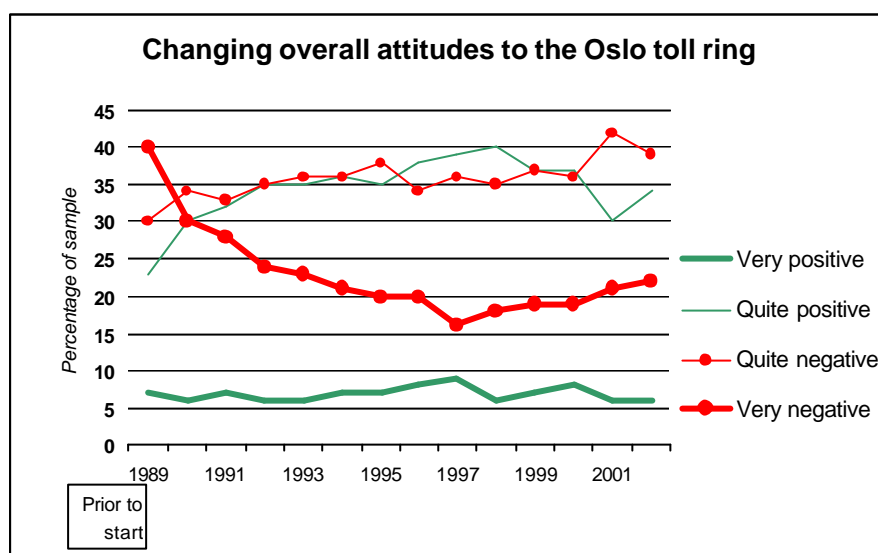


Figure 2 A fine balance between popular support and opposition

A study of peak-hour increases in the toll charge¹

Oslo City Council has examined the possible effects of increasing the charge of road pricing during peak hours, so that car journeys would be more expensive than at present during the rush hour and cheaper or free outside working hours. The Institute of Transport Economics (TØI) has estimated the effects of a range of alternative time-structures for an increase in toll-charges, using a computer-based model for road traffic and public transport.

The TØI study indicates that changes in the detailed time spacing of the higher charge would produce only small changes in the effects on traffic and social benefits. The average toll charge in 1998 was € 1.12 per crossing for inward traffic only. The research proposal has recommends increasing the charge to between €3 and €5 during peak hours, €1.50 during the rest of the day and no charge between 10 pm and 6 am and at weekends.

The overall net social-benefit of rush hour charging is estimated to be around €25 millions. The main measurable benefits would be increased mobility and reduced journey times. Peak hour charging could lead to reductions in travel time averaging 3 ½ minutes, or 14 %, for motorists across the city as a whole. Travel times for journeys that specifically cross the toll ring could be reduced by up to 7 minutes.

¹ Based on work at the Institute of Transport Economics, TØI-note 1155/2000, Odd I Larsen & Tor Normann Hamre)

In addition, cost savings would be made on reduced fuel consumption and reduced staffing at the toll booths. Additional and less measurable benefits would be air quality improvements and traffic safety.

Seen in a wider regional perspective, the expected effects on traffic of peak hour charging would be small. The total traffic in the Oslo-region is currently about 6 billion vehicle-kilometres per year; introducing rush-hour charging with the toll-ring is estimated to reduce the total traffic by only about 3%, traffic inside the toll-ring by 4%, while 7% more passengers than today would be expected to use public transport than with the current toll-charge.

Car parking as an instrument for traffic-planning

The influence of parking on travel-choices

A number of studies have been carried out to examine the links between growth and travel patterns in the Oslo-region. A survey was carried out in 1996, to document the link between travellers' decisions and a range of factors, including work place parking. This study focused on the Oslo-south corridor.

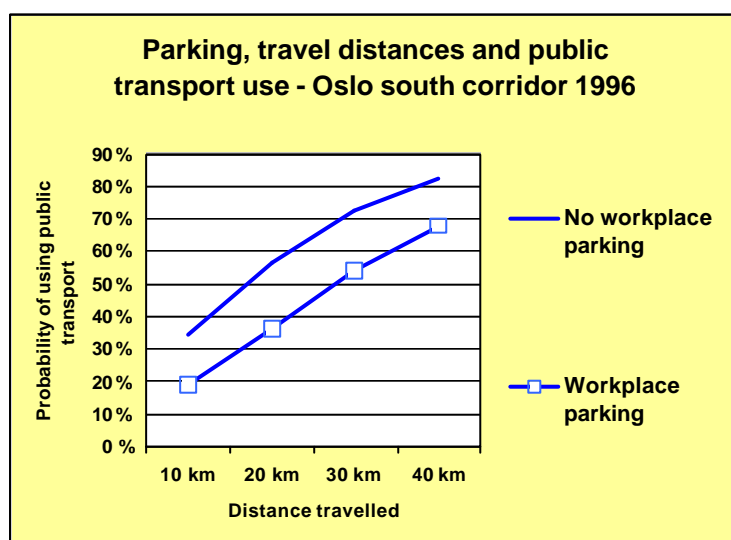


Figure 3 Use of public transport in journeys to work

Calculations based on a study of the Oslo south corridor, TØI 1996

This survey has enabled us to link the total travel time and parking provision, with decisions of how to travel to work (Figure 3). The shortest journeys to work have a low percentage using public transport on average, increasing to more than 50% for longer distances. Access to free parking space at or near the workplace has a strong influence on travel patterns, increasing the proportion that uses public transport by as much as 20 percent, or the equivalent of an adding a further 10 km to the journey!

Local government as a car-park authority

Local authorities can develop and follow up parking policy through the planning legislation. The Planning Law provides for general strategic parking guidelines, as well as site specific legally binding parking requirements.

Parking norms have so far been used to ensure that minimum needs are met by developers and landowners. This has led to extensive parking provision in most towns. Only recently, maximum

threshold parking levels have been introduced in a few town centres, as a means of reducing the total parking space and discouraging car use in the long term.

In addition to planning legislation, the Road Traffic Law provides the means for immediate action. Local authorities can charge fees and decide on the charging regime for publicly owned parking space. The aim of parking legislation has always been to maintain order and mobility in local traffic. In the example shown below, we can see how parking policies have typically prioritised motorized access to town centre traders as well as access for groups with special needs.

Table 1: Goals and means in local government parking

| |
|--|
| Goals |
| <ul style="list-style-type: none"> ✍ Reduction in parking-related accidents ✍ Adequate traffic flow for all road users ✍ Good vehicle-access to towns' functions, especially for handicapped, shopping, local services and traders ✍ Improved local environment for residents and businesses near the roads |
| Mechanisms |
| <ul style="list-style-type: none"> ✍ No-parking zones with clear regulations and signing. Pedestrian areas and road-crossings are given high priority ✍ No-parking in bus-lanes, pedestrian areas, pavements ✍ Effective and short-term parking in town centers, for circulation of customers and increased access. ✍ Parking spaces reserved for disabled people and freight. ✍ Parking schemes in residential areas, for safer and cleaner living spaces. ✍ Signing and information to road users. New technology and payment schemes should be user-friendly and easy to use. Parking advice and service should be easily accessible. |

Source: Stavanger Parking Company's web site

Parking fees also provide a valuable source of income for hard-pressed local government finances. Some authorities have therefore become more involved in private parking companies, leading to some concern over the influence this could have on following up longer term public policy.

The Government's role

Whilst local government is traditionally concerned with developing access to trading and services towns, the government is concerned mostly with parking as a means to regulate traffic and achieve environmental improvements in larger towns. National studies and policy have emphasized these aspects since the 1970's. In its White Paper no 37 (1996-97), the former government encouraged local authorities to develop *comprehensive* parking policies in the towns, while the government's role would be *to improve the legislation, removing unnecessary obstacles to an effective use of parking policy as a local tool to achieve environmental goals*. These signals are even clearer in subsequent green papers and transport plans, though more radical proposals for using parking-policy to achieve environmental goals have usually been watered down in their passage through parliament.

The government's role has, in practice, been limited to a purely legislative one, producing government advice notes relating to the planning and highways legislation. The principle of delegating responsibility to locally elected members is important and there are many conflicting goals between governing bodies. The large number of privately owned parking facilities complicates the picture still further. Any effective parking policy must be feasible for the companies involved, who fall outside the current public sector legislation.

Private parking

As a response to increasing traffic and demand for parking, we have seen a significant growth in the private parking sector over the last 30 years. Most of the private parking is managed by a small number of companies, including some multinationals. These companies all operate under legislation for private businesses.

Most Norwegian towns have more private parking than public car parks. The companies offer their services to both private and public landowners and clients. Private car parks are typically located at or near transport-termini, major institutions, shopping centers and vacant land in town centers. Parking fees are set according to market-assessments. A public sector clients' policy can be an important factor in the local market for car parks and will in practice often have a strong influence on the fees charged in public car parks that are privately operated.

New legislation?

Looking ahead, a possible new range of parking schemes was suggested in the recently published background paper "*Strategic analysis for counties and urban areas*", which is currently under consideration for the national transport plan review (2006-2015). Here is emphasized. The report emphasizes the need for a coordinated view on public and private parking and recommends changing the law to enable the regulation of privately owned parks. It also argues for changes in tax regulations relating to work-place parking (currently a tax-free benefit) and employer-subsidies for public transport (currently a taxable income) and that we generally improve our understanding of parking as a key instrument in transport planning.

A new politics for transport in key regional developments

Gardermoen - Oslo's new airport

Gardermoen is the new national airport, opened in 1998. The airport is 45 km from Oslo centre. There was a clear objective set at an early stage in the planning, that 50% of air-passengers should use public transport. A new high-speed shuttle train was completed at the same time to serve the airport and a comprehensive bus-service was established. To achieve the 50% objective it was calculated that parking provision should be kept to a low level – about 2,000 lots. Parking is however an important source of income for the airport, so that the parking provision ended up being about twice the recommended capacity and has since been enlarged further.

Fornebu - redevelopment of Oslo's former airport site

The former national airport at Fornebu is a key site for redevelopment, 10 km from the centre of Oslo. The site is located in Bærum, Oslo's largest neighbouring local authority. When the airport was closed down, an area covering about 3 km² was released, which the council hoped could be developed to meet the increasing local housing demands. The sites owners, the government and Oslo City Council, hoped to maximise their gains from the sale of land. A heated debate ran for over 5 years between Bærum on the one side and Oslo city together with the government on the other, over the number of houses that could be developed the Fornebu site.

One of the criteria for high density build in Fornebu was that the area would be served by public transport, with a higher proportion of using rail or bus than in other areas with a comparable location.

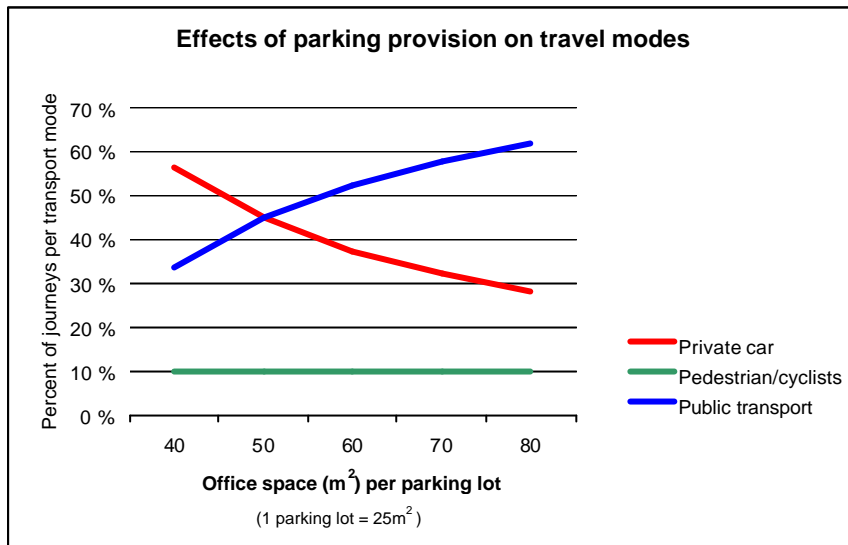


Figure 4 Work-place parking restrictions influence travel modes.

Planning studies recommended a light rail rather than buses to serve the new redevelopment area, as the main access road will have little free capacity. The studies concluded in addition that the traffic development should be constrained by parking requirements that were more restrictive than elsewhere in Bærum. Calculations of the effects of alternative parking requirements were presented as part of the plan (see figure 4).

The planning committee agreed to a plan based on a more moderate reduction in parking than that which was proposed. The site has yet to be fully developed but we anticipate that the level of parking provision will lead to congestion problems and insufficient demand for the public transport service to run economically.

Bjørvika - planned redevelopment in Oslo's harbour

Bjørvika is part of a former industrial and port facility in central Oslo, near the main railway station and public transport interchange. Norway's major traffic routes currently dominate the site. The site will be redeveloped to provide new space for city functions, including employment, housing and culture, including a new national opera house. A precondition for redevelopment in the harbour area is that the present through-traffic will be removed, with the help of a new relief-road.

The new development (estimated 500.000 – 700.000 m² floorspace) will, however itself generate new traffic. Applying the current parking requirements in Oslo central areas, Bjørvika will soon fill up with cars, creating similar congestion-problems and poor environment as in neighbouring side streets.

CONGESTION CHARGING IN CENTRAL LONDON AND WHERE NEXT?

Malcolm Buchanan, Managing Director, Colin Buchanan and Partners.

A long gestation

1. The economic theory underlying road user charging was first proposed by a Frenchman, Dupuit in 1844. The concept was that the users of a transport system (in Dupuit's case canals) should be charged a marginal cost as and when they used it and that the revenues should be invested in improving the system up to the point at which the marginal benefits of so doing equalled the marginal costs incurred.

2. In the UK the idea that road tax revenues should be invested in improving the road system endured about fifteen years after the arrival of the car until the Road Fund grew so large and tempting that it was "raided" by the chancellor of the exchequer, one Winston Churchill, in the 1920's. Since then, and unlike some other European countries, it has been normal practice for UK governments to use road related taxes as general revenue and to re-invest only a small part of them in better roads. Small wonder then that the UK has the highest number of vehicles per km of motorway in Europe (8040 cf 3170 in Sweden).

3. Although, indeed because successive UK governments thus completely failed to establish any relationship between what vehicle users were prepared to spend on driving and what was invested in roads, the economists such as Vickrey and Roth who, after the war, began to apply Dupuit's theories to "Paying for Roads" (see Gabriel Roth's book of that title) usually took it for granted that road pricing revenues should be invested in improved roads. But in the mid-sixties the Smeed Report on Road User Charging saw pricing primarily as a means of controlling traffic in busy areas at busy times of day/week. The use of the revenues was regarded as a separate issue.

4. Over the last forty years since the Smeed Report, there have been many studies of road pricing in London and a good few in other cities. In London the studies were almost unanimous in their successive conclusions that a charge to enter Central London would prove to be a good and highly cost-effective policy. The conclusions written in 1988 by my own company's chief economist, Kingsley Lewis, at the end of a joint study with MVA, provide a good example of the sort of prediction made:

"Charging (£5) for entry to Central London, on its own, produces a net social benefit of between £345m pa and £433m pa, and a financial gain of £295m pa. The extension of charging to Inner London is less efficient; net benefits are reduced, but revenue is increased. Both options are progressive in their effects and produce substantial environmental and safety benefits. "

5. This particular prediction was made using the London Area Model (LAM) developed from the GLTS data and describing Greater London as comprising about sixteen zones, with the networks between and within them being represented by simple speed /flow curves - a refreshingly simple model able to produce a forecast which has proved remarkably accurate.

The need for clear objectives

6. The discussion of road user charging has already highlighted the need for clear objectives. The discussion of Oslo by Asplan emphasises this. Is road pricing aimed at reducing congestion or raising revenues? Or both? And if it is about raising revenues, does it matter what these are spent on?

7. The conventional wisdom in London on this matter seems to be that the revenues should be invested in better public transport alternatives to the car. But if road pricing really reduces congestion, won't the buses go that much faster and produce better public transport without the need for the two hundred extra buses deployed in Central London at the introduction of Congestion Charging?

8. We, in the UK, have always understood the conventional wisdom in Oslo to have been that the revenues should be divided between improving roads (something which Asplan argue cancels out the benefit of congestion charging), better public transport and environmental improvements. Clearly there is scope for confusion on such matters with the potential to dilute the benefits of the scheme as a whole.

9. The answer to the question of what objectives should be is that they should simply reflect as far as possible the general objectives of transport policy. Road user charging and congestion charging should be judged not according to whether they raise revenues but according to whether they contribute significantly to the general objectives of transport policy. In the UK this is somewhat hard to assess because, since the 1998 White Paper, the stated objectives have overlapped and been muddled and the attempts, in advice notes, to get a clear and unambiguous evaluation procedure have not really produced one.

10. However, if we go back to basics and list the objectives of transport policy as being:

- To increase accessibility in terms of reducing journey times and costs
- To reduce accidents
- To improve the environment
- To conserve scarce resource
- To achieve the equivalent for freight
- To be progressive
- To contribute to planning objectives
- To achieve all this at a minimum cost to the public purse

then the evaluation of road user charging becomes much clearer.

11. To start with the issue of what the revenues are spent on becomes irrelevant or at least peripheral. If it is an objective of transport policy to achieve its other objectives at a minimum cost to the public purse, then a policy which raises net revenues is a good one, provided it does not achieve this at the cost of greater disbenefits elsewhere in transport. Raising revenues by increasing fares, for example, is generally a poor policy, because though it raises revenue it usually does so at a greater cost in terms of reduced accessibility, something usually reflected in fewer passengers. A strength of road user charging is that it can raise revenues AND increase accessibility by reducing congestion. Moreover it is generally progressive (since the poorer people are on the buses) and the reduction in traffic will tend to reduce accidents (subject to any increase caused in the use of mopeds and motorcycles) and improve the environment. There is therefore a prima facie expectation that road user charging will be a good and effective policy.

12. A complication on this matter in the UK is that the long hard battles over the "ring-fencing" of road user charging revenues for transport expenditures, though worthily intentioned, carry the qualification that if there were no cost effective policies on which to spend the road user charging revenues, then road user charging itself could be made a poor policy. If the revenues had to be spent on wasteful schemes, then road user charging itself would be made a wasteful policy. In this sense therefore "ring-fencing" is a doubtful policy.

13. Apart from this concern, the only likely question marks over the success of road user charging in Central London are its effect on shopping and business and any increased accidents attributable to more use of mopeds and motorcycles. Regarding the first, although the charge will increase accessibility overall, particularly for those on buses, it increases the price of driving into Central London and could therefore cause people to shop or do business elsewhere. It could therefore conflict with important planning aims such as maintaining a vigorous and vital city centre. There is as yet no evidence regarding the second concern.

The Central London Congestion Charging (CLCC) scheme

14. CLCC was introduced after lengthy studies and consultations, and despite last minute legal challenges and hostile press coverage, on 17 February 2003. The scheme covers the area within the Inner Ring Road or roughly the area within the 12 main rail termini. The area is about 6km East/West and about 4km North/South. It has a resident population of about 250,000? but a supplementary daytime working population of about 1.1 million. The whole area was already subject to tough and expensive parking controls.

15. Those who enter Central London in the morning peak period do so overwhelmingly by public transport. In 1999 the observed mode shares were:

- Rail 78%
- Bus 8%
- Car 12%
- Other 2%

16. It follows from these figures that if CLCC reduced the number of cars entering Central London by 20% and if all these were to transfer to public transport, the increase in the use of public transport would amount to only about 3% In other words despite the widespread fears of the public transport system being unable to cope, the effects of CLCC would barely be noticeable. It was a recognition of this that prompted TfL to proceed with CLCC on 17 February, even though the Central Line, the main East/West underground line running through the charged area was closed on 15 February, following a mechanical failure and remained closed for the first four weeks of CLCC.

17. The CLCC is in operation from 0700-1830 daily from Monday to Friday. The cost of entering the charged area is £5, which may be paid either in advance or up until 10pm on the day. Payment may be made by cash or credit card at on-street outlets, by phone, internet or as a text message. Late payments rise to £10 by midnight and a penalty of £80 is incurred thereafter. This is reduced to £40 if paid within two weeks, but increased to £120 if not paid in four.

18. Exemptions or major discounts are available to:

- residents of the charged zone
- the disabled
- the drivers of cars using alternative energy sources

- powered two-wheelers
- recovery and breakdown vehicles
- vehicles with more than 9 seats.

19. The means of enforcement is by numberplate reading and recording. Numberplates are compared with the list of those who have paid that day, and the owners of defaulting vehicles are then traced via the Vehicle Licensing Office in Cardiff. All numberplates of non-defaulting vehicles are deleted from the records.

20. Despite the relatively small percentages of cars entering the CLCC area, the numbers before CLCC were claimed by TfL to be the equivalent of about 25 lanes of motorway. Within Central London this traffic was formerly estimated to spend 50% of its time in queues, with the cost of this congestion being estimated at £4-6M per week. In readiness for the anticipated problems on the boundaries of the CLCC, about £100 m was invested in traffic management schemes. The revenue raised from the CLCC is to be added to the expenditure programmes of TfL.

Early results of the CLCC

21. At the time of writing the CLCC has been in operation only 3 weeks. It is therefore too early to form a full assessment of its effects and the following paragraphs will be updated at the conference in May. It is however clear, that unlike most traffic management schemes, the effect of CLCC in deterring traffic from entering Central London can be expected to decline rather than increase. Introduction of the scheme was accompanied not only by some confusion as to how payments could be made but also by warnings from TfL that the introduction would be traumatic and things would take six months to settle down. Taking account of the additional complication that the scheme was introduced during the school half-term, it is hardly surprising that its initial effect was a dramatic reduction in traffic entering the charged area and no significant problems at the boundary.

22. The actual statistics for the first three weeks may be summarised as:

| Week | 1 | 2 | 3 |
|--------------------------------------|--------|-----|-----|
| Reduction in traffic in charged area | 20-25% | 20% | 17% |
| Entry payments/day | 93k | 97k | 98k |
| Penalties issued | 34k | 30k | 25k |

23. These suggest a pattern of increasing payments and compliance with a slow erosion of the amount of traffic deterred from driving to Central London. However within the charged area there have so far been no instances of serious congestion - a major achievement.

Where next for road user charging?

24. With road user charging having apparently painlessly and comfortably achieved the effects predicted over 40 years ago, attention is already turning to which towns will be next to try it or whether perhaps a nation-wide system will be introduced. In a country which boasts traffic problems almost everywhere, it is not surprising that speculation is rife.

25. However, the enthusiasm to try road user charging elsewhere is soon likely to be tempered by the recognition that Central London is unique in its public transport accessibility - no other city having a public transport system giving such excellent access from every direction and all distances, and no other city centre having such a large proportion of its workforce (86%) arriving by public transport. On the other hand it is at least possible to serve city centres and other major trip attractors,

such as airports, by public transport and road user charging could provide the funds to do so much better than today. More city centre schemes and equivalent schemes at other major trip attractors, which can be served well by public transport, are therefore likely.

26. In the suburban and extra-urban travel markets, where the car dominates and public transport is no match for it, it seems likely to require a new form of public transport, capable of providing a good alternative to the car to make road user charging acceptable. Though this may seem a vain hope, it is unlikely to remain one for long as the second industrial revolution increasingly infiltrates public transport in the crude and essentially nineteenth century forms we currently know it.

COMPARISONS AND CONCLUSIONS

1. Our joint experience proves that calculations and models of transport costs and travel patterns are more or less correct – road pricing and parking restrictions do detract road users. People do adapt their travelling patterns to new situations in predictable ways. We await the longer term effects of the CLCC with much interest.
2. There is much controversy over the introduction of restrictions over road users, even in city-centre areas. The introduction of road pricing in cities is still perceived as charging more for something which was previously free – or already paid for through road taxes, fuel taxes etc. Starting a road pricing scheme requires clarity and resolve in agreeing the objectives and reaching decisions.
3. The benefits of congestion relief are tangible - both as a result of less traffic and improved infrastructure. Alternative forms of access to vital and dynamic city-centres need to be provided, to offset any possible loss of customers and spreading of activities.
4. City size appears to be an important factor. In large cities such as London, the effects of congestion relief are highly significant, at the same time as the public transport service has a large carrying capacity and already carries by far the largest number of passengers. In many smaller cities, such as Oslo the public transport service into the centre may often be good, yet there is little support for increasing the road charges enough to reduce the numbers of cars.
5. Road charging has to be seen in the context of other transport policies and strategies. Restrictive parking provision at centrally located workplaces would have a major effect, though this can be more difficult to enforce and is often equally unpopular. More importantly, improvements in public transport should go hand in hand with efforts to deter cars, so that there is both a push and a pull influencing peoples' choices.
6. Together with Rome, London and Oslo make up the small group of European capitals which to date have set up schemes for charging road users who drive into the centre. Much will depend on the success these schemes are seen to have. There is a chance that this experience marks the beginning of a range of new perspectives towards urban transport. Not only can public transport benefit from additional funds for modernisation, but the real social costs of road traffic in cities are becoming more widely understood.

The socio-economic effects of the metro line “U3” in Vienna (Austria) evaluated under the European research project *TranSEcon* (www.transecon.org)

This paper is addressed to workshop “1a- Traffic, environment and growth”.

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Introduction

Decisions for urban infrastructure investments are mainly linked to the criteria of transport efficiency. However, such investments have wider socio-economic effects within the area, such as employment effects, urban re-generation effects and economic development effects. The research project *TranSEcon* (Urban Transport and Local Socio-Economic Development) established a common evaluation procedure considering all these so called socio-economic effects. The methodology is driven from a multi-disciplinary perspective requiring expertise in related fields. The main expected outcome of the research work is to provide tested indicators describing social and economic effects of urban transport infrastructure investments by carrying out an ex post cross-site evaluation throughout 13 European cities, one of them being Vienna (Austria) and its metro line U3.

Objectives of the Project *TranSEcon*

The *TranSEcon* research project aims to provide a qualitative and quantitative evidence regarding the existence of the direct and indirect effects and impacts of transport infrastructure investments. Long term effects of implemented large scale infrastructure investments are analysed using existing data-bases together with stakeholder interviews in 13 European case study cities. The selected case studies cover a wide range of city and intervention types (in terms of geographical distribution, city size, transport policies and investments). The research partnership involves 16 organisations (6 universities, 2 research centres, 7 consultancies) in 9 EU member states, 1 EEA country (Switzerland) and 1 accession country (Slovakia).

Socio-economic effects of urban transport investments

Socio-economic effects are a type of indirect effects or third party effects. Economic effects can be:

- ? broadening the access of employers to a pool of qualified labour,
- ? the extension of market areas for goods and services,
- ? the attraction of foot-loose inward investment,
- ? bolstering the image of an area,
- ? unlocking suitable development sites and
- ? spending or employment effects.

Meanwhile social effects can be:

- ? improved access to mobility for disadvantaged people,
- ? better accessibility of basic services,
- ? achievements in terms of safety in traffic and security in public space, but also
- ? reducing the burden of nuisances in urban or suburban areas and thus improving health conditions.

The term “socio-economic effects” refer to a conglomerate of such economic and social effects. In addition it includes environmental impacts. Beside the transport policy measure itself three other system elements have to be considered if measuring these socio-economic effects and impacts of transport policy measures (Figure 1):

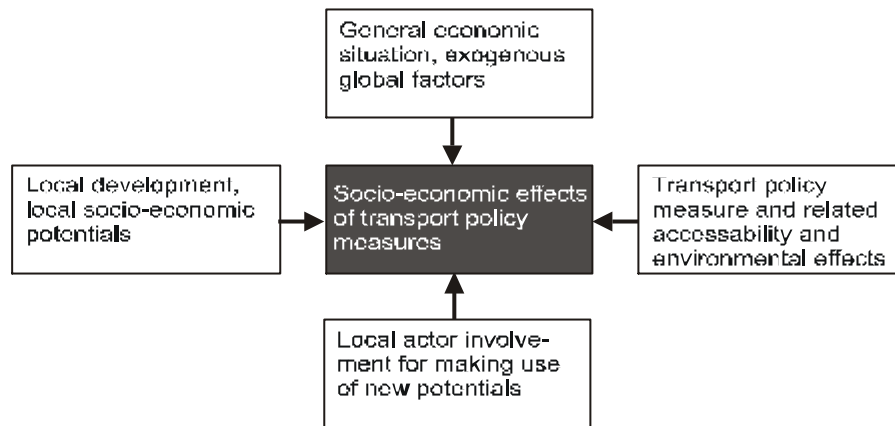


Figure 1: System analysis of relevance of transport policy measure for socio-economic development

Life-cycle of a transport infrastructure

The interaction of the decision makers of the different levels of the socio-economic system like firms, households, politicians, etc. are highly interwoven and non-linear. On the level of a single decision maker (micro-level) a complex mixture of fluctuating rational considerations, professional activities and emotional preferences and motivations finally merge into one of relatively few well demarcated resultant attitudes as reaction of a planned or realised infrastructure investment. On the other hand, all infrastructure investments are also the outcome of a sequence of decisions of different decision makers in a complex interplay of rational and emotional, conscious and subconscious and environmental influences. The obviously non-linear structure of the interaction between individuals implies that there exists a cyclic coupling between causes and effects in society. Learning processes of individuals and organisations as well as speculations may lead to retarded or even anticipated effects on the micro-level (level of individuals) as result of a planned infrastructure investment (macro-level).

Decisions for private investments can occur long before a political decision is taken on the infrastructure investment, during construction or after start of operation (see Figure 2). Compared with the phase the infrastructure is ready for operation, the socio-economic impacts could occur earlier and/or later. By probably excluding some important impacts, this time shifts can have a great influence on the result of the evaluation. The reasons for such anticipating, stepwise or retarded private reaction on infrastructure investment may be that not all real estate developers assess investment risks in the same way, and that local or general economic contexts of private investment show certain cycles as well. It is common knowledge that infrastructure investment cycles and private investment cycles often do not have the same rhythm. Monitoring of socio-economic effects of transport infrastructure and policy measurers must take account of such interference

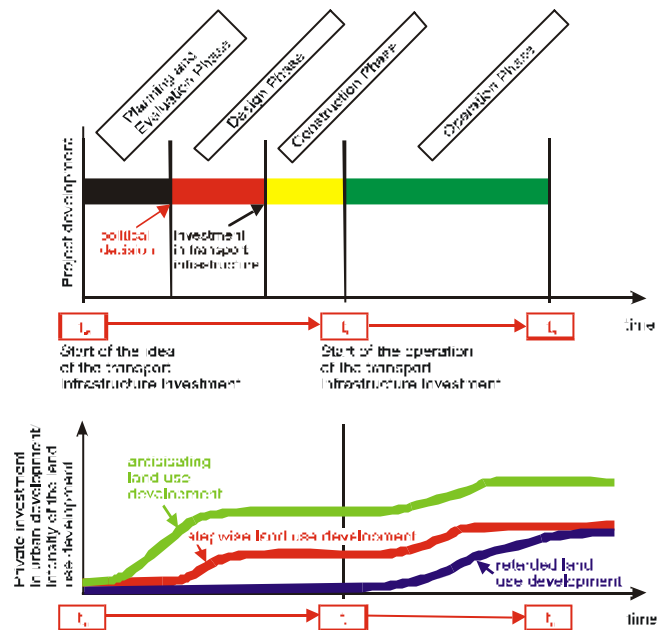


Figure 2: Infrastructure investment development and land use development

The Case study Vienna

Vienna has a population of 1.6 million inhabitants with a car ownership rate of 395 cars per 1000 inhabitants in the year 2000. In 1966 the local government of Vienna agreed to establish the metro network for the City of Vienna, based on an old railway system which was constructed at the beginning of the last century. Currently the metro network consists of 5 lines with about 65 km.

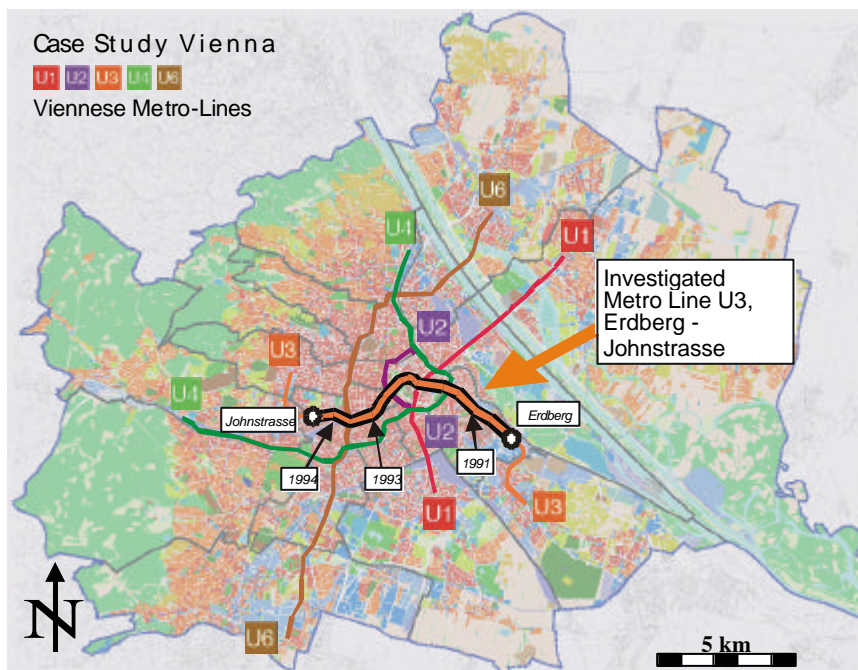


Figure 3: Case study map of Vienna: Metro line U3

The case study selected for *TranSEcon* is the centre part of the metro line U3 (see Figure 3) which connects the 3rd district in the south-east of the city with the western part of the city, passing through the city centre. This new line with 14 stations has a

length of 8.2 km, and was opened step by step between 1991 and 1994. The travel time is about 17 minutes connecting 5 Viennese districts in total.

As the U3 is a diametrical line it crosses several different areas of urban characteristics. The eastern and western parts of the line are areas of middle to low land price. The middle section crosses the inner city high land price area. Due to the construction of the metro several tramlines were closed on the route of the metro. This gave the opportunity to reconstruct the surface in many parts along the line in a pedestrian friendly way.

Effects on accessibility

The evaluation of the transport related socio-economic effects of the Viennese metro line U3 is based on a transport model considering two scenarios, the “scenario with metro” and the “scenario without metro” assuming that the tram lines, which were closed permanently due to the metro, are still in operation. The approach is to calculate the comparison between these two scenarios based on the transport network of the year 2001.

The construction of the metro line U3 represents an important increase in public transport supply. The reorganisation of the network due to this investment was more important in zones directly affected by the metro than in others with an increase of about 19 % of the capacity. This is leading to an increase of 2 % in passenger - mileage in the whole city.

As the metro was constructed to replace several tram lines it permits a strong overall increase of the public transport speed based on the average travel time of passengers in the vehicle per day, weighted with the number of trips. The effect of accessibility in the city of Vienna is significant (Figure 5).

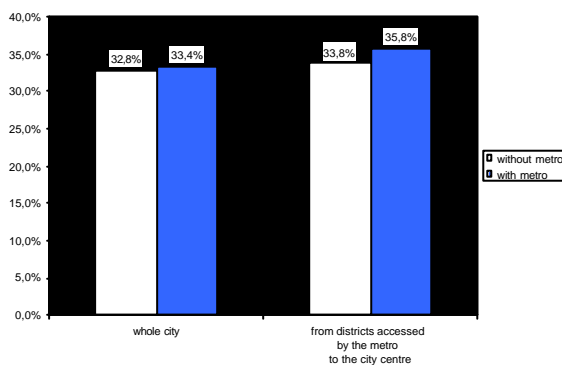


Figure 4: Share of public transport trips

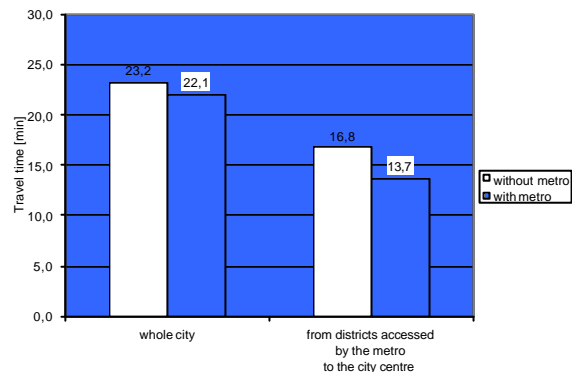


Figure 5: Average travel time per public transport trip

The increase of the share of public transport trips (Figure 4) causes a reduction of car - mileage as well as congestion within the city leading to a reduction of emissions of harmful chemical in the city of Vienna. This leads to a reduction of illness for inhabitants of the city (e.g. cancer, lung diseases), less damage on buildings and vegetation. Therefore the quality of life in the city is increasing, external costs of transport are reduced and are relieving the budget of the public sector. The reduction of CO₂-emissions is a contribution for global targets as well. Additionally, it can be assumed that the reduction of the car - mileage have an influence on the average accidents per year.

Economic development effects

Since the beginning of the infrastructure project in 1966 (evaluation phase until 1980) 1,936 M€ have been invested in Vienna's metro line U3 (section Erdberg – Johnstrasse) until 1995. With the help of the regional econometric model for Austria the employment effect and the additional GDP was modelled. To be able to model these effects, the investment was split into different sectors.

The dynamic results are calculated using the scenario technique. Scenario 1 assumes that no traffic infrastructure investment is undertaken and scenario 2 assumes that the infrastructure investment is undertaken. From the different development of these two scenarios, the additional value added effects can be calculated, which are demonstrated in additional regional GNP, employment and regional income.

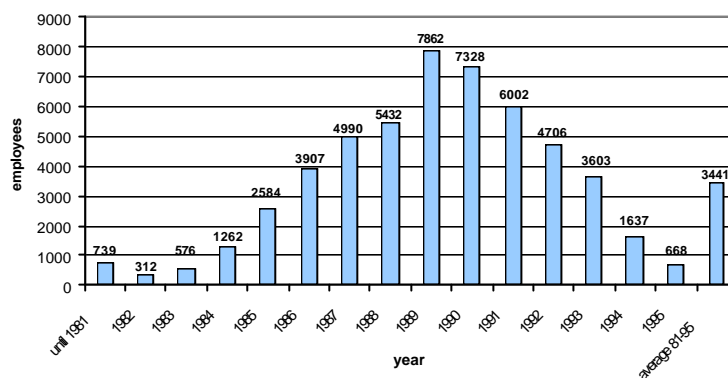


Figure 6: Employment effect of Metro line U3

The dynamic simulations contain all induced multiplier effects, caused by the infrastructure investments, i.e. all indirect effects are captured and the additional value added is quite often sizeable as the following results demonstrate. In carrying out the dynamic simulation with the help of the regional model the result for the employment effect is shown in Figure 6. The additional regional income is considerable too. On average the additional regional income over the period 1981-1995 is 175 M€. On average the additional regional GNP over the period 1981-1995 is 275 M€.

Urban re-generation effects

Investigating the urban re-generation effects two areas in Vienna are analysed:

- ? sample area with access points to the metro line U3
- ? reference area without any metro access, but similar in its size, land-use pattern, housing structure, inhabitants structure as well as distance to the city centre

In terms of the constructive condition of houses the difference between the sample and the reference area is rather small due to a well developed subvention system for renovations or improvements of buildings. The main difference is the higher number of totally new constructed buildings in the sample area (Figure 7).

Comparing the development of commerce and retail of both areas the difference is significant. The new metro access stimulates the commercial activities in the sample area. The range of sectors concerned are covering new supermarkets, restaurants, ware-houses and a shopping mall as well. In the reference area the situation is something between stable and slightly decreasing.

The difference in the development, design and condition of street furniture including public areas like parks or play grounds is significant as well. The situation in the reference area is stable, the area is well developed. But in the sample area most of the streets were redesigned, trees were planted, the parking areas, play grounds and parks were renovated after the metro construction work was finished. This concerns especially this street, where the metro was constructed, but as well those two streets, where the parallel tram line was closed down due to the new metro line.

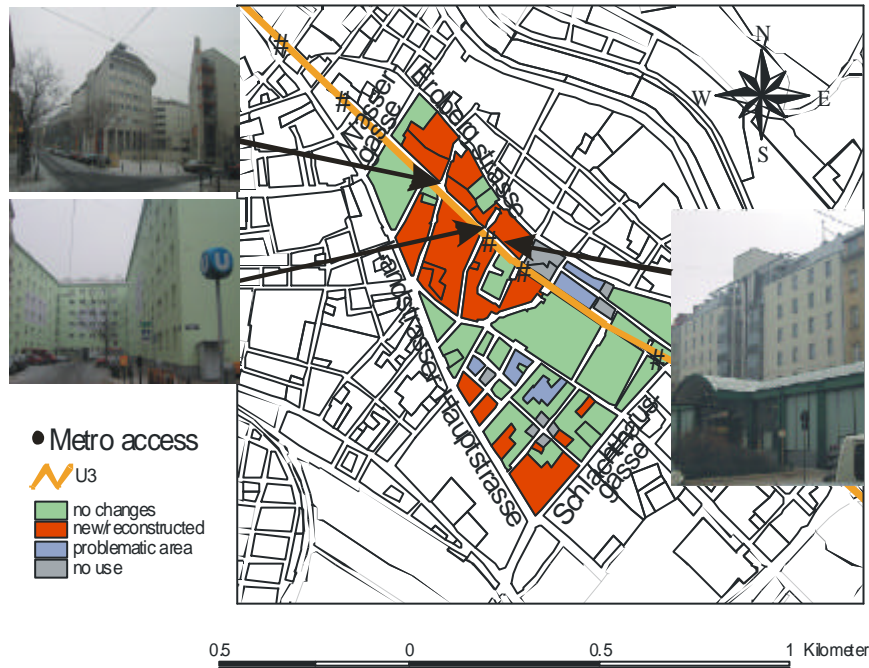


Figure 7: Constructive condition of houses in the sample area

Economic Development Effects

Spatial redistribution processes are the result of an interlinked process of spatial interactions where different agents (households, accommodation agencies, employees, firms, ...) with different, partly inconsistent interests, are involved. The multiple decisions of the different agents result in migration flows of households (people), changes in commuter flows and in a redistribution of workplaces, due to firms decisions to search for an optimal location. As a consequence each investment into the transport system leads to changes in accessibility measures of the different areas. However, changes in the transport infrastructure in a specific area can have a positive or negative impact in other parts of an urban region. In addition transport infrastructure may have a positive or negative impact on the city region as whole. For the identification of economic development effects a statistical analysis framework based on an improved shift-share analysis is applied fulfilling the following conditions:

- ? stable estimation algorithm (for different time series and zoning)
- ? data base (stock data for different time steps, not necessarily equal time steps)
- ? introduction of as little model parameters as possible
- ? separation of “spatial” effects and “growth” effects in a specific zone
- ? estimation and separation of the “natural” growth effect

The shift share analysis in Vienna is performed for the eleven variables (population, workplaces, employed persons registered at the place of work and home, income per

capita, gross wage payment, purchase prices of used flats, land prices, rents of housing, offices and shops).

The population of the city centre received a significant growth impulse, when the metro line accessed this area in 1991, before and after this period the population development was below the average. The number of workplaces within the project corridor stayed stable, whereas the other areas are confronted with a negative development. The number of employees registered at the place of home is correlating with the population. That means, the employment rate is stable over the period observed and the same effects like the development of the population can be observed. The growth rate of income per capita and the gross wage payment in the city centre is clear above average. Well developed infrastructure like the access of a metro is a precondition of such prosperous developments in this area. Best correlation between the project corridor and the construction of the metro can be observed on land price (Figure 8), rents of offices and purchase price of used flats. As these markets are liberal, the price is very flexible and regularly adapted to the market conditions.

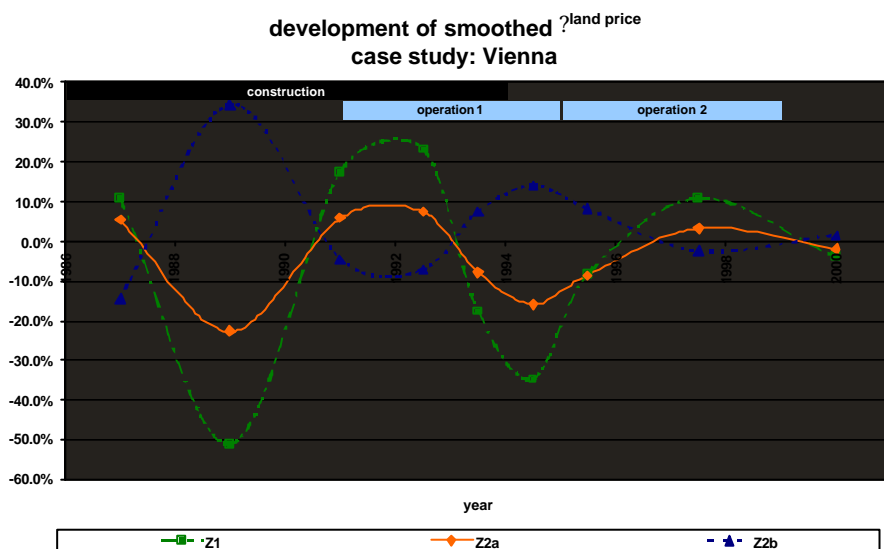


Figure 8: Annual deviations from the average growth \dot{p} land prices (t) in the city centre (Z1), districts accessed by the metro (Z2a) and districts not effected by the metro (Z2b)

Attitudes of key persons towards the construction of the metro and its socio-economic impacts

20 key persons were interviewed in Vienna in order to allow a more in-depth analysis of the history of the construction of the metro line U3 and the contents under which it has been developed and has had its impacts. Of special interest is the role of actors. The main results of all 20 interviewees can be summarised as follows:

There is a clear **transport effect** caused by the metro project perceived from most of the interviewees. This effect is evident on the supply side, whereas on the demand side the effect is smaller. This divergence is argued primarily by the unachievable convenience of private car traffic, even in inner city areas. This leads to a weak effect on the operational efficiency of the public transport system and the modal shift towards public transport as well.

The construction of the metro line is one of the rare case of **transport planning** in the city without major opponents. Reasons of the few cases of opposition are mainly

private interests of land owners. The reasons of the strong support within the city is the absence of significant negative effects for relevant actor groups in the city. This situation leads to an easy decision process on political level for the development of metros in the city. The only question is the acceptance from the federal level as construction costs of metro projects in Vienna are shared between the city and the federal level. Exclusive metro funding with federal money leads to the support of metro constructions more than other public transport projects.

The effect of **urban regeneration** can be seen in a small area around the metro stations (approx. 500m). This effect is influenced by the structure of the area accessed, the development level before and the availability of land plots. The effects on the prices are significant, but these markets are very statically and can only be seen on new contracts. Existing contracts (especially rents for tenants) are protected by law in Vienna. The land use planning sector is perceived as a strong supporter of developments along the metro line. Metros are accelerating the trend of concentration of market places to only few shopping areas or other commercial zones. The effect on employment is a long term effect as well, but it is obvious, that all larger buildings newly constructed for bureaus are currently oriented to the metro network.

Due to missing opposition the group of **actors involved** is small and the decisional process is concentrated to few key persons. Primarily politicians and the city administration responsible for transport development are involved.

Most of the interviewees perceive the metro project as the most **sustainable** transport measure in the city, including environment, efficiency and socio-economic aspects.

Conclusion

The socio-economic effects of the case study Vienna metro line U3 are significant in terms of economic development, urban re-generation, and capable to improve the quality of life in the city targeting a well developed but sustainable mobility. This effects are strengthening the attractiveness of the city in local and international competition. The project *TranSEcon* is ongoing until December 2003, the next steps are the cross site evaluation of all 13 European case study cities to get knowledge about different efficiencies of different investment sums and different transport policies in the different regions. Further details can be found on the regularly updated homepage of *TranSEcon* (www.transecon.org).

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Transports in a sustainable society

Greenbook about the road haulage industry
contribution to sustainability

| | | |
|----------------|---|-------------------------------------|
| Title | : | Transports in a sustainable society |
| Workshop 1a | : | Traffic, environment and growth |
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Content

| | |
|---|----------|
| Background and scope | 3 |
| Methodology | 3 |
| Transports contribute to welfare and prosperity. | 4 |
| What is a sustainable society and it´s transports? | 5 |
| Who can do what to shift into a sustainability mode? | 7 |
| Sustainable Development Strategy | 8 |
| Strategic Dialogue Invitation | 9 |
| Discussion on results | 9 |

Background and scope.

Sustainable development including welfare and prosperity to more people and solutions to important ecological problems is vital.

Transports and road transports in specific are frequently focused upon in debates to be a significant contributor to environmental problems. Politicians, authorities and NGO:s raises demands on more stringent legislation and economical control instruments to hold back further increase in road transports and to shift from road transports to railroad and shipping. EU launches the strategy about decoupling economic growth from increased transports.

The overall question to be penetrated within the road haulage industry would be - How do we contribute to sustainability?

Methodology.

To face this challenge and to try to find out what to do from the road haulage industry perspective some 100 executives met in 12 seminars during year 2002.

The main purpose for these seminars was to achieve increased knowledge and consensus about the sustainability concept and ideas for a long term sustainable business development within the road haulage industry.

Other purposes was to create ideas on how to establish :

- * Sustainability strategies and communication (2003).
- * Integrated sustainability forum throughout the haulage industry (2004).
- * Sustainability concept integration into training programs (2004).
- * A sustainability council representing important stakeholders (2004).
- * Strategic Dialogue Network (2004).
- * A Government Treaty on Sustainable Development (2005).

Results from seminar discussions will be presented in terms of conclusions, questions and fact descriptions and in the following structure :

- * Transports contribute to welfare and prosperity.
- * What is a sustainable society and it's transports ?
- * Who can do what to shift into a sustainability mode?
- * Sustainable Development Strategy.

Transports contribute to welfare and prosperity.

The first conclusion that came out of the seminar discussions were - Transports are important to secure welfare in Sweden and to support welfare and prosperity development throughout the entire world.

Welfare and prosperity in Sweden is to a very high degree dependent on well functioning transports partly because we have long distances within the country and to important markets and partly because we are very dependent on import and export.

Cooperation within EU is based on the idea of the inner market with free mobility of employees, money and goods and free competition. The inner market is supposed to create welfare and prosperity to people in Europe. Increased and more flexible transport capacity would be of crucial importance to support further economic growth and prosperity in EU.

In a global perspective poverty together with poverty related illness and social tensions are very important problems to be solved. Environmental problems e.g. climate change, ozone layer depletion, fresh water shortages, etc constitute major threats to sustainability. Increased economic activity and trade would be the basis for a continued and broadened welfare development. Increased transport capacity and more flexible and efficient transport solutions would be most important to make a positive development possible.

(Picture of production and transport chains that are important for economic growth, employment and welfare.)

The transport means truck, train, boat and aeroplane partly have their natural separated business areas and partly compete on the transport market.

Private cars constitutes a very important complement to transport services especially outside city centres.

Collective transport means in city centres are very important to reduce congestion and environmental and other problem related hereto and to enable goods transport services efficiency.

Optimised mixture of light and heavy trucks is important to increase efficiency in vehicle fleets and to minimise environmental impact.

What is a sustainable society and it's transports?

Seminar attendants found out that it is very difficult to explain the meaning of a sustainable society and what role transports could have in such a society.

They also found it difficult to fully understand how the process of transformation into a sustainable society could be carried out.

The following conclusions came out of the discussions.

It is very important to apply a holistic view on the sustainability concept and on the overall function of transports in society. Sub-optimised and fragmented approaches in many decision processes seems to be inefficient and delaying the transformation into sustainability.

(Picture on Sustainable Development including ecological, social, cultural and ethical aspects together with economical aspects on individual, company and society levels).

A sound market economy with relevant government and legal control would provide the best basis for an efficient transformation into a sustainability mode of development.

Obviously there is a need for partly new values and views and unconventional cooperation and for mutually agreed strategies to support short term and day-to-day decisions.

Transports are important to support a global welfare development but transports also have some significant negative side-effects such as :

- * Utilization of energy in electrical power and fuels.
- * Utilization of resources e.g. transport technologies, infra structures, government financing, other costs, etc.
- * Emission of air pollution and noise.
- * Accidents causing human injuries and damages to environment and other objects.
- * Barrier effects and other disturbances in land areas and marine environments.
- * Pollution of land and sea and of surface and ground water.
- * Changes in ground water levels.
- * Impact on cultural objects and on landscape views.

These and other negative side effects will grow more serious as transports are increased. Several of the negative effects also worsen by congestions in road traffic and over crowded airports.

One very important objective for EU is to achieve a de-coupling between further economic growth and increased transports.

The overall conclusion would be that the transformation into a sustainable society means both to reduce negative side effects from transports that are carried out and to hold back the supposed large increase of transport needs. Some interesting areas of various improvements would be :

- * Production/consumption of services not creating transport needs.
- * Strategies for production, storage and distribution of goods.
- * Consumption and life style patterns.
- * Society planning and placement of trade centres, residence areas and production plants, etc.
- * Increased efficiency within each transport mean e.i. truck, boat, train and aeroplane.
- * Increased efficiency in the transport sector as a whole.

Most executives participating in the seminars expressed their uneasiness regarding the general environmental debate in mass medias. The beneficial effects from transports are very seldom mentioned and taking into account when transport issues comes up. Why?

To enable relevant choices of measurements and government control e.g. legislation, taxis, etc on different system levels it would be interesting to develop and implement indicators and models on efficiency.

(Picture E = + / -).

Would it e.g. be possible to identify benefits (+) versus negative side effects (-) in ecological, economical and social terms on system levels such as transport assignment, transport chain, transport loop, transport mean respectively, etc. Would it be possible to develop and implement efficiency (benefits/negative effects) concepts on the overall society level to enable prioritisation of measurements in line with a sustainable development.

Who can do what to shift into a sustainability mode?

The Swedish road haulage industry invests hugely in increased customer satisfaction and reduced environmental impact. This however will not be enough to create a sustainable society.

(Picture showing a modern truck including IT, GPS, Telecom and Transports logistics and implementation of Euro 1-5 environmental requirements. The road haulage industry is becoming a high tech industry.)

In a 25 years period from 1990-2015 the road haulage industry will invest approximately 25 % or 2 billion SEK extra per year in increased efficiency and reduced environmental impact (IT, GPS, Telecom, Transport Management, Logistics, Euro 1-5 and recycling of CO₂ in refrigerated transports).

The road haulage industry will also invest in heavy eco driving which reduces fuel consumption and CO₂ emissions by 5 % or more. Most drivers will participate in training programs before year 2015.

Integrated management systems (Quality, Environment Protection, Work Environment, Road Traffic Safety, etc) will be implemented in most haulage firms before 2015. Today more than 2 300 firms have implemented management systems compatible to ISO 9001:2000 and 14 001.

A comprehensive program for business development with important aspects such as leadership business approach to increase the profitability, which is partly very low compared to many other business sectors. Increased profitability is very important to secure the capability of making investments for increased efficiency and reduced environmental impact.

Increased efficiency and reduced environmental impact on the road haulage industry system level is very important but it probably has a limited effect on sustainability compared to what could be achieved on other areas mentioned above. To avoid irrelevant focus on the road haulage industry it is important to participate also on the other areas of improvement. The Swedish road haulage industry would like to intensify and enlarge the sustainability dialogue with actors/functions like:

- * Society planning, land use, energy/fuel production and distribution, building and running of infra structures, traffic planning, etc

- * Development of business ideas, products, services and of manufacturing processes, sales and distribution, trade, etc.
- * Customers in all parts of the production chains and end consumers.
- * Purchasers and procurement procedures.
- * Suppliers of vehicles, fuels, electricity, IT, GPS, Telecom, Logistics and of other components and services to the transport sector.
- * Parliament, government, authorities and other decision making bodies on international, national, regional and local levels.
- * Branch and trade organisations.
- * Transport agents.
- * Transporters : road haulage firms, own account transporters, train and rail road operators, boats and harbour administrators, air freighters and air port operators.
- * Banks and other financiers and insurer companies.
- * Research and Training.

Sustainable Development Strategy

Based on a holistic view on ecological, economical and social aspects and on the function of transports in society the Swedish Road Haulage Industry will participate in the transformation to a sustainable society :

- * Striving for increased knowledge and consensus within the road haulage industry and in society as a whole about problems and development possibilities.
- * Develop and implement efficient ways of working and routines to identify and manage important aspects.
- * Develop and implement relevant indicators and key figures for measuring, control and reporting of sustainability performance.

- * Develop and commercialise products and services with growing customer satisfaction and decreasing environmental impact.
- * Develop, procure and use best available technologies and methods when ever possible from an economic point of view.

This strategy will be processed and decided on at the 2003 Road Haulage Industry Congress.

Strategic Dialogue Invitation

The Swedish Road Haulage Association would like to invite any actor interested to discuss the transformation into a sustainable society and the transport function in such a society.

Discussion on results

Participating executives are very experienced in various aspects of the business and the transport sector as a whole. They have a genuine and strong belief in increasing the transport efficiency and reducing environmental and other negative side effects from road transports and from transports in general. They fully appreciate the forthcoming needs of transformation into a sustainable development on a global scale and they want to participate in the transformation process in the best way possible.

This green book is the first attempt to collect ideas on how the road haulage industry could participate in the transformation into sustainability. Hopefully it will be used to initiate a fruitful strategic dialogue.

ECOMM
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Title: SMART Road User - individual marketing campaign for environmentally sound transports

Conference: EPOMM, European Conference on Mobility Management in Karlstad, May 2003

Organization: Mobility Centre, Technical Services Department, City of Lund

Author: Päivi Elmkvist, Project Manager, paivi.elmkvist@lund.se; phone: +46-46-35 69 88, fax: +46-46-35 67 10, Byggmästaregatan 4, SE-222 37 Lund

Main topic: 1h, Key factors in achieving sustainable change in attitudes and behaviour.

Objective: Individual marketing method called SMART Road User is a central part of the work at the Mobility Centre in Lund. Individual information in combination with dialogue and an opportunity to try another mode of transport results in sustainable change in behaviour.

Relevance to conference theme: The City of Lund works on a broad basis with mobility management in a growing urban area and has been successful in changing behaviour, even though the changes are small so far. By presenting some of the methods used in Lund, good practice can be spread and discussed.

Background

Traffic in Lund

In the municipality of Lund about 45 percent of all trips are made by car and another 45 percent by bicycle or walking. App. 10 percent of all trips are made by public transport. The share by bicycle and walking is a lot higher than the average in Sweden which is app. 30 percent. The population in Lund is young, the city is quite small and the climate is suitable for cycling, but we also have a tradition of cycling. A great deal of the short trips are already made by bicycle and that is one of the basic factors supporting the general plan for spatial planning in Lund. Important objectives are that the city should grow within biking distance (maximum five kilometres) and other expanding parts of the municipality must be provided with good public transport.

Traffic by public transport and by bike increases in Lund. Car traffic, however, is unchanged since some years back. The trend in Sweden is increasing car traffic. Is this a coincidence or is the work towards a sustainable transportation system starting to give effect?

LundaMaTs - an integrated effort to create a sustainable transportation system in Lund

Since 1995 the City of Lund has worked with LundaMaTs, Lund's sustainable transportation system. In 1997 the project started with a study concerning the current traffic situation, followed by target setting and an action program with eight main projects and 83 subprojects. The following five major reforms were identified:

- ? Town and country planning
- ? The Bicycle friendly town
- ? Extended public transportation
- ? Environmentally friendly car traffic
- ? Commercial and industrial transportation

In 1998 the City of Lund selected four projects to focus on over a three-year period (1999-2001) and began the implementation process. The four selected projects were the *Mobility Centre*, the *Bicycle Municipality*, *Walk and cycle to school* and the *Lundalänken (Lund Link)*. A new three-year project period (2002-2004) started a year ago and the projects *Mobility Centre* and *Bicycle Municipality* are continuing and a new project called *Environmentally sound car traffic* has started.

New infrastructure AND mobility management

The measures carried out within LundaMaTs are of both technical and mobility management character. Examples of measures are construction of new bike paths, safe school routes, commuting by bike and bus, car-sharing associations etc. Another example is the *'In town without my car'* event in which Lund participated on September 22, in the years 2000, 2001 and 2002. In 2002 Lund also participated in the *European Mobility Week*.

The emphasis in the reforms of LundaMaTs is on measures designed to encourage voluntary changes aiming at creating an environmentally sound transportation system.

Costs of LundaMaTs

To enable work with the LundaMaTs system, the City of Lund has applied for and received a special grant for environmental improvements from the Swedish Department of the Environment and the Swedish Environmental Protection Agency. During 1998-2004 app. 280 million SEK (app. 31 million €) are to be invested in different measures within LundaMaTs.

| Project | Period | Total cost in millions SEK (incl. governmental grant and municipality funding) | In millions €, app. |
|---|------------------|---|----------------------------|
| Bicycle municipality | 1998-2004 | 80 | 9 |
| Lundalänken, Extended public transportation | 1998-2003 | 170 | 19 |
| Walk and cycle to school | 1998-2002 | 9 | 1 |
| Mobility centre | 1998-2004 | 16 | 2 |
| Environmentally sound car traffic | 2002-2004 | 4,6 | 0,5 |
| In total | 1998-2004 | 279,6 | 31,5 |

Table 1: Cost of LundaMaTs projects 1998-2004 million SEK, both governmental grants and funds from the municipality.

The bicycle municipality

Already today, Lund is one of the best towns for cycling in Sweden. Bicycle traffic is given high priority to by improving the infrastructure for bicycles. A bicycle centre with rental bikes and a bicycle reference group has been started.

Extending public transportation

Extending public transportation is very important in reducing dependency upon cars. *Lundalänken* is a fast connection from the railway station Lund to the major working areas in the town. It was finished in January 2003. App. 24 000 persons commute to the town every day and the goal is to get as many as possible of them on the *Lundalänken*. In the beginning *Lundalänken* will be a connection for bus services only, but the link is developed and dimensioned for a possible introduction of a modern tram system.

Walk and cycle to school

The purpose of the project is to reduce carbon dioxide emissions by getting parents not to drive their children to school and preschool, and to walk or cycle with them or let the children walk or cycle on their own instead. An inventory of these school routes for the youngest has been made and the most dangerous intersections and paths have been localised and rebuilt. In addition to the improvements a series of mobility management measures have been conducted. Information at parent meetings, traffic safety work in school, campaigns and preventative health projects are some of these measures.

Mobility Centre

The *Mobility Centre* in Lund has been active since 1999. The Centre works with mobility management measures such as car sharing, walking school buses, car pooling and commuting by bike or bus. The measures of technical character, which have been carried out at the same time in the other projects, have made it easier to communicate about traffic with the inhabitants of Lund.

SMART Road User

One of the most important mobility management campaigns within the *Mobility Centre* is the SMART Road User. SMART Road User is a method to present information about commuting to work. The *Mobility Centre* has compared travel time, cost, emissions and health effects of commuting by bike, bus or car between residential areas and working places in Lund. The residential areas studied are seven different areas in Lund and the five towns outside of Lund with large groups of people commuting to Lund. Seven different working places are included. The results are presented in so-called SMART pamphlets, one for each trip. The SMART pamphlets shows for each individual how much money can be saved by taking the bus, or how much time it would take to bike to work. The health aspects are covered in an amusing way by counting calories consumed by cycling into kilos of chocolate. The four aspects time, health, cost and emission are always in the pamphlets, even if car would turn out to be the best alternative.

Time: in many cases the bicycle is fast, sometimes even faster than the car. Bus is usually the slowest alternative, but it can be relaxing to read or sleep while travelling to work.

Cost: taking the bike or bus to work can save you a lot of money. We count that the car costs 2,4 SEK per kilometre (app. 0,3 €/kilometre), bicycle 0,4 SEK/kilometre.

Health: up to 80 kilos of chocolate per year for biking to work! Other effects on the commuter's health are brought up as well.

Environment: emission of carbon dioxide for cycling, car and bus are presented. Bicycle is of course always the best alternative, but even train and bus make a huge difference compared to the conventional private car.

The results of these trips are to be presented to those who travel – the goal is to present information relevant to each individual. How can we find these individuals and how do we communicate? We work from two different directions – residential areas and working places.

Residential areas

The SMART Road User campaign in residential areas consists of several different activities. The first activity is to send out brochures containing information of environmentally sound transports with clear connection to the residential area in question. It can contain information of the latest bicycle path in the neighbourhood, an interview with a person in a car sharing association, how to ride a bus to the new *Lundalänken* etc. The next step is square exhibition with information, dialogue and for example test-driving of an electrical bike. Media is kept informed.

After distribution of brochures follows knocking doors and discussing traffic with the population. Those who already are travelling smart are encouraged and more information, such as bike maps and timetables are available. The smart travellers also receive a small gift. Those who commute by car are offered to join one of our campaigns: *test riders* or *health bikers*. In these campaigns they get the opportunity to try biking or travelling by bus to work. *Test riders* try the bus or train to work for one month, we offer the travel pass free of charge and in return they answer some questions. In earlier *test rider* groups up to 60 percent of the participants continued to take the bus after the test period. The *health bikers* promise to commute by bike for a whole year. They receive a bicycle computer, training suit, reflector vest etc. During the year they cycle we have meetings with them, they answer surveys and can report faults in the infrastructure.

Information about car sharing, eco cars etc. is also offered. Some households have been contacted by telephone in order to evaluate which method is the most effective. We also arrange thematic meetings in the residential area for example about car sharing.

The first residential area was contacted in the autumn of 2003. In January 2003 an evaluation of the two methods, knocking on doors and telemarketing was done. What was the most effective? The experience so far is that the two methods are equally efficient, but it is not yet known how successful the campaigns (*test riders* and *health bikers*) in the area will be. In the first residential area 559 households were visited/called by telephone. 65 households were interested in participating in one of the campaigns (11,6 percent). The next area 80 households of 544 visited were interested (14,7 percent).

Working places

Campaigns at work places are conducted in cooperation with the company/organization visited. For example the *Mobility Centre* has met app. 350 employees at Tetra Pak and participated in their International Environmental Day. The aim is to offer companies a variety of measures and help them in carrying out different activities. The measures can be

the same as in residential areas (*test riders* and *health bikers*) but also videoconference, tele-commuting, eco cars at the company and car-pooling.

Simultaneously as the opening of *Lundalänken*, which offers better public transport to the major working places in town, information campaigns at companies close to the route were conducted. Ten big working places were visited with an exhibition. Brochures, pamphlets, timetables etc. were handed out. In total over 3 600 brochures were handed out. About 600 of these were so-called SMART pamphlets that indicate how commuting by bus, bicycle or car affects you and the environment.

After the exhibition try-out bus tickets were handed out at the company parking lots in the morning rush hour. A ticket valid for one day in public transport was offered to employees travelling by car if they were interested in trying and had a connection that worked. 945 tickets were handed out to car drivers - ours most important target group!

The goal for the campaign is not necessarily a change in attitudes, but a change in behaviour. It is important for the individual to see benefits for himself or herself, better economy or health. Old habits are hard to change when it comes to transports - that's why the *Mobility Centre* gives individual information and lets people try other modes of transports.

LundaMaTs – the first evaluation, May 2001

LundaMaTs has given results - physical measures and Mobility Management give synergy effects. Three years after the project started, in spring 2001, the first extensive evaluation was carried out.

Awareness and effects

The purpose of the evaluation was to investigate how aware the inhabitants in the City of Lund were of the different projects that had been conducted over the last few years, and how they have affected the inhabitants.

The four major projects were fairly well known in the City of Lund. Within every major project several activities and subprojects had been carried out. The awareness of these more specific projects was somewhat larger than for the five major projects.

Attitude towards the investments

The inhabitants have in general a positive attitude towards the investments for a sustainable transport system. 60 percent consider the investments very good and another 30 percent think it is good.

The Mobility Centre

The projects that are included in the first survey include car sharing, eco cars and locally produced groceries. The Mobility Centre has worked to get more people to start or join car-sharing associations. This has resulted in a very high awareness among the inhabitants in the City of Lund.

The Bicycle Municipality

In general 50 percent think that the investments have been larger or even a lot larger during the last two years. Slightly less than 15 percent have not noticed any difference, and less than 35 percent say that they do not know. The concept *Bicycle Municipality* is known by a majority of the people living in the City of Lund.

Walk and cycle to school

The project group has mainly been involved in activities such as *Safe routes to school*, which 55 percent of the inhabitants have heard about, and *Walking school bus*, which 30 percent have heard about. The final evaluation of the projects shows that awareness isn't enough to change the behaviour: the decrease in driving children to school was only two percent.

Effects on travelling and emissions

The majority of people living in the City of Lund are aware of the work with LundaMaTs and the projects and activities involved. The scheme has also affected the inhabitants' travelling:

- 2 percent have to a large extent switched from car to bicycle and public transport
- 2.4 percent have to some extent switched from car to bicycle and public transport
- 4.3 percent sometimes try to take another transport mode than the car
- 3 percent have started thinking of alternatives to the car

Approximately 10 percent of the inhabitants say that LundaMaTs has influenced them to cycle more and make more use of public transport. A large proportion of the inhabitants have also stated that they have reduced the distance in kilometres that they travel by car during an average week.

The people living in the City of Lund have reduced their car travelling with nearly 4 million kilometres – or about 1 % – during the last year. Annual counts of traffic confirm these figures; the car traffic increase has been eliminated. The change corresponds to a 900 tonnes reduction in carbon dioxide emissions.

Conclusions

The LundaMaTs system represents an integrated effort to ensure a better environment. One can thus expect synergistic effects when a variety of different measures of the sort described are put into effect simultaneously.

The evaluation shows that the activities have given measurable effects after a couple of years. It is important to continue giving the inhabitants the information that is required for an altered behaviour, and also point out the individual's gains such as better health, time and money. By investing a lot of time and money in LundaMaTs, the City of Lund has become a city working effectively with sustainable transport.

Individual information and dialog with the inhabitants of the city is a very important part in creating a sustainable transport system; investments in better infrastructure are required but they also need to be supported by mobility management measures such as SMART Road User campaign.

The future

The *Mobility Centre* has been active since 1998. In year 2003 a new project starts within the centre to tie mobility management and spatial planning even closer together. The project aims to form a policy and a handbook for mobility management in spatial planning and to find tools to work more efficiently with these issues. Demonstration of good examples and seminars for providing greater insight into the effects planning has on traffic. A basic conclusion is that planning needs to be started now if an environmentally sound traffic situation is to be expected in 30 years from now. Sound land use and structural planning is one of the reforms that the city works with. Adapting the infrastructure to environmentally sound forms of transportation by creating more adequate infrastructures for various

activities. A good example is safer routes for children's way to school so that fewer children will need to be transported to school by car.

The SMART Road User campaign will continue the whole project period until autumn 2004. App. 6 000 more households are to be visited prior to July 2003. In the spring of 2004 a new LundaMaTs survey will be conducted in order to evaluate the results and effects on the traffic in Lund.

7th European conference on mobility management
ECOMM 2003

Title of the text:

With the privatization of the former state-owned railway companies comes the responsibility to meet the needs of the passenger at small railway stations.

Title of the workshop:

1 g: Services and products for the traveller

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Objective of the report

Topic of this report is the provision of new services for passengers of public transport at small and medium-sized railway stations.

The reorganization of the former state-owned railway companies in line with the EU directive 91/440/EEC has brought some fundamental changes to the way such projects are handled. In the past the state-owned railway companies provided a comprehensive service at each station, where customers could approach their staff for all matters of concern. But the division of the railway companies into "infrastructure manager" and "railway undertaking" today makes it more difficult for the passenger to perceive a unified rail service.

In fact the new infrastructure managers are more likely to focus on the rate of return of their business than on the needs of the passengers or even give up services at stations where costs could quite reasonably be covered in combination with various other services.

The main reason for addressing this topic is the various projects of Agentur BahnStadt, which include the improvement of services, the setting-up of mobility centers and the transformation of existing buildings at small and medium sized railway stations for new applications. Many stations in Germany today see less than 500 passengers per workday and therefore offer only vending machines or even no service at all. As these stations are now often unmanned and in areas with little social activity, vandalism and soiling of the buildings and surrounding area have become commonplace.



The unmanned station of Goerden (federal state of Brandenburg). Note the graffiti on the station buildings.

While stations reduced to simply providing the bare minimum of transport facilities can still be operated efficiently according to the formal standards of the supervisory body and the railway companies' contract governing the use of stations, they have a negative effect on the way public transport is perceived by the customers.

A more customer-friendly way of operating railway stations in rural areas that helps to attract new passengers is given below.

Framework conditions of the projects

? Increased competition over railway passenger traffic is set to become the norm in all European countries. To minimize the potential for discrimination of new competitors we should expect the station infrastructure and operation of transport services to be separated in all countries.

The impetus behind the German railway reform initiated in 1994 was the above mentioned EC directive 91/440. This stipulated first of all that the formerly independent authorities of "Deutsche Bundesbahn" and "Deutsche Reichsbahn" be brought together to form the private company "Deutsche Bahn AG". This single company was then to be divided into single joint-stock companies under a common holding company. This has meant that the responsibilities for railway transport and the operation of the infrastructure have been formally divided, whereby a further subdivision of the infrastructure has been made by setting up "DB Netz AG" to handle the network and "DB Station & Service AG" to run the stations.

The advantage of this shared responsibility is that the construction, maintenance and operative costs that operating an infrastructure generates can be assigned to the responsible operators, who tend to work more efficiently in their own field. Healthy non-discriminative competition among different railway companies is now possible.

In France the given directives of the EU have been formally met by separating the operation of the network from the provider of rail transport services, yet there is still no actual competition between different railway transport companies.

For the SNCF, which is still in charge of station infrastructure and enjoys a position of monopoly in France, the operation of station buildings is not only a question of making profit. As a state-owned transport company it is also interested in offering comfortable waiting rooms for its customers and staff rooms for railway employees on duty.

This unity of station management and transport company generates a situation where all members of staff at the stations take pride in working for the railway and are therefore keen to offer their customers a friendly and comprehensive service.

However, it is only realistic to expect the future establishment of competition in the French railway system - with staff from different companies having to cooperate in each station - to bring about at least some change to this attitude.

? *Many rural locations have seen long-term neglect and have a huge backlog of necessary station infrastructure maintenance which requires large investments both today and in the future. Where the infrastructure managers cannot raise the money for this, they simply strive to shut down the ailing infrastructure.*

With the restructuring of the former state-owned railway companies, most new infrastructure managers have received the order to ensure that all the costs of the infrastructure are covered.

As the road network is financed by the community or the state, but the railway network and the infrastructure of the stations is financed by the customer, the two modes of transport are in imbalance in terms of marketability. In many countries this imbalance has been intensified by long-term under-funding, leading to obsolete or even unusable sites.



The platform still in use at the Caputh-Geltow station (federal state of Brandenburg)

The infrastructure managements' need to cover all costs then ultimately leaves them with a simple choice. They can either enhance the infrastructure through extensive investments to cover subsequent operational costs in spite of the poor market position, or simply shut the network down due to the gloomy prospects of getting back their investment. This affects both the general infrastructure and station buildings on poorly frequented lines.

The consequences of such a closure for the total system of public transport are alarming. When conditions deteriorate, passengers in rural areas quickly lose interest in public transport and the numbers of users often drop – a situation which only reinforces the operator's desire to reduce or even cease its service. This leads to the divide in living conditions between rural and urban areas becoming growing even further.

? *On closer examination, however, income can often be raised from state financial support programs and regional administrative bodies. With a bit of ingenuity, these funds can be used for the renovation of the infrastructure at railway stations and the operation of new services.*

When the government seeks to improve the living conditions of the population, this often comes in the form of promoting investment and the operation of facilities for the public at large. There are numerous opportunities in using these aid programs for the development and operation of services in station buildings, for instance in the spheres of

- ? transport infrastructure
- ? urban planning
- ? social and economic policy and
- ? regional policy

Whether as a by-product or the principal aim of such aid programs – a careful examination of how to use these funds to improve the service at stations seems sensible. With the right preparations there is no reason why a group of young people or an employed or physically handicapped person should not be a stationmaster or the manager of a mobility center.

Description of the problem in Germany

Having been released from the system of public budgets, “DB Station & Service AG”, the company that looks after the infrastructure of stations in Germany since the reform in the rail system, now has the opportunity and also the task of operating in the market economy. Against the background of overdue maintenance on their station infrastructure and little chance of making small and medium-sized stations profitable, “DB Station & Service AG” is now pursuing a threefold strategy:

- ? As a rule, all measures set up in and around the station building are geared towards an internal return on the given capital. This demands a certain size of station in a central location with a sufficient number of passengers – parameters simply not available to many small and medium-sized stations.
- ? A series of systematic strategies have been developed in order to limit the amount of money, time and energy spent on developing new concepts. These strategies are designed to offer support and improve the services at a large number of stations (examples being DB ServiceStore, DB ServicePoint and DB ReiseFrische). The losers of these strategies, however, are often smaller stations which do not fit into this standard model and desperately need to exploit local potential to become viable.
- ? At small and medium-sized stations, DB Station & Service AG is giving up fields of business in deficit. So you might see a waiting room erected outside of the disused station building replacing the traditional foyer inside the building and vending machines in place of businesses.

The central problem, as Agentur BahnStadt sees it, is that the low return on capital of stations in small and medium sized towns is causing a lack of desire to market and utilize the opportunities. When there is no-one to recognize and exploit the potential of a site, no partners are found and the realization of ideas is not developed and discussed, the interests of the customers are easily forgotten.

The following is a typical example of the lack of coordination at a station:

At a medium-sized station (hourly regional fast train service to two economic centers at a distance of about one hour with 1,000 daily travelers and ticket sales of around € 700,000 annually) the service staff on the platform are provided by the station infrastructure company, the signal box operators are provided by the network infrastructure company and the ticket office is run by the railway operating company for long-distance travel.

In the course of improving their cost-effectiveness, all three companies realize that their staff are not fully occupied and are therefore not operating economically. Each company then implements its own solutions to this problem.

An agency (often a travel agency located somewhere in the city center) takes over the ticket office, the signal box is converted at great cost to become automated and the service staff are replaced by an emergency and information telephone.

The result is the effect mentioned at the start of this report – the station is automated without staff, there are no other businesses in the building and vandalism and soiling ultimately start to dominate. At some point the decision is then taken to close the station building and the customer has to wait in an newly constructed yet unheated shelter on the platform.

Course of action

So how can we create a new interface between the different railway companies, the local economy and the customer, taking in consideration the outlined framework in small and medium-sized stations? The most important thing is that the interface should be available on site to respond to the needs of the local customer. The desired effect is to generate a presence which effectively supports the image of the railway as a means of transport. Even stations formerly marked as unprofitable can become modern centers of communication and mobility, attracting new customers to public transport.

Basic idea of the projects

Outline

The station master used to supervise or himself provide all services at stations. At smaller stations passengers could ask him questions, while at larger stations he was responsible for organization and ensuring all work was carried out correctly for the larger volume of traffic.

The basic idea of the projects to be presented is the opening of a so-called mobility agency, where a new private station master offers his services to the passengers of public transport, the town's inhabitants, visitors and also to the railway operators and the infrastructure managers.

These services include:

- ? offering information on all means of transport in the town/region and the sale of appropriate tickets
- ? offering visitors tourist information and arranging accommodation
- ? providing services for passengers, such as toilets, telephones, Internet access, fax, bicycle hire

- ? janitor tasks, such as cleaning the station building and the grounds, clearing snow and ice in the winter and helping physically handicapped passengers
- ? work at the interface where customers and railway operators meet, i.e. providing information about delays and recording complaints, ideas and suggestions for improvements
- ? running a postal and dispatch business and a concierge service
- ? running a café and a local store

Economic viability of a private station master

These services are financed through commission paid by the different contractual partners, payments for services provided, profit margins for goods sold and, where present, other local services.

The basic idea of a private station master is not a new one. Such systems are commonplace in other service sectors. And the use of an agency service at train stations is also nothing new – many railway operators use agencies to perform services previously provided by their own personnel (sale of tickets, convenience stores). The potential of these projects lies more in the consistent bundling of all services at small stations so that these can be carried by a single person, the private station master. The decisive factor is that all partners and parties involved should strive for a friendly, efficient and economic solution to all tasks at small stations for the benefit of the customer.

Having a private station master running the entire station brings two positive effects. Firstly, this system allows services to be provided that would otherwise simply not be viable. And secondly, a private operator is in a better position to provide a high quality service than a railway infrastructure management company, as he is directly responsible for his own economic success and therefore has a vested interest in giving satisfaction to his customers and employers.

Table 1 depicts the average takings of a busy mobility agency. The figures are based on the ten projects that the BahnStadt agency is currently handling in the German states of Brandenburg and North-Rhine-Westphalia.

| | |
|---|--------------|
| commission from tickets for long-distance transport | 56 % |
| commission from tickets for regional transport | 12 % |
| takings from the shop | 12 % |
| takings from the café | 10 % |
| subsidies by the transport authority or the community | 4 % |
| takings from services carried out by the janitor | 4 % |
| booking of trips | 2 % |
| sum total | 100 % |

Table 1: Financing the operating expenses of a mobility agency

The principal aim of these projects was for a private agent to start selling tickets again at a station where this had been given up by the railway operator. The takings from ticket sales thereby dominate the overall takings.

As a high proportion of the takings was expected to come from selling tickets, efforts were made to increase this source of income as much as possible in order to ensure a sound economic basis. A great deal of separate talks were held with the train and bus service operators and the companies to license the agency, although a small

subsidy was still required for most of the projects. This was granted by the relevant regional administrative body and local bodies.

The takings do not reflect those free-of-charge services which, while not generating turnover are important for keeping passengers happy. These include giving information about the timetable or the surrounding area and providing a toilet.

In Table 2 you can see the overhead expenses of a mobility agency in detail.

| | |
|------------------------------------|--------------|
| personnel | 75 % |
| technical equipment | 11 % |
| rent | 5 % |
| financing the deposit | 3 % |
| advertising | 3 % |
| office equipment and communication | 2 % |
| financing investments | 1 % |
| sum total | 100 % |

Table 2: Proportional costs relative to the total expenses of a mobility agency)

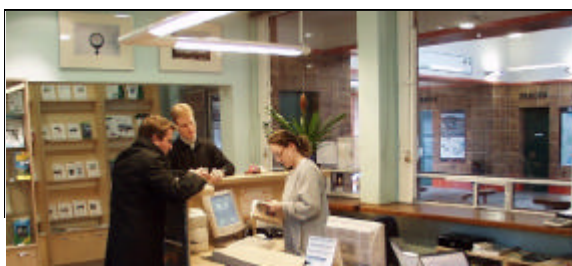
This table indicates a decisive factor to minimize the overhead expenses of a mobility agency. It is not so much the reduction of costs for rent and materials that determines the success of the project, but rather the minimization of personnel costs. An efficient use of the staff or the use of job creation programs can lower personnel costs. Even poorly frequented stations can then offer services to their customers. Some suppliers of services at stations, for example, concentrate even on job creation programs of the employment exchange – something which enables them to reduce their personnel costs significantly.



In Würth, the sale of tickets is financed by programs of the employment exchange

Examples of projects

Potsdam-Griebnitzsee



The new mobility center in the station building of Potsdam-Griebnitzsee.

Agentur BahnStadt renovated the station hall, the former ticket office and an additional office room of the rapid transit station (S-Bahnhof) situated in a suburb of Brandenburg's capital Potsdam. These remodeled premises now house a mobility center.

This agency offers an extensive service to local people, employees and visitors of the adjacent boroughs. Alongside advice and information about all means of transport in town, the area and all over Germany, the service includes the sale of the right tickets for tourists, a bicycle hire station, guided bicycle tours and the sale of newspapers. A financial setback caused by the transfer of the bus stops to the rear of the station building (the passengers changing here no longer pass by the mobility center) could be compensated by the extension of the services.

The agency received great support from the owner of the premises (DB Station & Service AG), who agreed to offset the costs for the redevelopment of the station building against the rent on the building – thereby enabling overhead expenses to be reduced in the long term. Unfortunately, attempts to take on services in the building itself, such as cleaning or keeping the station area clear in winter weather, were rejected by the station infrastructure management company.

The realization of similar projects in co-operation with local bus operators has started for eight additional locations in the federal state of Brandenburg.

Espelkamp



The Espelkamp station building before its renovation.

On behalf of the town of Espelkamp and within the framework of the "aufdemland.mobil" research project financed by the German Federal Ministry of

Research, the BahnStadt agency drew up a design for the renovation of the Espelkamp railway station building and to find new users (around 300 passengers daily and some 25,000 inhabitants in the town itself). This project has just started and will consist of the following elements:

- ? Purchase, renovation and conversion of the station building by the town.
- ? Takeover of the ticket office by a private agent working together with a new local store and café in the station to form a “mobility agency”.
- ? The relocation of local youth center and a gym into the adjacent building – this will bring life into the area and get young people using public transport in Espelkamp.
- ? Use of the former restaurant and an optional annex by a bicycle shop to run a bicycle hire station.

Subject to the pending agreement of the municipal body to offer financial assistance, this project has a good chance of success. This success is also thanks largely to the fact that young and motivated entrepreneurs have been found to make the station a center of mobility and communication.

Halle (Westphalia)



Private service at its best: The new ticket agency in the station of Halle (Westfalen).

In the framework of the EXPO project “RegionalStationZukunft” (future of regional stations) the station in the small Westphalian town of Halle has been remodelled, with a local company moving into the former staff room and ticket counter. This business is financed with the help of job creation programs. An agency has taken on the sale of tickets and committed itself to generating a sound customer base in order to make the ticket business profitable.

Summary: Framework for the creation of a mobility agency

The projects described and also other projects of the BahnStadt agency have shown what conditions are necessary for a successful conversion of a disused station into a mobility agency:

- ? Potential financing of the overhead expenses of a mobility agency through different sources. The aim here is to establish a sound economic basis by operating in different sectors, offering advice and information on transport

services, services for the infrastructure management company and railway operators and the supply of goods and services for passengers

- ? Sufficient interest of all co-operating partners to make the project a success, with allocation of the necessary agency licenses and share of subsidies
- ? The political intention to support the projects by the community, regional bodies and public transport managers with non-material support of the project, provision of aid, establishment of necessary contacts to the local industry and commerce and to the local trade.
- ? Commitment of one of the partners to the conception and implementation of all plans, including kick-starting the project and financing the planning process.

It is particularly difficult to attract agencies in places with poor prospects of achieving a high return on capital. The implementation of the concept requires sound knowledge of the local trade and general conditions here. Detailed work, such as holding talks with individual involved or interested parties, is needed as a strategy against the systematic thinking of the station infrastructure manager.

It is, however, important to note that the interaction of local politics, the railway operators and the railway infrastructure management needs great improvement. The high rate of personnel turnover within Deutsche Bahn AG still occurring nine years after the first step of its creation makes it difficult to form local partnerships.

The lack of a unified mobility and timetable information services for all national railway services is also holding back potential growth. The quality of service for the passenger should have higher priority in the political arena.

But the often arduous commitment is almost always well rewarded when an old and seemingly unviable station once again becomes a center of communication and mobility.

“MobiHarz”-project: Integrated mobility management and services for visitors

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Concerning main topic 1 g – Services and products for the traveller

Basic project information

The “MobiHarz”-project as both a research and implementation project has two strategic aims:

1. Gaining empirical based knowledge on tourism/- and leisure mobility
2. Improving intermodal mobility of visitors (tourism, day trips) in order to reduce car use by demonstrating a combination of different solutions.

The project focuses particularly at day trips and short holidays. Excursionists are a group of visitors payed only little attention concerning integrated measures although they cause substantial negative impacts.

MobiHarz refers to Wernigerode district in the eastern part (former GDR) of the Harz mountains in the middle of Germany. The region is an important German tourism destination and recreation area for the surrounding agglomerations (like Hannover, Braunschweig, Magdeburg, Halle, Leipzig).

The project is funded by the federal ministry of education and research. It has started in 2001 and is standing 2003 in the implementation phase.

The consortium nests around the two main poles:

- ? interdisciplinary scientific partners (social scientists, psychologist, transport planners, tourism consultants, IT experts) and
- ? different regional partners for implementation (local and regional authorities, tourist agencies, transport operators and authorities).

Problem setting

Private, individual motorised vehicles have an overwhelming modal share of all leisure trips to the Harz mountains (93%) and *within* the destination resp. during the reported day trip (90% including alternative transport modes within a journey). Generally, the average distances of leisure trips as well as the overall kilometers travelled for leisure purposes except holidays have been getting longer and longer and are stabilising on high level since the mid 90ies (federal German ministry for traffic 2001). But (short) holidays may show other developments. The car use in tourism and leisure transport is seen not only as a result of inappropriate infrastructure for alternative transport modes, but also as a consequence of insufficient information and marketing efforts. Therefore, the integration of transport modes as well as additional mobility services and multi-channel information is regarded a key factor to foster alternative modes of transport.

Even if the negative effects of individual motorised traffic are locally not or not yet high enough to motivate restrictive measures against motorised vehicles, the improvement of tourism is always a reason and a motivation to enhance marketing actions – and they can be taken as a chance for a joint development of mobility management.

The advantages of combined mobility and economic profits for each participant (particularly transport operators) can and should be coupled. An economic argumentation is necessary, because the public budgets are not well balanced and sustainability is not an important issue in the Harz region despite the high value, tourists pay to clean and “untouched” nature. The usual aim of tourism marketing to gain more visitors should not lead to higher negative impacts of traffic.

Approach

The MobiHarz project comprises both empirical research and work packages (WP), which

implement a strategy to foster sustainable modes of leisure transport by optimising services and infrastructure as well as offering integrated information on tourism and mobility.

The empirical WPs have been finished, parallel to the empirical research the working groups started to implement an improvement of infrastructure, service and information in 2001. So the development of measures could be linked with empirical results.

Research design

The research design has been concentrated on the identification of target groups for different forms of soft mobility¹. The formation of target groups should help to better analyse and explain the mobility of tourists, improve transport demand models and – relevant for this paper – develop appropriate measures of mobility management by taking into account the attitudes and habits of the tourists.

According to the scientific knowledge, that structural data of persons does not sufficiently explain or predict their behaviour, the definition of target groups was based on attitudes and motivations. In the given context general attitudes (lifestyles) and leisure mobility orientations have been chosen. Besides, the usual structural data were collected, too.

The research was based on both qualitative and quantitative surveys in the touristic destination in the Harz as well as in the main catchment area for tourists (150 km resp. two hours of journey; "MobiHarz" State of the art, Brunsing 2001).

Before the quantitative survey took place, intensive qualitative interviews have been carried out by the Institute for Social-ecological Research (ISOE, Frankfurt). The aim was to explore the motives for Harz visits and the travel habits as well as the social background and main attitudes and preferences concerning leisure, travelling and information habits. In the following phase, quantitative surveys with standardised questionnaires were carried out both in the Harz destination and in the main catchment area, each with about 2.000 interviews. The identical items of both surveys had been empirically tested in another research project². In order to build lifestyle groups with different general orientations and attitudes towards mobility, a cluster analysis based on these items was carried out. The sample was clustered around ideal starter cluster based on the results of the intensive qualitative interviews. Seven lifestyle groups were distilled. In a 2nd step, these lifestyle groups were described with all the other attributes in order to get a comprehensive profile. The description was done separately in order to take into account the differences between the Harz visitors on the one hand and the interviewed persons in the catchment area on the other hand. The sample of Harz visitors is not representative, because it is methodologically not possible to get a random sample of visitors in a greater area without knowing the total number and structure of the Harz tourists. The given sample can therefore only be an approximative image of the visitors, even as the locations, where the interviews took place, are carefully chosen and cover all kinds of activities in the region.

Within the seven lifestyle groups, three target groups for measures of mobility management have been identified according to their affinity to 'soft mobility'. This attitude gives a notion of the potential for according measures. For example, the so-called "nature-related" (the 'label' tries to characterise the groups very shortly). The traditional attitude of these people goes with affection to nature. They want to avoid risks without feeling socially insecure. Walking is their preferred form of mobility and they have a positive attitude towards public transport. Leisure and car use are not closely related for this group.

Implementation of mobility management

MobiHarz tries to better promote the Harz region as an attractive destination, which can be explored by different modes of transport – either without using the car. So it tries to promote alternative modes of transport via information services. On the other hand infrastructure and services for "soft mobility" have to be improved in order to get a product, which can be successfully promoted.

¹ all transport modes except individual motorised vehicles

² Examples: „The meaning of life is for me to have as much fun as possible.“ (general social orientation) or "I can imagine to spent my spare time without car." (attitude towards leisure mobility). (ISOE 2002: "Leisure mobility styles", on behalf of the federal environment authority)

Optimising transport infrastructure and services for tourists

MobiHarz focuses on improving mobility offers for tourists in the Harz region. This includes the public transport network in the Harz mountains, the Rübeld railway line as well as walking in Wernigerode city, cycle routes and mountain bike trails in the region.

Public transport

Public transport in this mostly rural area has to be adapted to the requirements of visitors - without neglecting the daily needs of the locals. As there is no additional project funding for the transport operation, the given resources have to be re-allocated. The knowledge of the tourist structure (origins of trips like the main accommodation centres and the main attractions) should lead to restructuring the public transport (lines and schedules). As the bus service is normally oriented to students and commuters, i.e. only covers the morning, lunch and the (later) afternoon hours, there are capacities for leisure purposes during the working day and, more important, for the weekend.

In cooperation of the MobiHarz project with the transport operators and authorities, the public transport network in the district of Wernigerode for the weekends will be restructured in summer 2003 by introducing a structure of lines and frequencies (1-2 hrs) as clear as possible. Optimised connections between buses and trains are important to allow day excursions from the catchment area into the remote mountain areas.

During the season from April to October bus services run through the national park, where no private cars are permitted, with clean gas vehicles. An additional, free service are rangers on board, explaining environmental issues.

Event oriented mobility for visitors is also offered in original steam trains, especially to a famous mountain top (no motorised accessibility).

Besides, packages with several transport modes (different kinds of public transport and walking/hiking; biking) are offered to those visitors who prefer to reduce their own organisational effort.

If the transport with fix schedules does not reach the critical mass of demand, flexible services like arranged passenger transport (Taxi-Bus-Services) can be implemented in cooperation with local taxi companies. Flexible services are important to be able to offer a 'guaranteed ride home' in order to minimise the fear of constrained mobility.

The challenge for the concept for the Rübeld railway, threatened to be closed because of low passenger numbers, is to transform the often negative connotated use of collective transport to an event and make it a part of the activity scheme. The experience of a beautiful landscape, interesting technical details (technical heritage) and the tourist attractions along the railway are the factors for the joint marketing focussing on excursionists. Unfortunately external developments (a complicated tendering procedure, which changed several times due to political changes and the intention of the federal railways to close the electrical railway) disturbed the process. On the other hand, these developments raised the motivation of the tourism stakeholders and local authorities along the railway to foster the passenger figures. The local political pressure helped to persuade the regional government and the German Rail to invest into the railway and to increase the offer. As one result of MobiHarz, a joint flyer will advert the tourist attractions and the Rübeld railway.

Cycling and Mountain Biking

Cycling and mountain biking are touristic market segments with a high potential, but starting at zero. In order to foster these sustainable modes resp. making it more sustainable concerning the arrival, MobiHarz developed cycling routes, that have been adapted to three kinds of user with different criteria: less sporty ambitious cyclists, ambitious cyclists and mountain bike for more sports and risk orientated target groups. In cooperation with Wernigerode City and the National Park authorities signposting and information products will be realised in 2003. The advantages of combining tours with public transport are pointed out (short cuts, wheater).

Integrated information

In tourist destinations usually a lot of offers can be found, but particularly for the non-motorised visitors the effort of getting advice and information is a high barrier to visit this

region without a car. In contrast, motorised visitors are better informed due to the hegemony of car use.

Visitors have to be assured before the trip, that non-motorised mobility does not mean reduced mobility, but that mobility management offers the opportunity to be individually informed about mobility patterns according to the personal needs. This general approach is particularly fruitful for non-habit situations like trips and holidays in an unknown environment. It has been empirically shown, that the visitors informed themselves before their visit the longer they stayed in the destination. In the given case it has been supposed, that either visitors for one day could be reached by compact information and influence their behavior at least concerning further visits³.

In the Harz mountains mostly separately operating tourism agencies inform tourists about their very local area. The tourist agencies, particularly the help desks, are by far the most important source of information used by the Harz visitors during their stay. But, apart of some coach or steam train excursions, the mobility issue is not touched. On the other hand, the transport companies, which have a marginal information effect for visitors, are the only institutions dealing with public transport.

The implementation of the mobility management – the so called “HarzTourService” - had to be founded on the existing information and marketing structures in order to avoid greater financial efforts and to build on the given and widely accepted channels. An intensive communicative process started involving the responsible persons of the tourist information agencies, the transport companies and the authorities. This effort lead to broad and stable results with the explicit aim to last after the end of the project.

The HarzTourService as a *de-centralised mobility and tourism service* offers integrated information about activities, points of interest (POI), accommodation and their accessibility as perhaps the most important product for visitors. A brochure (*HarzTourGuide*) is offered at 20 HarzTourPoints in the district (the tourist information offices of all cities and villages, bus operator centre, railway stations and National Park information centres) as well as on the internet. The print media is complementary to the face-to-face information and can be purchased for a small fee and used on the way. This service includes information for the visitor about interesting details (e. g. opening time, fares/reductions, further information etc.), who so far had to contact fractal sources of information. The design is more traditional according to the target groups preferring this media channel.

The offers are arranged around topics and themes (e.g. culture & history, sports & wellness, nature, mobility). The empirical knowledge about information behaviour and needs of the target groups supported the development of this service on all levels: printed products for the more traditional groups, IT-solutions for the more innovative groups.

As it is not sufficient to deposit some flyers on the desk, the counter staff has to be motivated and trained. This is important because you break through professional competences and change daily work. Tourism staff should now inform on mobility options, public transport staff should inform about tourist attractions, the local tourist information should inform about all the regional offers.

On the longer run the network of distribution should become more dense. Accommodation companies and attractions will distribute the HarzTourGuide either. As the guide contains a lot of very detailed information, regular updates are absolutely necessary.

The internet version focuses the technically interested target groups. (Potential) visitors can plan their day in advance: they select simply what they want to do (activities and attractions) and are told how to get there by different modes of transport. Also visitors who arrived by car can be made interested for public transport by offering a combination of public transport trip, visit of attractions and walks/hikes. The system displays stops and stations nearby the POIs as well as the schedules and the walks to the stops. For hikes between two attractions a map and a profile of heights are produced. The chosen route for the day can be printed. Some tour suggestions will also be given, showing the variety of possibilities of this region with its long hiking tradition. The technical layout is according to the partialities of the target groups.

Comment: für welche Zielgruppe?

³ Only 15% of the interviewed Harz visitors were there for the first time, tourists more than excursionists.

To reduce maintenance costs of the system, the solution of a self updating system has been chosen. Interested tourism stakeholders can register and add their offer (hotel, attraction) by positioning it on an interactive map and adding further details.

Not only the services have to be eager for visitors, but also the fares and the ticketing. The *HarzTourCard*, which offers for three days free use of public transport in the region and reduced fares or free access to attractions, is promoted, too. Beyond this, efforts are made to develop a tourist card for the whole Harz Mountains destination.

Bikers and cyclists with their particular information request will not only be informed with brochures or on the internet about the route suggestions, but also about the attractions along the route and the opportunities of taking along the bike with public transports. These brochures, due to their large content not integrated in the *HarzTourGuide*, will also be offered at the *HarzTourPoints* and in bike shops and hotels interested in it.

Lessons learned

Joint research and implementation projects – does it work?

The regard that there is not 'the visitor', but defined groups of visitors with particular requirements is to be transferred to the implementation partners. As they usually play a more passive role or do not cross fixed competences and their decisions are usually not based on empirical data, it is hard to break through given structures, install new ones and integrate a lot of scientific information. Not only the different 'languages' used, but also the muddling through of implementation partners as well as the scientific correctness are to be related to each other. Another problem is, that some working packages started already before the end of the research phase, because working groups of partners, who rarely had contact before, need a lot of time to get agreements about the proceeding. These are critical aspects, that should not deny the necessity.

Target groups based on orientations and attitudes – a promising strategy for mobility management?

The scientific experiences show, that for the explanation of mobility behavior an approach beyond structural data is necessary, same for promising marketing activities. But the efforts made in this project are exceptional due to the funding. As in the normal case there are limited means for surveys, it is at least recommended to cross the borders of the habituated proceeding resp. target group(s) towards more differentiation resp. new target groups (concerning the Harz: to have also other groups in mind than only traditional elderly hiking).

Conclusion

To sum up, the project shows the opportunities of an integrated development of existing mobility and information/marketing structures towards a more sustainable mobility of visitors. The financial effort can be kept low, the more existing structures and products are integrated. To tackle the problems linked with the predicted rise of tourism and leisure mobility, new approaches and examples of best practises are needed.

ECOMM 2003, Karlstad, 21st to 23rd of May

Managing transport demand to attain sustainable transport demand and economic effectiveness – why and how?

**Strong partnerships to produce effective services for the traveller:
Swiss applications of promoting sustainable recreational traffic**

Workshop 1g: Services and products for the traveller

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1. Recreational traffic in Switzerland

Leisure – whether everyday or for day trips and holidays – is the most important reason for travelling (see table 1-1) and also the sector that displays the strongest growth. Mobility during leisure time is essential to keeping social relationships alive and also important factor in the economy (around 5% of Swiss GDP is generated by tourism economy). But at the same time, the associated volume of traffic (around 60% per cent of all travelled kilometres per year are due to leisure traffic, journeys to Switzerland by foreign visitors included) creates considerable problems relating desirable spatial development and the quality of the environment. The environmental problems (noise, air pollution, congestion) are strongly related to the still exhaustive car use for recreational activities (see table 1-2).

Table 1-1: Travel behaviour in Switzerland – some key figures (Year 2000)

| <i>purpose of travel (type of journeys)</i> | Average daily number of trips per person | Average daily distance per person (in km) | Average daily travelling time per person (in minutes) |
|---|---|--|--|
| <i>work</i> | 0.8 | 8.8 | 16.0 |
| <i>school / education</i> | 0.3 | 1.6 | 5.1 |
| <i>shopping</i> | 0.7 | 4.0 | 10.7 |
| <i>leisure</i> | 1.4 | 16.3 | 41.3 |
| <i>service / accompanied</i> | 0.2 | 1.7 | 2.9 |
| <i>business</i> | 0.1 | 3.0 | 4.9 |
| <i>others / unspecified</i> | 0.1 | 1.7 | 3.6 |
| Total | 3.6 | 37.1 | 84.5 |

Source: Swiss National Travel Survey, Microcensus 2000

Table 1-2: transport modes in recreational traffic (amount in terms of travelled distance) – Year 2002

| | |
|------------------|-------|
| on foot | 6.3% |
| bicycle | 3.2% |
| motorcycle | 2.4% |
| car | 67.8% |
| train | 11.3% |
| bus, trams, cars | 3.2% |
| others | 5.8% |

Source: Swiss National Travel Survey, Microcensus 2000

Swiss transport policy on a federal-level has concentrated its activities in commuter and long-distance traffic. But in the future leisure traffic will become one of the key topics of transport policy. For that reason the Federal Office for Spatial Development (ARE) was instructed to work with all of the federal agencies concerned to draw up a strategy outlining the principles and framework of a federal policy on leisure travel. As a part of a programme of action, the ARE supports – with other federal agencies in some cases – a range of practical projects aimed at ensuring the sustainable development of leisure travel. Although common efforts on a strategic level have only started recently, several applications on national, regional or local level yet exist. And in some of them mobility management plays an important role. In the following chapters a few, existing and promising applications promoting the use of sustainable modes for leisure activities will be presented.

2. "Veloland Schweiz – Cycling in Switzerland"

In 1995 the "Cycling in Switzerland" Foundation was founded with the aim of realising a national cycling network within the framework of a "Public Private Partnership" by 1998, with continuing future development. Since 1998 the target is extended towards the development of sustainable recreational and touristic offers in the "Human Power Mobility" field particularly in combination with public transport. Because of its national goals, the Foundation is under the supervision of the Federal Government. It is entered in the Berne-Mittelland Company Register and is regarded as being in the public interest.

Organisation structure

The structure of the Foundation is subdivided between a so-called *Foundation Board* and the *Project Management Committee*. In the Foundation Board representatives of different institutional organisation are included, like:

- Swiss Tourism Association and Switzerland Tourism,
- Federal Railways,
- Swiss advisory Bureau for Accident Prevention,
- Swiss Olympic Association,
- Swiss Cycling Association,
- Touring Club of Switzerland TCS, Swiss Transport Club VCS,
- Cycling Club of Switzerland IG,
- ATB Association for Transport, Sport and Recreation,
- Association of Swiss Manufacturers, Wholesalers and Importers in the Two-Wheeler Trade VGFI,
- all 26 Cantonal Administrations of Switzerland, represented by a delegate.

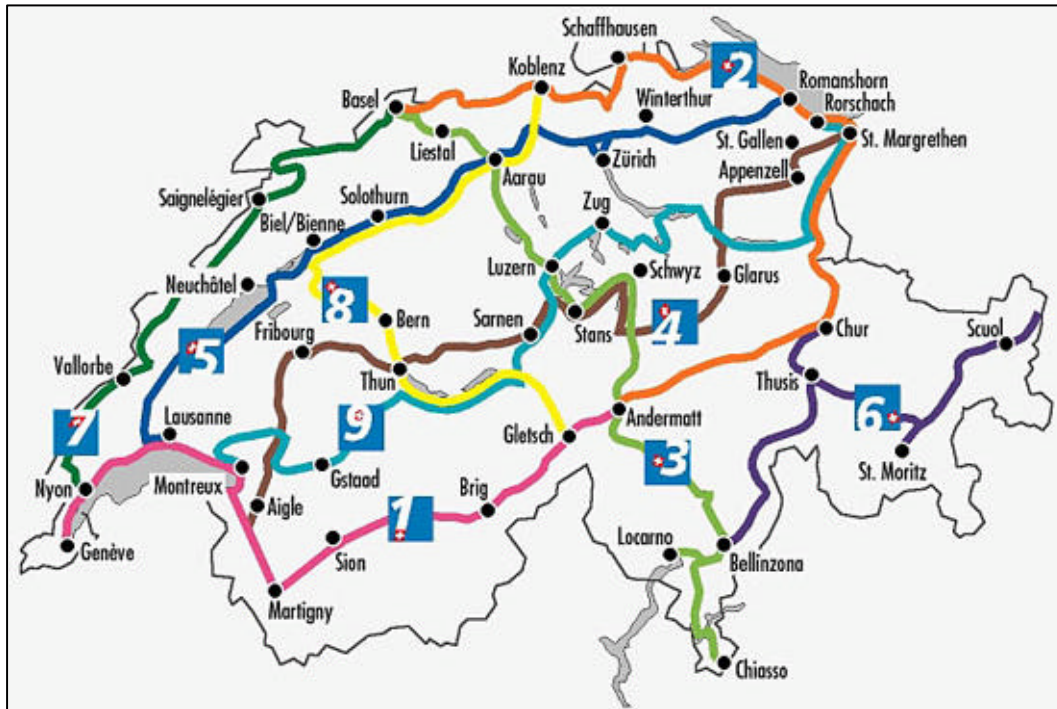
The Project Management Committee is responsible for the daily business and the members are the Swiss Tourism Association and the Cycling bureau, Olten. Beyond the Board members the Foundation receives financial support by:

- Energy Switzerland Programme of Federal Office for Energy,
- Federal Office for Economic Affairs,
- Federal Office for roads,
- Federal Office for Spatial Development,
- Fund for road security of the Swiss Federal Roads Authority,
- Action Plan Environment and Health of the Federal Office for Health.

Product

The main product promoted by the Foundation is the network of nine national cycling routes, with a total length of 3300 km (see figure 2-1). The routes are linking all the Swiss Regions, lead through captivating countryside, and are uniformly signposted. The network is supplemented by over 3000 km of regional routes.

Figure 2-1: Overview of the Nine Routes



Source: Cycling in Switzerland Foundation

Information tools

Interest cyclists have different tools at their disposition:

- Internet Web-Page www.cycling-in-switzerland.ch with basic information for each route, newsletter about novelties and information about construction activities at specific sites,
- printed maps and route guides (available at railway station, libraries, etc) for each single route with information on altitude and profiles, fotos and travel tips, list of hotels, restaurant, camping sites with the “Cycling in Switzerland” quality seal, list of sections recommend for cycle transport by rail, bus or ship.

Associated Partners – Seal of quality

A large amount of so-called “Cycling friendly” establishments are associated partners of the Foundation. They can be recognised from the uses by the seal of quality on a sticker or a metal plate at the entrance of the establishment. “Cycling friendly” means that the establishment provides:

- A selection of meals and refreshments especially geared to the needs of cyclists, larger portions of vegetables and carbohydrate-rich food on request,
- Accommodation with bath or shower also possible for one night only,
- A covered and securely locked space for the bicycle overnight (excl. camping sites),
- Facilities for washing and drying clothes and gear for overnight guests,
- Air pump and the most important tools for minor bicycle repairs,
- Information on local bicycle repair service stations, bike rental, and tourist information offices,
- Regional train, bus and boat timetables,
- Information on local and regional cycling paths.

Results so far

The results performed in table 2-1 show that the demand is continuously increasing. Between 70-80% of the trips made are one-day trips.

Table 2-1: Key figures on demand (1999-2001)

| | year | 1999 | 2000 | 2001 |
|---|------|---------|---------|---------|
| - Overall number of trips (in millions) | | 3.3 | 3.4 | 4.2 |
| - Overall number of km cycled (in millions) | | 140 | 155 | 133 |
| - Expenses of users in CHF (in millions) | | 137 | 138 | 170 |
| - number of overnight stay in associated hotels | | 330'000 | 340'000 | 680'000 |

Source: Cycling in Switzerland Foundation

3. "RailAway" of Swiss Federal Railways

"RailAway" was founded in 1999 as a daughter firm of Swiss Federal Railways. Due to the fact that more than 60% of the leisure trips are done with the private car, the company was established to fulfil following objectives:

- provide a large range of attractive and cheap offer of leisure activities feasible with the train target to different user groups,
- establish the brand "RailAway" with different market strategies,
- enlarge the market share of the Swiss Federal Railways within the leisure market,
- establish the position of "RailAway" within the overall structure of Swiss Federal Railways as an independent company,

Organisation structure

"RailAway" is a stock corporation with two shareholders. Those are the Swiss Federal Railways (70% of the capital) and Kuoni Reisen Holding SA (30% of the capital). Kuoni Reisen Holding AG is one of the biggest tour operators in Switzerland. RailAway is subdivided in several branch-offices. For the development and the daily business of each product one apposite branch-office is responsible. Beyond these product related offices others are responsible for financial and controlling issues and for overall communication activities (co-operation, PR, branding, market research). About 40 persons are working for RailAway.

Product

RailAway offers a wide range of leisure activities for different target groups and in different regions of Switzerland. The development of the products is an ongoing process based on regular studies on market research, which are made in-house. The main offers of the actual product range is shown in table 3-1. In principal the type of offer for all products is the same. It combines the train ride to a site with an additional product available at the destination itself, and this for a lower price than buying the single elements. Special offers for all products are made for groups (e.g. schools, sports associations) and for those RailAway offers also special leisure trips accorded to the wishes of a single group. Beyond the financial attractiveness of buying combined packages, a further advantage is that the package can be bought "all-in-one" at almost every railway-station in Switzerland or via the dedicated telephone-centre. Consumers have the advantage

Strong partnerships to produce effective services for the traveller: Swiss applications in promoting sustainable recreational traffic; *Workshop 1g: services and products for the traveller*

to select from a wide range of existing products and spending less time and efforts for planning their leisure activities.

Table 3-1: examples of the actual range of products offered by RailAway

| Product | Information |
|---|---|
| Snow 'n' Rail | combined packages for 31 ski destinations in Switzerland, includes price reduction for train ride from every train station to the ski-resort, for ski-tickets, for rental of skis or snowboards, etc. |
| Events (musicals, concerts, exhibition, fairs) | combined packages, including train ride from every railway-station to the place of the event and the entrance to the event, special price offers, almost every event of national importance is included |
| International | special fairs for the train ride to 17 cities in Italy, Germany, Austria, France and Holland from every railway station in Switzerland |
| Ticino | combined packages train and overnight stay in around 40 hotels of the Swiss Italian part of Switzerland (called the sunny-side of Switzerland), additional entrances to museums or castles, reduced costs on ship-rides, etc. |
| Nature, Culture | combined packages to important naturalistic zones or museums, including price reductions on meals at sightseeing restaurants, suspension railways, entrances to museums |
| RailAway Bike | combined packages for 14 regional bike tours, including train ride and bike rental for using on dedicated sections of the whole trip |

Source: RailAway

Collaboration rules with associated partners

The collaboration rules between each of the associated partners (e.g. hotels, bike rental-rental services, ski-shops) are fixed in a contract. The communication activities (e.g. Internet, print material, inserts in newspaper) are in charge of RailAway. The single partners have to provide logos, photos, etc. of their specific offer at their own charge. The price-reduction on the elements of the offer of RailAway and of the single partner are established in the beginning of the collaboration and can be changed periodically. Furthermore the partner has to guarantee that the personnel is well instructed about the RailAway offer in order to provide the customer with adequate information. The associated partner receives 1% of the in advantage defined turnover goals as a so-called "Kick-back".

Results so far

In the first 3 years of activities (1999-2001) RailAway has raised its market share from 14,9% (1999) to 16.3% (2001). In 2001 408'702 RailAway -Arrangements had been sold with a turnover of about 24 millions of CHF.

4. New Services to promote sustainable leisure trips within the Canton of Zug

The canton of Zug (20 minutes form Zurich by car or train) has several important leisure destinations, which on weekends are mostly frequented by families with children. As in whole Switzerland also in the Zug the car is the dominant used transport mode (around 70% of modal-shift) for leisure activities. In the framework of the EC project MOST (Mobility Management Strategies for the next Decades) Zug hosted a case study in tourism and leisure cluster. The aim of the project was (held between 2001 and 2002) to deliver new services for families living in the canton of Zug in order to promote the use of sustainable modes for sightsee-

Strong partnerships to produce effective services for the traveller: Swiss applications in promoting sustainable recreational traffic; Workshop 1g: services and products for the traveller

ing-trips within the canton, starting from the conditions that Zug has a well-developed public transport network and also a dense foot- and bike-path network.

Organisation structure

The main partners of the project were the official Tourism Office of the canton (Zug Tourism), the regional Public Transport Association (Tarifverbund Zug, and its main transport provider Zugerland Verkehrsbetriebe) and the Office for Public transport of the canton. Beyond financing the project each institution had a member in the project group. This group was led by an external consultant (synergo, Zurich) and his activities were financed by the Federal Ministry for Science and Education.

Implemented product

The implemented product has been 4 new round-trips, covering the different parts of the canton, feasible with different kinds of sustainable modes and connecting attractive sites for children (like playing-grounds, animal farms,). In comparison to car-use the round-trips had the advantage that the users did not have to go back to the starting point (where the car is parked). Furthermore the "selling-strategy" behind was, that if the round-trips are attractive for children they could play the role of multipliers convincing the parents to make the trips.

Information tools

The main information tool was a brochure on the round-trips containing the following:

- two pages of information about each round trip (including a map with the route, information about activities during the action days, information on permanent attractions on the route, and PT timetables);
- four *stamp cards* for children (one for each route), with questionnaires to parents relating to mobility behaviour on the back of the cards;
- two pages of information about the project;
- two pages of information about the entire public transport network in the region of Zug.

The information strategy carried out by the project group was extensive and focused, utilising both the mentioned brochures and conventional media channels:

- 10 000 copies of the information brochures were prepared, and were distributed to 16 public transport information and ticket sales centres, 15 bakeries, and 12 agencies of the Cantonal Bank of Zug;
- 500 posters advertising the action days were placed at all the points where the information brochures were available, at all schools within the Canton of Zug, and at various public spaces throughout the Canton;
- 20 000 flyers were distributed on all the buses of the Zugerland Verkehrsbetriebe, at schools and at the offices of Zug tourism. 500 of these copies were mailed to holders of the *Zuger Pass Plus* (public transport yearly season ticket);
- Advice and downloadable brochure on the Web-sites of Zug Tourism (www.zugtourismus.ch) and Zugerland Verkehrsbetriebe (www.zvb.ch);
- 160 posters with information to the final event placed in 80 busses and 20 posters distributed in all sales and information centres of the "Tarifverbund Zug";

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The launch of the project was announced at a press conference, held at the 24th of April 2002. The regional newspaper *Neue Zuger Zeitung* was the official media sponsor of the project. Two announcements appeared in this paper the days prior to each action day and two special announcements related to the final event.

Communication strategies

The project group was very convinced that for the promotion of the existence of the round-trips not only a passive strategy in terms of distributing brochures and leaflets would be successful. The information activities had to be supported by strategies to involve actively the target group (families with children). Something had to happen on the round-trips in order animate the target groups to do trips and to let them make their own experiences. At the end the end three elements (action days, stamp collection competition, final event) of active promotion were chosen for implementation.

Action Days

On the so-called two “action days” of each round-trip , special activities” where held (see table 4-1).

Table 4-1: overview of the activities during the action days

| Ennetsee (5 th and 26 th of May, 2002) | Gubel (16 th and 23 th of June, 2002) | Zugerberg (21 th and 28 th of July, 2002) | Frauenthal (18 th and 25 th of August, 2002) |
|--|--|--|---|
| Special event-points | | | |
| <ul style="list-style-type: none"> - Kickboard and Inline-Skate Rental Service (free of charge) - info-point with a person who explains the nature reserve - special play-ground corner - special eat-corner | <ul style="list-style-type: none"> - organised kickboard-races - visit of an animal farm - special play-ground corner - special eat-corner | <ul style="list-style-type: none"> - Kickboard and Inline-Skate Rental Service (free of charge) - tales-corner (4 women telling stories to the children) - special play-ground corner | <ul style="list-style-type: none"> - Kickboard and Inline-Skate Rental Service (free of charge) - visit of the farm of the Federal School of Technology - special play-ground corner - info-point with a person who explains the nature reserve |
| Special transport services | | | |
| <ul style="list-style-type: none"> - extra ship service | <ul style="list-style-type: none"> - bus-shuttle service - horse-tram shuttle service | <ul style="list-style-type: none"> - bus-shuttle service | <ul style="list-style-type: none"> bus-shuttle service boat-trip shuttle service |

Every local partner who participated at one of the action-days was contacted in advance to explain the idea of the project, to help them identify their possible contribution and to define the costs. The general attitude of businesses and individuals that were contacted was positive, and those that did not ultimately participate where either already occupied on the action days or did not had attractive contributions.

Stamp collection competition

A further element of active promotion was the so-called stamp-collection competition. Children had the possibility to collect 3 stamps on each round-trip. Those where placed at 3 different sites of each trip. To collect the stamps the trips had to be done entirely. The stamps had to be put in dedicated spaces on a dedicated part of the information brochure. The children had the possibility to deliver for every round-trip the dedicated “stamp-card” with the stamps and with the fulfilled questions, which the parents had to answer, to one of 12 information and sales centres of the public transport association (Tarifverbund Zug) placed in different municipalities of the canton. There they received for every round-trip a special gift. Furthermore the children had

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the opportunity to get a reservation of a plastic duck for the final event free of charge, if they at least delivered two "stamp-cards" of two different round-trips. The connection between stamp-card and questionnaire was made with the purpose to get the information about the round-trips needed from the parents. This was the only way to get in a cost-effective way in contact with the adults who made the trips.

Final Event

The project was concluded with a final event during the European Car Free Day (22nd of September 02), which was held at an important leisure destination nearby the city of Zug (Höllgrotten, Baar). The highlight of the event consisted in the "Duck – Race" on the river Lorze. Children, which made at least two round-trips, had the opportunity to bet on one of the numerated plastic ducks. Of course at the "Duck – Race" children, which didn't the trips had also the possibility to participate but they had to pay for each duck 1 Euro. The "owners" of the first twenty arriving ducks received a gift.

Results

The project group expected an attendance to the 8 action days of totally 800 people. In reality 452 persons made the trip during the action days. About 80% of the household used therefore sustainable modes. More successfully was the number of people at the final event. Around 700 persons took part, with a modal shift of 65% of public transport users, about 10% bikers, and 25% car-users.

5. Conclusions

The presented applications show that there is a willingness to provide professional products to the customers in order to promote the use of sustainable modes. Especially the mentioned nation-wide products "Railaway" and "Cycling in Switzerland" are well-developed products where important companies or public institutions are involved. In both of the products the strategies behind is to offer from "out of one-hand" services and information, which facilitate the use of sustainable modes for the customer. Those products have to be coupled with professional and wide-ranged promotion strategies. That the described products have a certain positive effect is due to the fact that the transports offer in terms of rail-network and bike-network is very well developed. This is the basic condition for all type of marketing and sales strategies in order to promote the use of sustainable modes, not only for leisure activities. With regard to effective partnerships the mentioned national applications show that the demand of collaboration between the different tourism and leisure related partners with the Swiss Federal Railways is very high. The main reason therefore is, that Swiss Federal Railways offers a large and huge communication platform where a lot potential clients can be tackled. The regional approach applied in Zug is very specific and the results achieved during the pilot project are not satisfying. But the partners involved will enlarge their offers – o course with lower financial efforts – providing round-trips for other target groups. Due to the fact that leisure activities have a broad range and that differs in space and time the market share, which can be tackled with new products will in general be limited, if at the same time restrictive strategies for car use are not applied. Positive examples therefore exist especially regarding the traffic management of large events. At the most music concerts or sports events of national importance parking restrictions from the local authorities are implemented, coupled with a good public transport offer and information services done by the Swiss Federal Railways and regional public transport providers in collaboration with the event-organiser.

ECOMM 2003 – 7th EUROPEAN CONFERENCE ON MOBILITY MANAGEMENT

CAMBRIDGESHIRE TRAVEL FOR WORK PARTNERSHIP: PROGRESS SINCE ECOMM 1998

WORKSHOP 1F: Effective Partnership – Quality partnerships to generate demand for alternative transport.

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1.0 INTRODUCTION

1.1 Background

This paper follows one given by David Arkell of Cambridgeshire County Council at ECOMM 1998¹. We hope that the benefits of partnership working in the mobility management field are evident from our Partnership's achievements since 1998. This paper presents these achievements and is realistic in its approach, recognising where hindsight has allowed lessons to be learned as well as where success is noteworthy.

2.0 THE TRAVEL FOR WORK APPROACH

2.1 Travel for Work Partnership (TfW)

TfW was born in October 1997. It evolved from, and still incorporates, the previously existing Cambridgeshire Cycle Friendly Employers Partnership. It is seen in the local area, and more widely, as a unique² example of effective partnership working in the travel planning field. TfW's partnership status was highlighted in the 1998 paper as being useful in allowing the appointed officers a degree of independence in their relationship with local employers. This situation remains the same in 2003. Employers sometimes more readily accept advice and encouragement if it is seen as being independent from local government.

TfW is a partnership of the following funding organisations;

- ? Addenbrooke's NHS Hospital Trust – *a large campus on the outskirts of Cambridge comprising a teaching hospital, university departments, and private health and research bodies, employee accommodation etc. (7,000+ employees)*
- ? Cambridge City Council – *a first tier local government organisation with offices in the centre of Cambridge City (1,200+ employees)*
- ? Cambridgeshire County Council – *the second tier local government organisation – offices around the county but with a concentration of central management offices in Cambridge City (3,000+ employees)*
- ? Cambridge City NHS Primary Care Trust – *implementing health improvement initiatives in the National Health Service – at various sites around Cambridge (450+ employees)*

¹ European Conference on Mobility Management 1998, *Changing Travel Behaviour through Innovation and Local Partnerships – Conference Proceedings*, PTRC Education and Research Services Ltd.

² The majority of local authorities now employ travel plan co-ordinators as part of their core staffing. TfW is unique in that it is a *partnership*.

? University of Cambridge – *the organisation of college ‘departments’ (as opposed to the University Colleges, which are largely autonomous). Many sites within and around Cambridge (6,000+ employees)*

? South Cambridgeshire District Council - *a first tier local government organisation based in Cambridge (350+ employees)*

and the following non-funding organisations;

? The Cambridge Cycling Campaign – *a local organisation of volunteers which campaigns for improvements in resources and facilities for cyclists in the Cambridge area*

? The Cambridge Chamber of Commerce – *a local organisation which acts for and supports local business*

? The Council for the Protection of Rural England – *the local representatives of a charity organisation, which campaigns for the protection of the English countryside and promotes sustainable development practices*

? The Government Office for the East of England - *represents the work and interests of nine central government departments. It works with regional partners and local people to help deliver the Government's central aims in the Region.*

The Partnership employs a full-time Development Manager and a part time Project Officer. A steering group comprising representatives of all the above organisations sets TfW's aims and objectives.

2.2 Aims

TfW exists to help businesses achieve positive modal shift³ away from single occupant car use to environmentally preferable forms of transport. This is achieved through the production and implementation of site-specific travel plans. The associated aims are a reduction in congestion, improvements in local air quality, improvements to the local environment and reduced business costs.

2.3 Membership of Travel for Work

There are now over 60 local organisations that are considered to be TfW employers⁴. Membership is free to the employer. All members have access to the advice of the Development Manager and Project Officer. Member employers receive quarterly newsletters and have regular employer meetings. They have access to a yearly internet based travel survey and receive a report from TfW analysing their survey results. They are also kept up to date, via email networking, on current travel planning approaches, developments in transport infrastructure and public transport.

3.0 PROGRESS SINCE ECOMM 1998

3.1 Wider partnership working

From the initial steering group of six employers, a further four have joined since 1998 (see 2.1). These diverse organisations work very well together. The fact that they are willing to give their time, and in some cases money, to TfW reflects the importance that travel planning is given by the steering group organisations. Employers hold a justifiable perception that TfW has authority as a result of being a partnership.

The core network of TfW employers currently stands at over 60. It is estimated that over 40,000 employees are represented throughout the network, over 15% of the workforce in Cambridgeshire (UK National Census 2001). With the limited personnel resource available to TfW, it is recognised that the core influence of the Partnership will be at an organisational level, working with senior management on the business, environmental and social cases for travel planning. However, through the advice and

³ *Modal shift* is the movement of commuters between the different types (modes) of transport

⁴ A TfW employer is one who has sought help and advice in the production and implementation of a travel plan.

guidance of TfW on an organisation's travel plan, all employees within that organisation will be influenced, to a varying degree, by this input and the resulting initiatives developed.

3.2 Positive survey trends

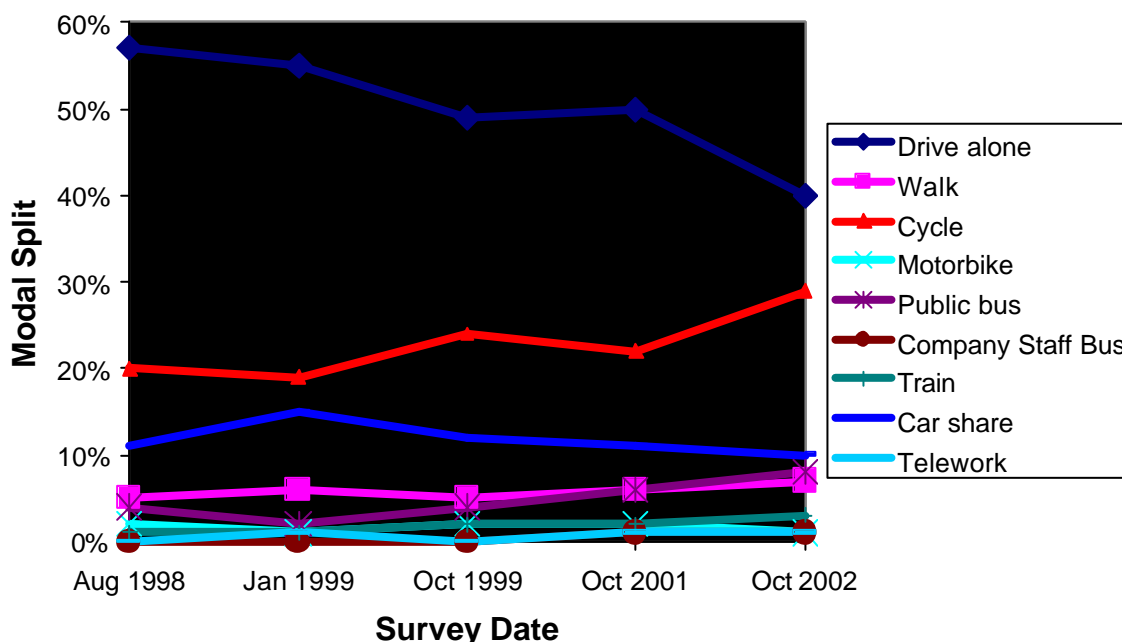
TfW, in partnership with information technology professionals at Cambridgeshire County Council, has undertaken a number of 'Travel for Work' surveys since August 1998. Since October 1999, these have occurred on an annual basis, and today the majority of forms are completed online via the TfW website (www.tfw.org.uk). The survey is also available in paper format for those employers or employees without access to the internet (see Appendix A). The surveys, undertaken on a voluntary basis, ask respondents for details of travel patterns during one working week in October.

Results from the October 2002 survey show a continuing positive modal shift amongst TfW employees towards environmentally sustainable forms of travel. Table 1 and Figure 1 present the trends observed since August 1998.

Table 1: Cambridgeshire Travel for Work Partnership survey results (August 1998 – October 2002)

| | Aug 1998 | Jan 1999 | Oct 1999 | Oct 2001 | Oct 2002 | Trend |
|-------------------|----------|----------|----------|----------|----------|-------|
| Drive alone | 57% | 55% | 49% | 50% | 40% | -17% |
| Walk | 5% | 6% | 5% | 6% | 7% | +2% |
| Cycle | 20% | 19% | 24% | 22% | 29% | +9% |
| Motorbike | 2% | 1% | 2% | 2% | 1% | -1% |
| Public bus | 4% | 2% | 4% | 6% | 8% | +4% |
| Company Staff Bus | - | - | - | 1% | 1% | +1% |
| Train | 1% | 1% | 2% | 2% | 3% | +2% |
| Car share | 11% | 15% | 12% | 11% | 10% | -1% |
| Telework | 0% | 1% | 0% | 1% | 1% | +1% |

Figure 1: Cambridgeshire Travel for Work Partnership survey trends (August 1998 – October 2002)



Note: October 2000 figures are not available because no manager was in post at the time of the survey.

Source: Cambridgeshire Travel for Work Partnership.

Since 1998, drive alone commuting has decreased amongst TfW employees by 17% to 40% of journeys to work. There has been an increase in the proportion of cycling trips (from 20% to 29% of journeys).

This perhaps reflects the Cambridge-based⁵ nature of TfW employers and, as a result, could not be seen as representative of Cambridgeshire as a whole. However, other environmentally preferable modes have also seen an increase in levels, to a lesser extent. Most notably public bus travel has increased from 2% in January 1999 to 8% in October 2002, mirroring local improvements to the main bus services within Cambridge. Critically, the national trend for car commuting is increasing with bus travel decreasing – this is exactly opposite to the TfW survey trends.

When compared to travel to work figures both on a national and local scale, the TfW survey results further illustrate the positive impact the work of the Partnership is having (Table 2). When reviewing these figures we must recognise that the TfW survey is of employees in organisations that have put effort into travel planning measures. The national and local figures will be of all employers, many of whom have yet to take this step.

Table 2: Journey to work figures – national, local and Travel for Work survey figures.

| | England & Wales | Cambridge City & South Cambridgeshire* | 2002 TfW Survey |
|-----------------------------|-----------------|--|-------------------------|
| Work mainly at or from home | 9.2% | 10.1% | - |
| Teleworking** | - | - | 1% |
| Train | 4.1% | 2.8% | 3% |
| Bus/Mini-Bus/Coach | 7.4% | 4.5% | 8% |
| Motorcycle/Moped/ Scooter | 1.1% | 1.3% | 1% |
| Driving a car or van | 55.2% | 52.2% | 40% |
| Passenger in a car or van | 6.3% | 4.3% | 10% |
| Bicycle | 2.8% | 14.7% | 29% |
| On foot | 10.0% | 9.2% | 7% |
| Survey population | 23,627,754 | 275,685 | 18,208 work journeys*** |

Sources: UK National Census 2001 and Cambridgeshire Travel for Work Partnership.

* The majority of TfW employers are located within the Cambridge City and South Cambridgeshire local authority areas. These figures have therefore been combined to provide a closer geographical comparison with the TfW survey.

** The Travel for Work Survey records the proportion of work journeys replaced by *teleworking* (defined as work undertaken away from the main employer site).

*** To enable comparisons, 18,208 trips equates to a survey population of 3,884.

3.3 Maintaining a dialogue

Communicating information and maintaining a dialogue with all TfW employers is an important element within the Partnership. Since 1998 a number of communication mechanisms have been established:

- ? A dedicated website (www.tfw.org.uk) providing background information on the work of the Partnership and how to develop travel plans.
- ? An annual TfW report looking at the previous year's events, initiatives and progress and looking forward to planned work.
- ? Quarterly newsletters to the employer network and key regional figures providing up-to-date information on initiatives.
- ? Provision of regular news and information via e-mail circulation groups, both at an employer network level and a steering group level.
- ? Regular steering group meetings to provide guidance and support to the TfW posts running alongside regular employer network meeting, to facilitate networking and an exchange of information and best practice.

Significantly over the years, the Travel for Work Partnership has developed and maintains a strong and recognisable brand image within the business community. This has helped to raise the profile of the Partnership and the work that it does.

⁵ Cambridge is well known in the UK and further afield as a City with an existing strong culture of cycling. That TfW employers continue to improve the proportion of employees cycling to work is therefore impressive.

3.4 Case Studies

3.4.1 Addenbrooke's NHS Trust

The Addenbrooke's NHS Trust used TfW expertise in the initial stages of developing its 'Access to Addenbrookes' strategy. Its very size has allowed strong negotiating capacity with local planning authorities and transport service providers. A recent project has seen one of the hospital's car parks transformed into a small bus station. The Trust's developments in the travel planning field are now used as a benchmark model for many similar sized, complex institutions. Since 1998 Addenbrooke's Hospital NHS Trust has become one of Britain's most influential travel planners both within the health service and more widely; TfW now helps other organisations to consider using several of the innovative initiatives developed by Addenbrookes.

3.4.2 Teleworking Toolkit

The TfW survey results show that teleworking is still at a low level when compared to the national 'work at home' figure. TfW felt that some help was called for to help employers investigate the possibility of allowing employees to do more work from home. In 2001 TfW, with partnership funding from the East of England Development Agency (a government agency concerned with promoting the economic well being of the Eastern region), developed advice in the form of a *Teleworking Toolkit*. The toolkit is available either on the website (www.tfw.org.uk/teleworking/) or in booklet form.

3.4.3 Take a Stand

With partnership funding from the Cambridge City Council Environment Programme and Cambridgeshire County Council, TfW has initiated and managed this project. *Take a Stand* provides matched funding for employers in the Cambridge area to provide additional cycle stands at their premises. TfW advises on the types of stand, location and spacing. In 2002/03, £7,000 has been split between two charities and a commercial science park.

4.0 TRAVEL FOR WORK TODAY

The following is a snap shot of the current project in progress:

4.1 CamShare (www.camshare.info)

The biggest project ever undertaken by TfW has been the CamShare car sharing system. The TfW steering group decided a countywide car sharing facility would provide a useful tool for local employers and that it was an appropriate service for TfW to provide. Set-up funds were granted from the County Council Local Transport Plan⁶. In February 2002, after a thorough tendering and evaluation process a contract was awarded to a software company to adapt existing car sharing software to meet the needs of TfW employers. A branded website was developed with the help of a local graphic design company.

The service was launched at a high-profile event in August 2002 when five 'first tranche' employers, including four steering group members, went live on the Internet. These employers have acted as a pilot project to ascertain the effectiveness of the scheme.

4.2 How it works

Employers pay a nominal site fee to register on the service. They also pay a yearly license fee, which is based on the number of 'potential users' of the system in their employment⁷.

An employee completes an on-line registration form and personal car share profile at www.camshare.info. A search is made to ascertain whether the employee can be 'matched' with any potential sharers on the system. If a match is found, the employee sends the potential sharer an email to his or her workplace (for security purposes no home contact details are used). If a match is made the

⁶ The Cambridgeshire Local Transport Plan is a vision and strategy document for integrated transport. It provides the basis for investment in strategic road and rail routes, and transport in the Cambridge area, market towns and the County's rural areas.

⁷ A 'potential user' is defined as an employee who has access to the Internet and who therefore has the *potential* to register as a car sharer on the CamShare system.

sharers will decide how to make the necessary arrangements. To assist this process the CamShare website provides a series of helpful 'do's and don'ts' – these are concerned with making sure all sharers are safe, that the financial side of sharing is equitable (and does not fall foul of the taxation system) and that the car sharing environment is a positive one (smoking and in-car entertainment are considerations here).

4.3 Experience so far and lessons learned

The first tranche employers have a total of over 13,000 'potential users'. 350 potential users have actually registered on CamShare, and of these 230 are live on the system at the time of writing. Activity reports from CamShare show that in the quarter from 28 November 2002 to 16 January 2003, 161 searches were made but only 2 emails were sent seeking car sharers.

Although this has been disappointing, matches could have been made within organisations without using the CamShare email process. Also research shows that many car sharing schemes *report growth over time*' (Department for Transport (2002), *Making Travel Plans Work – Research Report*, Her Majesty's Stationery Office). Getting a critical mass of registered sharers is essential. Once achieved matching sharers is easier and the success of the scheme breeds further success.

The research also shows that the most successful employer based car sharing schemes provide incentives to share (dedicated car parking, free gifts, exemption from car park charges etc). These are promoted assertively to the staff. CamShare is unique in being a *single* scheme for *many* employers. As a result, promotion of the scheme using co-ordinated incentives is limited due to the variety of employer organisations. Employers are encouraged to provide local incentives for their employees to car share. It is natural that some have more resources to devote to such promotion than others.

Turning to another aspect of the scheme, CamShare was initially set up to search for matches solely within an employer's site. It quickly became obvious that the number of matches would be significantly increased if searches were possible across the employees of several organisations located in the same geographical area (for example, the city centre). TfW is in negotiation with the software provider to enable this to happen.

Finally, TfW is currently negotiating a Service Level Agreement (SLA) with the software provider. This will state clearly the terms and conditions of the contract and what each party can expect from the other in the day-to-day working of the contract. With the benefit of hindsight, if TfW were to launch a similar scheme today the SLA would be negotiated *before* the signing of the contract, even if this meant a delay in launch of the scheme. Undertaking the exercise at this stage is interesting in that, although much of the SLA is not contentious, there have been assumptions made on both sides that have needed quite detailed negotiation.

Despite early problems there remains a strong case for a County-wide car sharing facility. There is evidence that commuters are travelling further distances to work – the average distance between home and work increased by 17% from 7.2 miles in 1989/1991 to 8.5 miles in 1999/2001⁸. There is also a projected increase of new employees in the Cambridge area (see 5.1). We are convinced, therefore, that there is a need for such a service for local employers and their employees. TfW is looking forward to re-launching CamShare in 2003.

5.0 CHALLENGES FOR THE FUTURE

5.1 Strategic Policy and Planning

The continued growth of Cambridgeshire's economy, population and housing will increase the pressure on the county's transport network and infrastructure over the next decade and beyond.

The Cambridgeshire and Peterborough Structure Plan Draft Deposit⁹ forecasts that Cambridgeshire's population will increase by 94,900 by 2016 (on 1999 levels) with nearly 90% of this increase occurring

⁸ Department for Transport (2003), *Personal Travel Factsheet 3: Travel to Work in GB*, (January 2003)

⁹ The Structure Plan is the strategic framework for growth in the Cambridgeshire and Peterborough areas. The Plan covers the period from December 1995 through to 2006. It indicates how much land will be needed for homes, offices, factories, shops etc. and ways in which these requirements are to be balanced with the need to protect the

in the Cambridge Sub-Region¹⁰. To accommodate this projected population growth, 57,400 new houses are forecast to be built together with an increase in employment of 52,320 employees.

The role of TfW within this regional development context will clearly grow in scale and importance. The projected increases in employment and population will lead to new employers requiring travel plans through Section 106 agreements¹¹ as development will lead to more commuter journeys. The Partnership will be an important resource for developers and employers in steering them through the development and implementation of travel plans (see 5.3). Alongside this, the development and expansion of employer-specific initiatives (such as CamShare and the teleworking toolkit) will enable new and existing employers to provide more travel choices for employees.

A new Local Transport Plan for Cambridgeshire (to be submitted to Government in July 2003) will recognise the growing travel demands and pressures on the County. It is hoped that further funding for Travel for Work Partnership schemes and initiatives can be secured through this process.

5.2 New travel planning techniques

There is an increasing focus and recognition of the role new travel planning techniques can have in achieving modal shift.

Cambridgeshire County Council and Addenbrooke's NHS Trust are currently piloting one such scheme targeting new recruits at both organisations with individualised travel advice. TfW is acting as an independent consultant to the project, helping to provide an overall picture and input to the scheme. Funding for the one year project is provided by central Government.

The vision is to expand beyond the two pilot organisations to other TfW employers, especially in terms of providing best practice guidance. The final evaluation of the project will determine the potential successes of the technique and the viability of making it a core TfW scheme.

5.3 Websites

TfW will be improving its websites over the first part of 2003. This will see a regularly updated format allowing for greater interaction with the business community. The Partnership is considering the provision of a series of travel planning tools on the site, including down-loadable travel plan templates for a variety of employer types, a travel plan evaluation tool and links to other web based help.

6.0 TFW IN 2010?

6.1 Closer links with the planning system

Current Department for Transport research¹² highlights the potential for effective travel plans to be produced as a result of a developer seeking planning permission. Securing such travel plans through the planning process is, the research suggests, at '*an embryonic stage*'. TfW is ensuring that it is kept in mind when local authorities are considering this new and exciting area. We feel we are ideally placed to assist in the production of these plans as we sit between employer/developer and the planners. We are able to facilitate dialogue on the plans to ensure that softer, employee-based initiatives are considered along with infrastructure issues and the need to achieve planning approval.

6.2 Partnership working

The great benefit of this partnership organisation is the visible collaboration between large local employers, local government and the voluntary/charity sector. The business community is impressed with and takes notice of this factor. The downside up to this point has been that the funding organisations, for a variety of reasons, have not felt able to commit funding beyond a 12-month period.

environment for present and future generations. The Structure Plan is currently subject to review and as part of this process a Draft Deposit Structure Plan was published in March 2002.

¹⁰ Cambridge Sub-Region consists of Cambridge and the ring of market towns surrounding it.

¹¹ Section 106 (of the Town and Country Planning Act 1990) is a legal mechanism to secure highway improvement works, or financial contributions to transport schemes, necessitated by development proposals from developers.

¹² Department for Transport & Office of the Deputy Prime Minister (2002), *Using the planning process to secure travel plans*, Her Majesty's Stationery Office.

One outcome of this has been the lack of continuity in the officers of the partnership, who have all been employed on 12-month contracts.

This has changed with the recent appointment of a new Development Manager on a three-year contract (underwritten by the County Council). This will allow TfW a period of consolidation and the ability to engage in longer term planning. We are convinced that by 2010 the need for TfW will ensure that it remains the pro-active and vibrant resource it has become since 1998.

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APPENDIX A

Travel For Work Questionnaire

The survey asks some simple questions about how you travel to work. Information supplied is confidential. When you fill in the form (which should take less than 2 minutes) you will be entered into a prize draw. Please fill in this survey **for the journeys that you made to and from work for the week Monday 8th October to Friday 12th October inclusive**. Please complete and return the form to the person in your organisation who provided it by Friday 19th October.

| | | | | | | |
|---|-------|--------|--------|--------|--------|-------------|
| What is your home postcode? (write in) | | | | | | |
| What is your work postcode? (write in) | | | | | | |
| How many days do you normally work each week? (circle the correct answer) | 1 Day | 2 Days | 3 Days | 4 Days | 5 Days | 6 or 7 Days |

Please answer the following questions for your journeys to and from work for the week Monday 8th October to Friday 12th October (i.e. five days). (circle the correct answer) We are only interested in the longest part of each journey (by distance travelled).

| | | | | | | |
|---|------------|---------------|---------------|---------------|--------------|---------|
| How many days did you walk to work? | None | 1 Day | 2 Days | 3 Days | 4 Days | 5 Days |
| How many days did you cycle to work? | None | 1 Day | 2 Days | 3 Days | 4 Days | 5 Days |
| How many days did you motorbike to work? | None | 1 Day | 2 Days | 3 Days | 4 Days | 5 Days |
| How many days did you take a public bus to work? | None | 1 Day | 2 Days | 3 Days | 4 Days | 5 Days |
| How many days did you take a company staff bus to work? | None | 1 Day | 2 Days | 3 Days | 4 Days | 5 Days |
| How many days did you take a train to work? | None | 1 Day | 2 Days | 3 Days | 4 Days | 5 Days |
| How many days did you drive on your own to work? | None | 1 Day | 2 Days | 3 Days | 4 Days | 5 Days |
| How many days did you car share to work? | None | 1 Day | 2 Days | 3 Days | 4 Days | 5 Days |
| How many days did you telework ? | None | 1 Day | 2 Days | 3 Days | 4 Days | 5 Days |
| Did you use Cambridge Park and Ride as part of your journey? | No | Yes | | | | |
| Did you use Park and Cycle (at the West Cambridge site) as part of your journey? | No | Yes | | | | |
| On average, how long did it take you to get to work (i.e. one way only) each day? | 15 minutes | 16-30 minutes | 31-45 minutes | 46-60 minutes | Over an hour | |
| How much did you spend on your commute for that week? | nothing | Less than £5 | £5-£10 | £11-£15 | £16-£20 | £21-£30 |
| | £31-£40 | £41-£50 | Over £50 | | | |

The survey has been organised by Cambridgeshire County Council and the Travel for Work Partnership. If you would like to be entered into the prize draw (there are over £200 of prizes) please write your name and the name of your employer below, to help us identify you should you win. Thank you very much for completing the survey.

TRANSPORT DEMAND MANAGEMENT NEW STYLE
- from transport demand management to location accessibility -
(workshop: Quality partnerships to generate demand for alternative transport)

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1. INTRODUCTION

Transport demand management¹ policy has a history of more than 10 years in the Netherlands. Central government has used transport demand management since 1990 to tackle a major element in the problem of accessibility, i.e. commuter traffic. There have been various shifts in emphasis over that ten year period, from a largely centrally managed approach to a more decentralised one and from an approach directly aimed at employers to one aimed more at adjacent areas of policy.

All in all, the results have been disappointing in terms of reaching targets. In 1999 about 6% of the target group (companies² with more than 50 employees) were actively using transport demand management in the Netherlands (AVV, 2000). Apart from a few good initiatives, the need for transport demand management is clearly not widely recognized by companies. This therefore begs the question: to what extent has the policy been effective over this ten-plus year period and what does that mean for new policy? The policy needs reviewing, not just in the light of this ten years of experience, but also because there is a clear shift in present-day perceptions of public and private initiative. Public authority management does not always appear to be effective and is generally very much supply-oriented. By contrast, private initiatives are more demand-driven and can make use of the expertise available within the private parties to bring about process and technology innovations. Government support is sometimes necessary for this, and this is where the added value of a Public-Private Partnership (PPP) comes in. Experience with PPP structures has already been built up in major projects, particularly in infrastructure and property development, but this has hardly been the case, if at all, in transport demand management.

This paper will take a closer look at the developments outlined above and examine the consequences for transport demand management and transport demand management policy. In section 2 we will look back over transport demand management policy in the Netherlands since 1990 to the present. In section 3 we will look at how the private sector partners view the concept; what is the value of mobility and the accessibility of their location in terms of their own interests? It will be argued that companies are not so much interested in transport demand management as in working conditions, cost reduction and customer service, etc. Section 4 will consider the issues of what role policy can still play in transport demand management and how this affects the public and private parties. This will result in a vision, in which transport demand management will be presented as an integral part of much wider issues. Examples will be used to illustrate this vision. Finally, in section 5 we will draw some conclusions.

2. TRANSPORT DEMAND MANAGEMENT POLICY IN THE NETHERLANDS: 1990-2002

When we look at the period 1990-2002, transport demand management policy in the Netherlands can be described on the basis of a number of observations, i.e.:

- from central steering to decentralised activities;
- voluntary but ambitious policy goals;
- integrated transport demand management;
- providing a certain level of facilities.

¹ Transport demand management is an instrument which companies (i.e. employers) can use to improve their own accessibility and to promote selective care use.

² Whenever the word 'companies' is used in this paper, this refers to companies, institutions or any other organisations which function as an employer. Companies which supply products and services will be referred to in this paper as 'industry'.

From central steering to decentralised activities

Since the mid-1990s the relationship between the various tiers of government has drastically changed in the Netherlands, not least in the area of traffic and transport policy. While at the start of the 1990s central government still had an important steering and decision-making function, with the move towards decentralisation of financial resources, the provincial and municipal authorities have gained greater powers since 1 January 2000. This decentralisation has allowed the provincial and municipal authorities to bring policy more into line with regional needs and interests. This is shown by the wide variety of regional traffic and transport policies.

This development has clearly had repercussions on transport demand management. The regional differences are considerable. First of all, there are differences in setting priorities. Not every region attaches the same importance to transport demand management. In those places where the problems are most acute we find the most opportunities for transport demand management and more emphasis is accordingly placed on the subject in policy. There are also clear regional differences with regard to the content of the transport demand management policy itself. These differences can be seen in the relationship with other policy areas, as well as the methods and contacts with companies.

Voluntary but ambitious policy goals

In the Netherlands transport demand management is not directly associated with legislation. It was deliberately decided to do it this way, both because of the limitations of rules and regulations and because of what a voluntary approach was expected to achieve. It was believed that the accessibility problems were such that companies would recognize the urgent need for transport demand management. To underline this, ambitious policy goals were also formulated in the first half of the 1990s. It has already become clear that these expectations were rather over optimistic: the number of active companies has remained below or even well below the targets set in policy.

The municipalities still have ways of demanding transport demand management from companies through flanking policy. However, they make little use of this avenue, possibly because of the potential impact on their competitive position relative to other municipalities.

Integrated transport demand management

Although transport demand management was primarily seen as an instrument for improving accessibility, it was not long before links were made with other areas of policy than just traffic and transport. Policy on spatial planning, the environment, the economy and employment, as well as parking also offered useful leverage for transport demand management. This combination has, to some extent, led to a development in which transport demand management can potentially be used as a negotiating tool between the authorities and companies e.g. transport demand management in exchange for an environmental permit. This potential is already being exploited in some places through covenants, although in practice such processes are often long and drawn out. This is partly because companies do not always see the necessity for such agreements and it also partly depends on the implementation and degree to which they can be enforced.

Providing a certain level of facilities

Transport demand management in the Netherlands has mainly consisted of steering supply, both before and after the decentralisation of tasks. For example, a national network of regional implementing bodies (VCCs) has been created. These bodies operate as intermediaries between government, industry and employers. Their function is mainly to oversee the implementation of effective transport plans within companies, if necessary supported by government and industry. After the decentralisation, these VCC bodies were steered and funded by the regional authorities. This resulted not only in different working methods between the VCCs in each region, but also created uncertainty with regard to future funding.

Besides setting up the network of VCCs, technical innovation was encouraged through a subsidy scheme. The scheme was mainly intended to encourage the development of products and services to benefit public transport and other alternatives to car mobility. A number of subsidised projects has actually resulted in innovation; the true market value of these products will be demonstrated in the coming period.

Conclusions after more than 10 years of transport demand management policy

What has all this led to? The assumption was that by offering a certain level of facilities transport demand management would be embraced by employers. The policy has certainly borne fruit in terms

of the level of facilities. A network of implementing bodies (VCCs) has been created, innovation is encouraged and the subject has certainly been put on the traffic and transport policy agenda. A great deal of knowledge and experience has also been garnered through research and from pilot projects.

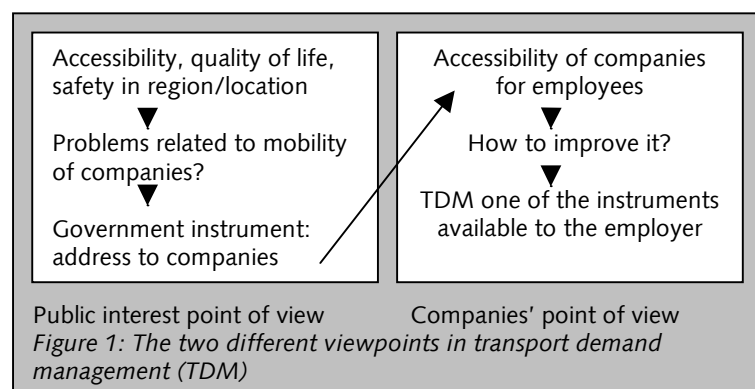
With regard to the number of active companies however, it has to be said that this has remained very small and that the envisaged policy effect on car use has not been achieved. It may justly be concluded therefore, that transport demand management has not been effective.

What conclusions can we draw from this? That transport demand management is ineffective? That would probably be going too far. Research has in fact shown that a number of transport demand management measures³ which are relatively easy to introduce could already result in an average reduction in car use of 7% (Novem, 2002). What we do see, however, is that despite supply management by the authorities, it is difficult to get companies to take the step to implement transport demand management. Clearly there is still not a sufficient sense of urgency among companies to take this step.

By extension, it is clear that transport demand management can be seen from two different points of view, i.e. from the companies' viewpoint and from the public interest viewpoint. Transport demand management is primarily about balancing the accessibility and other interests of employers and employees at a commercial level, or the companies' viewpoint.

Considered from the public interest point of view however, it is sometimes desirable to make transport demand management a policy topic. Congestion, parking

problems and environmental nuisance may be the triggers which lead to this. Transport demand management then becomes an instrument which the various tiers of government can use to make agreements with companies about mobility. In this case the degree of monitoring and enforcement will determine to what extent companies actually feel the need to tackle transport demand management.



Transport demand management in the Netherlands has so far been closely connected with policy-related and supply management approaches. Although something has been achieved at this level, the essential step required for transport demand management has never really been taken, i.e. the step towards the companies. Achieving a certain mass (or a particular share of active companies) has not happened. Clearly companies do not (yet) feel a sufficient sense of urgency to tackle transport demand management. The question in this context is when will companies actually feel sufficient urgency to want to invest in transport demand management? Section 3 will consider companies' attitudes toward accessibility and will look at the question of when companies will be willing to invest in transport demand management.

3. TRANSPORT DEMAND MANAGEMENT: A MATTER OF PRIVATE INITIATIVE

The results with transport demand management (expressed as the number of active companies) so far

A recent survey of 954 companies in industry and B-to-B services conducted by the employers' association in the Netherlands (VNO-NCW), showed that more than a third of the companies felt that the accessibility of their company was a problem (or a major problem). More than three quarters of these companies indicated that the operating results were to some extent adversely affected by these accessibility problems.

(Source: VNO-NCW West, RAI, ANWB, 2002)

suggest that companies do not have an interest in accessibility. Various surveys and research have shown, however, that this is not the true picture. In some companies accessibility is actually a highly topical issue. The difference is that this interest is not always the same in nature and scale as the

³ These are measures which encourage car pooling, cycling and the use of public transport.

authorities' interest in transport demand management and companies are therefore not always willing to invest in transport demand management. For a public authority accessibility is mainly related to car use and its effects and therefore a goal in itself. A company is primarily concerned with making profit and therefore accessibility will be a means of creating or securing that profit.

The three dimensions of accessibility for companies

Companies have to be accessible, otherwise it would be impossible to operate the business or make a profit of any sort. This accessibility has certain clearly differing dimensions, each with its own set of requirements.

1. *Accessibility through the front door.* Customers and visitors to a company enter a company through the front door. This could be to sell products or services, or to make business agreements. This is the first impression that a visitor or customer gets of a company. If entering by the front door already creates a problem (because there are not enough parking places or the distance from the station on foot is too far, or because there is too much traffic and too little greenery) this can have an effect on his or her attitude inside. In this respect, in the eyes of the customer or visitor, accessibility via the front door is an added value to a product or service. The front door is thus an important competitive factor in the **customer market** and partly determines the turnover which companies can generate at the location concerned.
2. *Accessibility through the side door.* The side door is intended for the company's employees. It is important to employers that employees can reach the side door on time, but the commuter traffic generated by its employees may be a reason to reduce the congestion caused by parking in the area (in favour of customers and visitors). Employees are pleased if they can reach this side door quickly and easily. Accessibility can therefore be a factor in negotiations about terms of employment between employers and employees. Thus, the side door is a competitive factor on the **labour market**. Particularly in times of labour shortages, this can determine whether or not an employer is attractive to an employee.
3. *Accessibility through the back door.* The supply and dispatch of goods takes place through the back door. In fact, there is just one guiding principle at work here: it must be as efficient as possible. The accessibility of the back door is important to both the company and the supplier.

Accessibility: the need

The urgent need for companies to invest in accessibility (and thus transport demand management) is closely related to the financial return companies actually get from these investments. In view of the fact that the accessibility of the front, side and back doors has a direct impact on the running and therefore the operating results, companies are often willing to invest in this where there are problems. Such investments are then made not to reduce car use or increase bicycle use, but as a service to the customer/visitor, to lower costs and to be able to offer good and sound secondary employment conditions.

The need for companies to invest in accessibility may also arise out of external factors. A company benefits from the spatial and economic infrastructure in which it is situated. The level of facilities, the presence of roads and rail links, neighbouring functions, the local labour market and the *cachet* of the location all contribute to a positive commercial performance. This is offset by the cost of using of this spatial and economic infrastructure (or elements of it) or other obligations which this brings; particularly when there are problems with accessibility, the quality of life and safety and a company has a part in this. In the construction, management and maintenance of a location such aspects are reflected in the regime in force in that location. This could consist of a set of permits (e.g. environmental or building permits), but could also take the form of pricing policy (e.g. paid parking).

If the benefits of the spatial and economic infrastructure outweigh the regime in an area, a company will be more prepared to invest in accessibility than when it gets less return on its own investments. This can still make a difference in whether a company really sees that there is an urgent need to invest in accessibility, because otherwise no permit will be granted and it will be impossible to conduct the business. Or a company can decide for itself whether it wishes to invest in accessibility or not, but it will see the effects of this decision (on society) reflected in the operating costs.

Finally, it is also the case that financial incentives can make companies more willing to invest in accessibility. Fiscal measures and subsidies will not increase the sense of urgency as such, but may well encourage initiatives.

From transport demand management to location accessibility

If we take the above a step further, we see that companies have an inherent interest in accessibility. It has three dimensions. Commuter traffic (and transport demand management) is just one element of it, aimed mainly at the accessibility of the side door (and only indirectly the front and back doors) and at agreements between employers and employees about mobility.

Investing in good accessibility through the side door: FLEXIBLE MOBILITY BUDGETS

In 1998 the ICT company Origin introduced a flexible package of employment terms. Among the main reasons for this were to increase the loyalty of the existing workforce in a tight labour market and to be able to offer an interesting package to potential employees. The poor accessibility of the office by car was increasingly seen as a reason for employees to switch to another employer or not to opt for Origin.

One element in the package is a mobility budget. The employee can use this mobility budget either for a leased car or for alternative transport arrangements. Since the introduction of this measure, 23% of new and existing employees (those whose lease contract had expired) have opted for the alternative transport arrangements. Most employees opted either for a lump sum payment of the mobility budget or, alternatively, for the use of a public transport annual season ticket. The main obstacle turned out to be the increased administrative burden that was created. The initiative has since been adopted by other companies.

But accessibility also affects other operational aspects than just the relationship between employer and employee. It appears that accessibility is equally important in relation to the customer, for example, although in a different way than in transport demand management. It is a matter of providing the customer with both motivation and satisfaction at the same time.

Investing in good accessibility through the front door: The EFTELING theme park

The Efteling is the Netherlands' largest theme park and attracts around 3 million visitors over a period of 7 months a year. An abiding consideration for such a theme park is to make sure that it continues to be attractive to customers. Good accessibility is just one aspect of this. Most visits (80%) are made by car (although with an average of 3.9 passengers per car). The remaining 20% come by public transport, coach or touring car and bicycle. To improve accessibility the Efteling has itself invested in access roads, parking facilities, sound barriers and a bus station. To encourage the use of public transport a shuttle bus service was introduced between the mainline stations in the area and the Efteling; known as the Fairytale shuttle (Sprookjespendel). Besides providing passenger transport this shuttle was also used for promotion purposes. The project has since been stopped because it was too costly. The Efteling is now working on the creation of a car-free bus lane to bring visitors who come by train quickly to the park.

The Efteling provides a good example of a private initiative. What this experience shows is that government support (in whatever form) is a critical success factor.

It would therefore be preferable in policy too, to speak of location accessibility rather than just transport demand management. Location accessibility can be defined as "the inherent interest which a company has in the accessibility of its front, side and back doors". The basic principle is that companies make up the balance for themselves about how the accessibility of their location can be improved. They are in the best position to decide what is likely to work and what not, based on their own expertise and interests.

Two concepts which are related to location accessibility are the area-based approach and park management. The area-based approach makes use of the added benefit to be gained from working with other stakeholders (often the public authorities and companies) to set up joint projects at local or regional level. Park management is an example of an area-based approach targeted mainly at new trading and industrial estates or business parks in which a private service provider manages and maintains the site on behalf of an association of the companies. These services could include waste disposal, security, signposting and accessibility. Park management is clearly on the increase in the Netherlands.

New mobility products and services

A key condition for companies to undertake private initiatives is the market supply of mobility products and services. Such initiatives will be almost impossible without an adequate market supply to improve location accessibility. Over the last ten years a major effort has been made in the context of transport demand management to provide advice and incentives to companies (through the VCCs) and to develop products and services for the commuter. Although expertise has been developed and innovation fostered, it appears that the market value of these products and services has never been very great because there has been no increase in the demand for them. The challenge is to encourage the industry to develop mobility products and services which have a market value, without creating an oversupply. This supply could be aimed at public transport, seamless mobility (trip chains) and cycling, as well as car use.

Investing in new mobility products and services: MOBILITY MIXX

In October 2001 the public transport provider Connexxion (bus company) started a service called Mobility Mixx for commercial users. This service is intended to allow trips for business purposes to be organized and coordinated more efficiently based on their own particular requirements. Mobility Mixx also allows employers to respond more flexibly to the actual situation. This service is a combination of more and more up-to-date travel information, pool cars, integrated payment and the facilities of a service centre.

The experiment has been successfully implemented by the municipality of Alkmaar and the Nuon power company. The results show not only an increase in the distance covered by public transport (in km) but also a reduction in costs for the companies.

For further information see: www.mobilitymixx.nl

4. TRANSPORT DEMAND MANAGEMENT: A NEW ROLE FOR POLICY?

In the foregoing we have seen that the effect of transport demand management is based not so much on the instrument itself as on how urgent transport demand management is perceived to be by companies (acceptance of policy and measures). It is clear that transport demand management is basically a matter for employers and employees and private initiatives from the market. That is not to say that there is no further role for the public authorities with regard to transport demand management. This role is essentially two-fold, i.e.:

- facilitating and supporting private initiatives,
- safeguarding accessibility, quality of life and safety in the region.

This requires not only a different approach but also a shift in thinking about transport demand management in companies. Just as transport demand management for companies is just one aspect of accessibility, so the authorities need to consider transport demand management as just one element in an integrated policy on traffic and transport, spatial planning and economic affairs.

Facilitating and supporting private initiatives

Private initiatives cannot always go it alone. Government support in the form of funding, legislation or coordination, for example, may be necessary to help get private initiatives underway. Some examples:

- A company wishes to set up a shuttle service to bring its employees to the workplace. In view of the congestion on the roads, if this service is to be a success it is important that a real time-saving can be achieved compared with the car, for example. A government authority could ensure this success by allowing this shuttle service to use the restricted bus lane.
- A supplier wishes to launch an innovative product on the market, the market value of which has already been demonstrated. However, a considerable start-up capital is required to ensure the success of the product. A government grant could help to bridge the gap between the major start-up investment costs and the often modest initial returns.

The public interest: accessibility, quality of life and safety in the region

The government is there to ensure accessibility, quality of life and safety in the region. When one of these goals is threatened (and scarcity is created), it is one of the responsibilities of the authorities to deal with this scarcity, not least by addressing the party causing the threat. The question is, how to do this effectively? In section 2 we saw that supply steering often by-passed the policy goals. In section 3 we saw that companies can often come up with good and effective solutions themselves provided that

the need for such investments has been recognized. Based on these two conclusions it is recommended that private initiative should provide the basis for transport demand management but under the conditions laid down by government. This could be through pricing policy or legislation.

Integrated policy on location accessibility

Companies consider accessibility (and therefore transport demand management) as an integral part of the operations. Besides having to select mode of transport, route and time, it is also something which affects the personnel, the product or service, marketing, etc. Essentially, the same applies to the government. Transport demand management is an integral part of several different policy portfolios, not just traffic and transport but spatial planning, the economy, the environment, the labour market and finance too. Transport demand management has therefore been too narrowly defined given the reality in the industrial estates and business parks. The term 'accessibility policy' would be more appropriate.

This requires a sea change in government circles. It means that cooperation with other policy fora and between the various tiers of government must be sought to create a coherent policy.

Mobility agreements: the link between public and private interests

Private initiatives should therefore provide the basis for transport demand management and to improve the accessibility of locations. The authorities still have a role in this, although a different one than they had in the transport demand management policies of the past ten years. Moving away from steering and promoting, the role of the authorities now will mainly lie in creating the right conditions and supporting private initiatives. An interesting development in recent years has been the industrial covenants that have been entered into between the public and private sector. A good example is the approach taken in the Amsterdam port area (Amsterdam-Westpoort).

Investing in regional cooperation: AMSTERDAM-WESTPOORT

Companies in the Amsterdam-Westpoort port area are faced with major accessibility problems. There is too much congestion and very little public transport (particularly outside peak hours). In 2002 a project was started the aim of which was to make Westpoort as a whole and the individual companies in particular, more accessible for both suppliers and visitors. Five major companies are currently working to re-organize and streamline their commercial transport operations by joining forces to combine purchasing and transport services. An external 'accessibility broker' will eventually be responsible for the private transport company and will act as a coordination point. This will provide the companies with various benefits: financial (greater efficiency), contracting out of commercial transport (less organisation), better public transport (making the companies more attractive as employers) and an environmental permit (which includes a section on mobility).

An organisation was set up for this purpose (Stichting Bereikbaarheid Westpoort – the Westpoort Accessibility Association) and to manage the combined annual budget of the participating companies. The launch of the new collective transport system is planned in May 2003 as a Public-Private Partnership (PPP). (Source: Raad voor Verkeer en Waterstaat, 2003)

5. CONCLUSIONS

Transport demand management is, in the first instance, a matter of choice by companies; they are in the best position to calculate the potential of the instrument based on their expertise and in relation to other aspects of their operations. This decision-making process can be influenced through policy. Not by steering supply. Experience has shown that the use of measures is determined first and foremost by how necessary the companies consider it to be to invest in transport demand management, and as long as there is no sense of urgency, supply steering will have little effect!

The degree of urgency which companies attach to investing in mobility and accessibility will be mainly determined by what return they get from these investments. This could be directly expressed on the shop floor, e.g. as good customer service (and therefore a higher turnover), good secondary employment conditions (and therefore a better position on the labour market) and more efficient operations (logistics and commercial transport). But this return could also be expressed indirectly as key conditions which are essential to the performance. An example of this in the Netherlands is the environmental permit, which could also include a section on transport demand management. Another consideration is that companies could and would be willing to invest in more than just transport

demand management. Improvement in mobility and accessibility can also be achieved by opting for a different location or by making a conscious decision to invest in accessibility by car or other means. Provided that the interests of the public are taken into account in these decisions, there is unlikely to be any problem.

In any event, the conclusion is that companies must ultimately decide whether they want transport demand management or not. This is the only way that companies will accept transport demand management and they will be willing to put more effort into it than in a transport plan on the side.

The role of policy is two-fold. Firstly, to support companies in their efforts to improve accessibility. Sometimes the public sector has the necessary instruments to enable or support private initiatives. A good example of this in the Netherlands is the provision of restricted lanes for company transport or van pools for certain target groups. It is therefore important that the authorities keep their eyes and ears open to make sure that such promising private initiatives get the support they need.

Secondly, policy should serve the interests of the general public and these go much further than the interests of companies. Here a balance has to be struck between opposing positions. One possible result of this might be that a public authority would ask a company to invest in the accessibility, quality of life or safety of a region to bring about a particular improvement. It is up to the company, however, to decide what would be the best way to do this. The company would be in the best position to see whether transport demand management would fit into this or not.

Taken as a whole, mobility agreements between the public and private sectors can be seen as a promising instrument in taking a concerted approach to the problem of accessibility. Based on a mutual sense of urgency (for the public authorities: accessibility, quality of life and safety; for the private sector: efficient operations, satisfied customers, employees, visitors and suppliers; for private suppliers: profit), goals can be jointly formulated and steering can take place on the basis of allocated roles based on what which each party is best at. In short: a businesslike approach.

At local and regional levels this businesslike approach will mainly be reflected in agreements made between the provincial and municipal authorities and employers on specific projects. At national level there will be more administrative agreements and commitments between central government and the umbrella organisations of the regional authorities and private sector parties.

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7th European Conference on Mobility Management ECOMM 2003

Effective Partnerships

If, Quality partnerships to generate demand for alternative transport

The Evolving Role of Transportation Management Associations in North America

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Transportation Management Associations (TMAs) have played a critical role over the past 20 years in building partnerships between public and private interests in many metropolitan areas throughout North America. The purpose of these partnerships is to improve mobility in specific activity centers or corridors through the development and promotion of alternative transportation options.

The role of TMAs has changed in recent years, in response to shifting public priorities and a renewed focus nationally on voluntary initiatives to engage employers, property owners and commercial developers in a variety of mobility-enhancement programs. Additionally, TMAs have played an instrumental role in influencing public investment in alternative transportation and, in many cases, focusing attention on creating a balanced, multi-modal transportation system.

This paper and presentation will provide information about TMAs, including:

- ✍ Update on the TMA role and function in North America
- ✍ Definition of services
- ✍ Select examples of program effectiveness
- ✍ Strengths and weaknesses of different programs
- ✍ Describe why certain TMA programs failed while others succeeded
- ✍ Discuss the future for TMAs in promoting mobility management in North America

What is a TMA?

Transportation Management Associations (TMAs) began to emerge around the United States in the early 1980s as public-private partnerships designed to address traffic congestion and air quality problems. Today, over 150 TMAs are in operation, primarily in the United States, Canada, Japan and the Netherlands. The appeal of the TMA lies in the synergism of multiple organizations and individuals banding together to address and accomplish more than any one government agency, employer, developer or resident could do alone. The need for the TMA stems from the realization that each group has a great influence on transportation and air quality, and must equally share in the solution.

The Association for Commuter Transportation (ACT) conducted a comprehensive survey of TMAs in North America in 1998, and has updated this information periodically through the efforts of its TMA Council. The statistics in the following sections are derived from this survey effort.

The geographic scope of a TMA varies with each organization. For example, across the United States and Canada, one-third of the TMAs offer services region-wide and one-fifth serve central business districts. The remaining TMAs serve suburban business parks, single office buildings or transportation corridors.

The typical TMA has 25 members, representing 25,000 commuters. TMA membership is primarily derived from businesses and employers (75%). The next largest membership type is government (14%) and non-profit organizations (9%). On average, TMAs represent 11% of all employers in a TMA district.

How do TMAs solicit membership?

TMAs use a variety of techniques to recruit members. Peer-to-peer and direct-contact methods are utilized by the majority of national TMAs. Only 16% of TMAs have mandatory membership. Interestingly, mandatory membership is used in all types of TMAs, including regional and city-wide. This finding belays the traditional perspective that mandatory TMAs are formed only through the result of specialized improvement district or developer requirements. Only three percent of TMAs recruit members through a discounted rate; however, approximately half of TMAs offer different categories and costs of membership.

How are TMAs funded?

For income, almost half of an average TMA's income is derived from grants and other district revenue. An additional one-third of revenues are the result of membership dues. The remaining funding is derived from developer contributions and fee-for-service arrangements.

The average annual budget for TMAs is around \$130,000. One-third of the TMAs have an annual budget of less than \$100,000; one-third have a budget of between \$100,000 and \$200,000; and the remaining third is over \$200,000. Budgets allocate funding as follows: 44% on office operations and payroll, 22% on marketing, 14% on direct services (such as guaranteed ride home) and 20% on contracted service and other related expenses.

In terms of annual financial reporting, 57% of TMAs provide an annual financial statement to TMA members. Three-fourths of TMAs also conduct an annual audit of its financial records. Finally, 68% of TMAs conduct an annual meeting to review TMA actions.

How is a TMA established?

The average TMA in North America has been in existence for seven years. Nearly one-third are incorporated as not-for-profit charitable organizations, one-third borrow corporation status for another organization, such as a chamber of commerce, and the remaining TMAs are either not-for-profit civic associations or membership associations.

What types of services do TMAs offer?

TMA services also vary by organization. The most common service is member advocacy. Advocacy can range from working with the local transit provider to improve routing and services, to lobbying federal decision-makers on laws that impact transportation.

TMAs offer a variety of services to their members, and in some cases, to non-members. The majority of TMAs provide rideshare promotion, regional advocacy, promotional materials, and promotional events. Conversely, only a small number of TMAs offer subsidized transit passes, a local shuttle or other transit, parking services and parking pricing. Although many services and products of TMAs are available to both members and non-members, transportation coordinator training, guaranteed ride home, subsidized transit passes, site design assistance, vanpool subsidies, parking services and parking pricing are primarily offered only to TMA members.

On average, TMAs employ one full-time employee, one part-time employee and no contract employees. However, the difference in staffing between TMAs can be dramatic. Some TMAs have no employees and are managed by volunteer board members, while one TMA has as many as 20 full-time employees. Approximately half of TMAs contract out the direct provision of services. The two most common services given to contractors were shuttle services and ridematching. However, 30% report that they contract out for marketing and administrative assistance.

Why form a TMA?

The reasons for forming a TMA are largely based on the need to address potential traffic congestion and accessibility issues for a specific area. The potential for area-wide traffic congestion exists if stakeholders in the area are not proactive in developing programs that will help to avoid worsening congestion. Employers, developers, building managers, residents and retailers have a tremendous influence over the commuting and traveling habits of employees, visitors and shoppers. The public sector organizations responsible for transportation in the area can provide transportation services to make travel options available, but the demand for these facilities and services is largely determined by the hiring, work hours, travel, and operational policies set by the private sector.

How are TMAs changing?

Many TMAs were originally formed to consolidate services for employers and others in an area. This was particularly valuable when regulations required employers to develop and implement commute programs. Generous public funding in certain states led to the rapid growth in the number of TMAs nationally. However, once public funding and/or the regulations disappeared, so too did the TMA. Nearly one in three TMAs failed after three years in operation.

TMAs have greater value when they appeal to broader issues than mobility and air quality. TMAs need to show employers that services can help to recruit and retain employees and show property owners that TMA services make their site more attractive to potential tenants. To communities, TMAs must show that businesses are more likely to locate in their area because of the TMA. In the absence of “bottom-line” impacts to the various stakeholders, most programs will not be sustainable.

A trend in funding for TMAs has been working with management and improvement districts. In Atlanta, Georgia, some TMAs have created self-taxing districts, known as Community Improvement Districts (CIDs), to at least partially fund TMA services. One TMA used improvement funding to develop a master plan for land use and transportation linkages. The idea was that coordinating commercial development and amenities would help to make the area more friendly to a mix of transportation options. In Montreal, Quebec, a TMA was incorporated into an urban enterprise area that helped to revitalize an aging district within the community. Transportation services were critical in promoting the area as both assessable and appealing for merchants and residents exploring relocation to the area.

What defines “success” for a TMA?

Success is achieved by meeting the expectations of funding agencies and private sector board members. For public agencies, TMAs were originally thought to be successful if they could be self-sustaining, without any government financial participation, after three

years of operations. TMAs were expected to maintain employer networks and broker regional transportation services at no cost to the public sector. This idea seemed to conflict with the whole idea of a public-private partnership. If the public started it and provided funding for three years, but then walked away, where was the value in continuing to work together?

In Houston, Texas, TMAs were initially funded based on the merit of grant requests designed to reduce vehicle travel during the grant period. Little consideration was given to the needs of the area and the long-term commitments from the private sector. No long-term feasibility assessments were conducted as part of the grant award process. It was of little surprise to anyone that after three years, when the public funding ended, half of the TMAs discontinued operations.

Research has shown that success is often based on five factors:

1. Having a well-defined transportation problem.
2. Securing sufficient interest and resources to address the problem.
3. Balancing public and private participation.
4. Targeting a sufficient market of employers, employees and others.
5. Building on supportive government requirements.

For example, a TMA in Denver found an effective niche in the community by helping to manage traffic generation at new commercial facilities. Developers can build higher densities if the TMA promotes alternative transportation options to tenants. The TMA has formalized its financing through inclusion in lease agreements at a rate of \$0.10 per square foot annually. The funding is then used to entice one-quarter of the building's commuters into using alternative transportation options through free bus passes, incentives and promotion events. Without the TMA program, developers would be forced to build at lower densities and thus, continue the reliance on the private automobile for commuting purposes.

What is the future of TMAs in North America?

TMAs play an integral role in developing and implementing mobility management programs through partnerships between public and private organizations. The continued success of the TMA concept will depend on the ability of TMAs to adapt to the evolving needs of both the public sector and the private sector. Only by continuing to provide value-added services to all members will TMAs secure the sustainable funding that is critical to their long-term success. For both public-sector and private-sector partners, however, the range of services that TMAs are being asked to provide is growing.

For public-sector partners in North America, from departments of transportation to regional governments, the scope of mobility management services is evolving beyond its traditional focus on promotion of alternative modes of transportation for the commute to work. The role for mobility management is expanding to address non-commute trips –

such as traveling to school, to recreation destinations, to sporting events, etc. Mobility management is also evolving as a tool to improve the operational efficiency of existing transportation systems through promotion not just of modal options (car, shared-ride, transit, bike, etc.), but also of travel-time options and travel route options (even for single-occupant vehicles). As government agencies continue to face rapidly growing demands for transportation infrastructure in a time of serious budget constraints, the broader understanding of mobility management applications offers the benefit of getting better performance out of existing resources. The future vitality of TMAs will depend on their ability to adjust to the growing needs of their public partners to develop and implement a full range of mobility management strategies for all trip types. In order to enhance long-term funding from the public sector, TMAs will play an increasing role in the on-going management of the transportation system – implementing strategies designed to improve transportation efficiency and reduce or delay the need for expensive capital investments.

For private-sector partners, from employers to property developers and managers, the role of mobility management is also expanding. As previously discussed, more and more TMAs are getting involved in strategies beyond the promotion of alternative modes of transportation for the commute to work. Programs to improve linkages between transportation and land use, strategies to enhance access to recreation destinations, and innovative development review and approval agreements are all part of a growing array of valuable TMA services. Securing long-term, private-sector funding for TMAs will require a broader understanding of the opportunities to provide value to employers, developers and others through expanded transportation management solutions.

Transportation problems will continue to get worse, not better, in the foreseeable future, and the negative consequences of these problems – from congestion to air quality – will continue to affect the economic vitality of our businesses and the quality of life of our communities. TMAs will continue to play a critical, though constantly evolving, role in the future by forging effective public-private partnerships between the organizations that have the largest stake how well the transportation system works for everyone.

Paper

Workshop 1e

Mobility Management in Borlänge

- changing work methods

ECOMM 2003, 21-23 May, Karlstad, Sweden

By Karin Lundgren, Envia and Johanna Ingre for Stiftelsen Teknikdalen Borlänge, Sweden.

There have been discussions for some time in the Borlänge area concerning work methods for starting work within the Mobility Management (MM) sphere. Preliminary studies, inquiries and action plans have been produced by Stiftelsen teknikdalen ('the Technical Valley Foundation'). Now, in 2002, the work has finally started at a local level. But how will this work be done and what effects will it have? At first the idea was to start a mobility office – but Stiftelsen teknikdalen changed its mind, and the work will now be done in line with different principles. In Stiftelsen teknikdalen, which is leading the project, a number of players are involved, including the municipality, Vägverket (the Swedish National Road Administration), Banverket (the National Rail Administration), the college, Dalatrafik (Dalarna local traffic administration), etc.

Previously, the Mobility Management idea was very much based on an actual marketing office being built, with a number of people who would administer questions within the MM field. Today, there is no such office. Instead a project manager has been employed with the role of integrating the planned MM measures directly into the ordinary activities of the municipality and other players as much as possible, as well as providing information. Examples of some of the involved players are Borlänge Energi (the municipality), which is responsible for walking and cycling, Dalatrafik, responsible for public transport, and other transport generating and informative units such as the Tourist Office and the consumer inform or the office for sustainable environment, agenda 21 (the municipality), etc. The college has an important role to support the work with research so has also the National Road Administration financing a large share of the work.

The new work method aims to increase cooperation with players and customers/passengers/travellers more than was previously the case (mobility office). It is together with the existing players, who jointly supply and facilitate journeys which can be undertaken by other means than alone by car, that the implementation of MM stands or falls.

The aim of the Mobility Management work in Borlänge, in the long term, is to:

- reduce the number of dead and injured in accordance with the Zero Vision in Framtidsdalen ('the Valley of the Future')
- reduce CO₂ emissions in Borlänge

- increase accessibility for children, the elderly and the disabled in Borlänge through strengthened footpath, cycle and public transport networks
- double the proportion of public transport use in Framtidsdalen between 1999 and 2005
- reduce the need for the number of parking places/employees in Framtidsdalen
- improve the functional sector coordination
- increase the satisfaction of customers, i.e. the end users of travel and transport services in Framtidsdalen

The project manager has a very important function to ensure success - to spread and implement MM through cooperation. This work will build on contacts, acceptance, problem orientation, coordination based on common interests, a scaling up of existing projects and inspiration for new ideas and solutions.

In this first face contacts with customers is hugely significant for rooting the work at the right level. The aim is to analyse their demands in more detail, using tools such as qualitative and quantitative surveys. Old surveys have been supplemented and new ones have been ordered in the form of a customer satisfaction index, idea competitions, test travellers and travel experience surveys. These investigations involves all actors mentioned earlier.

The following result has for example been seen:

- ¹Borlänge has a very low share of public transport only 3-6% use public transport.
- Most people complains on the public transport
- Already 50% of all the kids trips are made by car.
- Not even women or retired use public transport in the same amount as in the rest of Sweden.

Borlänge is a car dependent city. Improving the contacts with all actors is essential in many ways, there is plenty to win. Contacts and plans focusing on measures must therefore be created together with the actors responsible for improving walking and cycling, public transport, and other transports. The existing players and their focus and goals takes into account and discussions is held on what we can jointly improve and bring about.

In the long term, the success of implementation depends to a large extent on the participation of the players concerned, and their commitment and responsibility over a long period.

In this process the results from customer satisfaction investigations are used. In many cases, it is a question of already completed, planned or ongoing projects being updated and complemented by various Mobility Management measures. The Mobility Management idea is worked into the existing organisations and structures. The project receives an impetus and is run by established players who have both a mandate and the opportunity to change. The actors let their employers work with MM-issues inside the organisation and we turn the focus towards alternative transports.

the focus is 2002/03:

- Improved contacts with the customers and improved contacts with the actors – creating plans for measures and employing project leaders.
- Improved infrastructure – creating plans for walking, biking and public transport.

¹ RVU 2002 Resvaneundersökning i Borlänge Socialdata Uppsala.

- Improved information canals - creating plans for information at the tourist office, the consumer information and the office for sustainable environment, agenda 21.
- Improved work with increasing behaviour change – increasing the contacts and work with all companiers and households in the region.

To be able to carry this out, it is necessary to have a project manager with an overall view who can be a catalyst, motivate, see possibilities and support the work on a global level, but who do not themselves run all the various partial projects. As a support, this project manager has an overview action plan that clearly points out the main areas in which the work will move. The action plan forms an excellent starting point in discussions and surveys, and the option exists to make revisions during the course of the work.

The Mobility Management projects that do not suit some players are reviewed once again, and in those cases when it is deemed necessary, the initial stage is run by the MM project manager. It is also possible to put the projects on ice, mainly when they do not seem to be relevant for players or customers.

In terms of experience, good studies and planning have proved not to be enough. Reality, i.e. the players who do the work and the customers who use the services, can stop the work if they are not part of it or cannot express their opinion on, use and even run certain projects. Participation in the work and common benefit are important driving forces for success. It is also a case of documenting customer needs and the will of players, and to base the work on these.

This applies to decentralising and running the projects locally and, in this manner, getting the Mobility Management idea into all projects, thus creating a consolidated unit of measures and activities that move towards the MM goal. The overall goal and aim is always the same – i.e. to increase the number of alternatives to travelling alone in a car to and from various activities and to create sustainable transport for the future.

Differences in cities/regions and rural areas

1e, The framework conditions for mobility management in conurbations (cities and other surroundings) and for rural areas

Maria Dalmalm, Danzas ASG Eurocargo AB, Sweden

Green Tonnage – A renewable option for transport of goods

Introduction

In the spring 2002, DHL Express started to offer a unique renewable product to the transport market in Sweden. The product, Green Tonnage, which only can be received from DHL Express, is not only a regular product it is a product which brings the Green House discussion into useful practice. For more than 10 years DHL Express have worked with environmental issues and in the last years we have come to work closer and closer to our customer to learn how to fulfil their needs and wishes in an undefeatable way. This is not a unique way of working for a company in any branch or in transport business but when we talk about fulfilling customers wishes within renewable fuels DHL Express situation is unique. As the first Transport- and logistic company we could since April 2002 offer all our customers a renewable product.

This paper will first describe the product and then give an insight in DHL Express internal environmental work for the past two-three years.

Green Tonnage at DHL Express

Green Tonnage an option for all customers that wants to see a decrease of emissions from their transports. The Customer will choose the amount of tonnage-kilometres that they want to have transported with renewable fuels. DHL Express will produce an equivalent amount of tonnage-kilometres within our transport system with respect to the infrastructure, possible vehicle and our fleet. The reduction of carbon dioxide is a global problem and our customer can take the credit for it. In a way we sell reduction of emissions.

The results regarding emissions is that with every tonnage – kilometres we receive a reduction of 94% of carbon dioxide, if we add all emissions and calculate them according to their Green House Effect then we receive a reduction of 64% of all emissions (in GWP- Gobar Warming Potential). The customer pays a fee that covers the extra cost for the investments of new vehicles.

5 Myths regarding Environment and Transports

As mentioned, Environmental issues have been on the agenda in [DHL Express](#) for more than 10 years. The start was in 1992 a Scientific Advisors Committee was installed, the years after an Environmental Management System was built that worked as a platform for the environmental work. After a certification according to ISO 14001, that cover all business in Sweden the next issue was to out some effort to improve attitudes, both internal and external. When it comes to discussion about Environmental issues and the transport and logistic business it can be found a lot of negative conclusions and statements that are irrelevant and not built on facts. The people who have this attitude we ironic call “The Future Ignorer’s”. This is a person that many have met. He or she turns up in a lot of places and contexts. “The Future Ignorers” surround him/herself with 5 myths, which will be met below:

✎ *Myth 1: The Environmental interest from our customer has decreased*

FACTS: [DHL Express](#) makes yearly customer surveys. Since 1994 has this question been asked:

Do you take environmental aspects into account in your choice of transport and logistics companies?

In 1994 fourth part answered **yes**, in 2002 two third answered **yes**. The trend is the same in all Nordic countries – a strong increasing environmental interest and it is the largest logistic buyers that are most interested.

Well, says The Future Ignorer. That is in the Nordics but everybody knows that we are somewhat different up here – a lot of lovely nature etc but in the rest of Europe, you will hardly find any interest.

✍ *Myth 2: European people are not interested in environmental or social issues.*

FACTS: During 2000 MORI (Market Opinion Research Institute) on commission to CSR Europe one of the first surveys on social responsibility. 12 000 Europeans in 12 countries was interviewed.

From the survey we could learn that 70 % of the Europeans considered Company's social responsibility when buying products

Hmm, says The Future Ignorer. That sounds fine, but is there really anyone willing to pay any extra for it?

✍ *Myth 3: No one wants to pay any extra for environmental-adjusted transport- and logistic solutions.*

FACTS: In the MORI-survey 20% of the Europeans said that they were willing to pay extra for a product or service from a company that take social responsibility. In Sweden the government and the county's buy yearly products and services for more than 400 billion a year. Most of this is combined with some requirements regarding environment. There has been a lot of discussions in the EU regarding what kind of environmental requirements that can be set by different authorities without jeopardising the competition. A Swedish truck manufacturer said at the time they launched the EURO 3 motor that the customers were willing to pay 5-7% extra for a more environmental adjusted motor. There is also research allowance and other funds to apply to when developing more environmental adjusted logistic solutions.

The reason we do not see more "green" transports or products in the market has mainly depended on that the transport sector has not been good at providing alternative. If the alternative product existed they have not been served or launched in a proper way. The transport- and logistic-sector has a lot to learn from other lines of businesses especially everyday commodities that has successfully introduced organic food in their regular offer.

By this time, the Future Ignorer use to bring out his or hers card of triumph because this discussion has not really anything to do with his or hers own opinion:

✍ *Myth 4: Subcontractors of the transport business does not want to get involved in environmental projects.*

FACTS: In 2001 DHL Express made a survey to our most important partners and subcontractors. A lot of them already are part in pilot projects e g test of alternative vehicles but over 70% state that they are interested to be part of environmental investments. More the half of them are still interested even though it would imply extra costs. Today we have several subcontractors who have said that they want to be a subcontractor of Green Tonnage.

The last myth is now what is left for the Future Ignorer:

☞ *Myt 5: Environmental work cost a lot of money and we are in a low margin business which means we cannot afford it today...but maybe, in the end it can be payed off.*

FACTS: It is as simple as this: We cannot afford not to start today. It is in the beginning that the saving is high in environmental work. In a longer term, to enable sustainable solutions we have to accept to invest in new technique.

We work with a resource based management which can be explained in two steps. In the first step we strive towards maximum resource-efficiency with our existing logistic network. Actions leading to minimising our environmental impact often gives a reduction of costs as well.

In the next step, partly carried through at the same time as the first step, we found new solutions and renewable resources to build a sustainable logistic system.

DHL Express has defined a sustainable logistic network as a system, which with regard to profitable business and social concerns facilitates the supply of goods which fulfils customers needs while its consumption of resources and environmental impact is kept within the framework of what nature, the Earth resources and the atmosphere find tolerable in the long term without being impoverished.

| [DHL Express](#) has since several years chose side and striving to achieve sustainable solutions for our customers and for our internal processes.

Internal workshop and discussions with all Management groups, articles and information in external and internal magazines and communication to increase awareness has decreased the number of Future Ignorer's but still there are a few left in the company but not at any influential position.

Concept and Conditions

The next issue in 2002 was to find out how to meet our customers request for an environmental friendly product. A lot of customers have asked about a logistic solution that involves renewable fuels. Some of these customers were placed in the Northern part of Sweden and there is no infrastructure for any renewable fuel in that part of Sweden. In the south and west part of Sweden, where there are fuel stations with renewable fuels, there were some full-truck-load customers but biogas vehicles does not have a motor capacity that can do these large transports. In this situation it was hard to find a good solution – a product had to be created without taking care of ordinary goods flow. We had to think outside the box and this was the start of DHL Express new thinking. To deliver a chosen amount of tonnage kilometres somewhere in our transport system with renewable fuels was going to be the base of the product. The concept of Green Tonnage does not consider the ordinary goods flow, we simply goes into a partnership with our customer and we undertake to deliver an agreed amount of renewable tonnage-kilometres.

Several pilot tests have been carried out with alternative fuels mostly in larger cities. There is a complexity to find a good set up with a certain truck to match the fuel. There is three necessary conditions that have to be in place before starting a test: renewable fuel, fuel stations and alternative vehicles.

Well, what can DHL Express do? We are not truck manufacturers, we do not set up tank stations and we definitely do not set up plants to produce biogas. As the leading transport- and logistic company we have to be able to influence and to set up requirements for manufacturers and suppliers but it is not enough. We have to work together in some state of project. DHL Express has several experiences of that during the last decade. At present we are involved in a project called Bio-Vehicle. Several stakeholders and competitors are involved in this partnership. First the two major Truck Manufacturers in Sweden Scania and Volvo

Lastvagnar and the other companies are Arla Foods AB, Axfood, ICA Handlarna, Coop Sverige, Poståkeriet Sverige, Schenker, Green Cargo och Servera. The Bio-Vehicle push the development of new technique regarding the use of biogas. Several competitors act together in purpose to increase the use of biogas as a fuel. Two different trucks are used in tests Scania P114 and Volvo FL 6. The work started in 1999, in 2001 DHL Express received the first vehicle. Tests of the motor are carried out to follow up the performances of the vehicles, end of project will be in 2004.

We also are a part of EU project called TELLUS which also has the intention to speed up the use and need of biogas in Sweden. In that project you can find BioGas Väst and Scania. Through TELLUS DHL Express has the possibility to let the subcontractors try different biogas vehicles in ordinary operations to see if it fulfils the demands of the business.

Conclusion

Sustainable work is a must within a modern company but there is a long way to reach sustainability. New solutions and new technique have to be developed to solve our future way of living and this is not a work that one single company can do by itself. The access to renewable fuels is still low in many parts of Sweden and a lot of work has to be done before there are tankstations at an acceptable level.

Green Tonnage is a sustainable option for all customers in DHL Express, even though the the customer is based or the flow of the goods is in an area where the access of renewable fuels is low. The product is also a triumph to new thinking and will help us decrease the carbondioxide and other emissions in Sweden.

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.

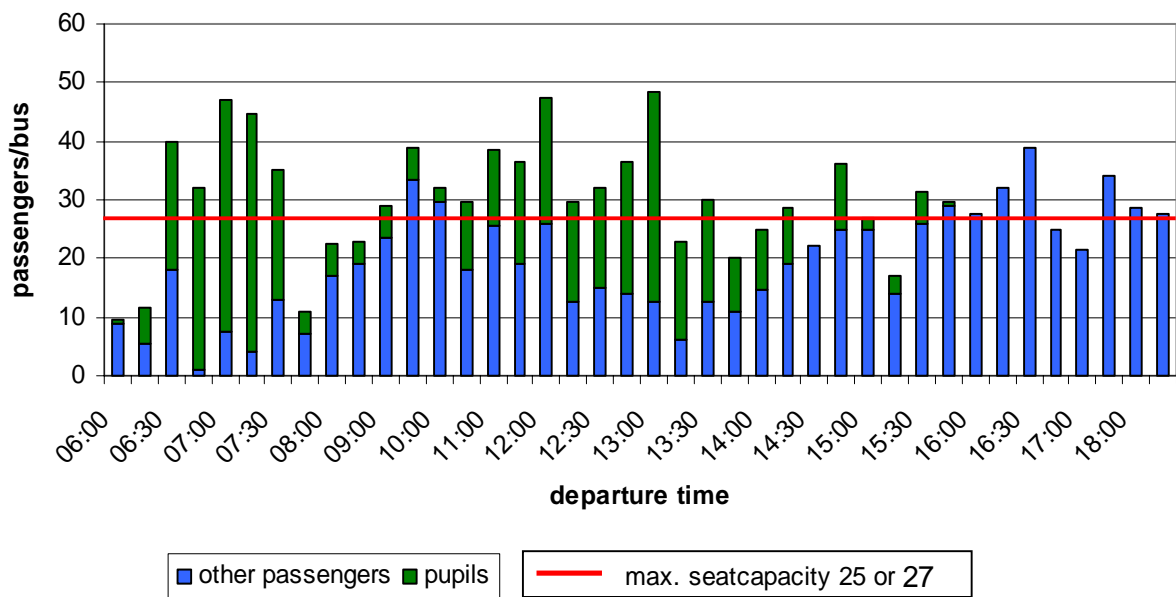


Fig. 2: Passengers of the bus-line 883 in Lemgo during the course of a day

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.

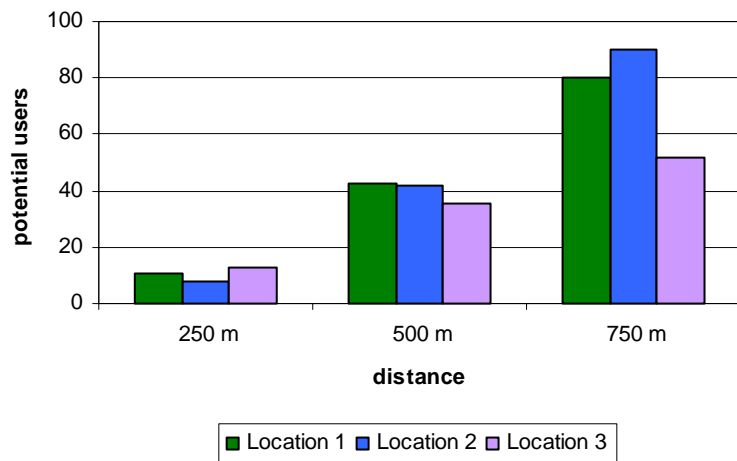


Fig 4: The Potential Demand of Possible Car-Sharing Locations in Lemgo

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.

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ABBEVILLE PROJECT SITE

Definition of a service at request with driving accompaniment
by shared cars in rural environment

THE SARACEN SYSTEM

Renault DTSI/ DR

Associated partner: **Keolis**- SNCF

Acronym title of the site project:

SARACEN : Service At Request, Accompanied, in Country Environment

(SARRASIN : Service d'Accompagnement en Région Rurale en Automobile Sur Inscription Nominative)

The background at stake

The DATAR (Délégation à l'aménagement du territoire et à l'action régionale) preparing the *National Scheme for planning and developing the Country* (Schéma national d'aménagement et de développement du territoire) pointed out the very low demographic density of France made of a network of small towns and villages among broad expanses. Some of these areas are decaying and their economic and industrial activities are decreasing.

The report enhances three main features of improvement:

- daily trips mobility is to preserve to keep solidarity between territories
- industrial activities have to be protected because they structure and balance the areas. Only less than 20% of the rural jobs are linked to agricultural activities
- strong demand for diffuse and « green » tourism must be taken in account. It generates significant profits for the local and regional economy.

Future transportation system Evolution scenarios and requirements

Objectives

The aim of the project is to build a forerunner scheme for the transportation of people living in very low dense areas. This system takes in account three main scales:

- local/regional
- intermodal with the national railways network
- international with a possible extent to Great Britain

The project is based on a few means of transport at request, microbus, taxi, car sharing, forms of car-pooling, non-traditional ways of accompaniment associated to mobile communication technologies.

The target is to achieve mobility to three main types of travelers:

- citizens, specially those in weak socio-economical situation
- professionals of health or social occupation and fields in relationship with teaching and training in occupational centers or manufacturing areas. The integration of young people into the job market is a priority.
- tourists sustaining high level of constraint in their trips, especially towards British and Belgian people coming often to visit the Bay of the Somme.

The project site

This global offer is to organize through the existing **central mobility unit** of Abbeville managed by the STRA public transport company, subsidiary of KEOLIS group, which belongs to the French railways company SNCF.

In a first step which would be the result of the research, the project would take place in three areas: in the city of Abbeville and two other small market towns to connect with located in Ponthieu Marquenterre. These points of a future larger network are potentially major trips generators for such a service to test. This has to be defined by the research.

Innovative aspects

The first point to deepen is how to gather and orchestrate different means of transportation in one whole system. The role of mobile communication technologies is prominent to bring reliability. The system has to make converge fixed solutions as railway and bus lines with stations with flexible and adaptable solutions mixing collective and individual means of transport. The architecture of the service and the system searches for intermodal and multimodal optimization.

The idea is to devote cars fleets to specific users who have high mobility deficiency by the intermediary lead of institutions or public authorities.

The function of such a system with actors has to be defined and precised. Some of them have been identified as the hospital. It is based on the ability of a group of drivers, professional or not, to accompany the users of the service.

The SARACEN system has to take place in areas where the classical service of public transports is irrelevant.

One main result of the research is the design of the service and technical architecture of the system.

Implementation

The operator are public authorities through the **central mobility unit** of Abbeville which is the mainspring of the system achieving information, booking, managing and allocating fleets and drivers, locating and dispatching the fleets, appointing and gathering the users, mapping out round trips, following up the routes and the durations.

The central mobility unit uses the software application OBITI that databased the schedules of all the routes and lines of transport operators and is able to move offer and demand nearer. Integrated mobile technologies are to locate and manage the moves of the pool cars.

The co-operation with British partners is under discussion and there is no commitment for now. It is an obvious dimension of the project to reach.

Field evaluation

The geographical location of Abbeville's pilot (coastal, in the neighborhood of Great Britain) and its social fabric involve a large diversity of the needs of mobility.

Two key elements explain the useful development of a central mobility unit:

- a rural isolated population, often jeopardized, aged, without car, badly informed about the existing transportation services
- touristic influx specially during international events (for instance ornithological meetings and exhibitions) in the Bay of the Somme

Filinfo is a central mobility unit (information and booking) created at the beginning of 1998, and spreading over the 160 councils area of the Somme Department around Abbeville and much wider according to the requests.

For now half of the 11 000 calls per year to the central unit find a convenient response often in gathering the trips in a transportation provider. In 50% of the cases the central plays a go-ahead role in organizing the offer, and in 50% it only just can give information. It proposes two types of services at request, virtual lines and door to door for disable persons, inside 12 councils (*communes*) belonging to the transportation authority area of Abbeville.

This type of service to implement is based on no existing model or previous market study relevant for such approach.

It combines different know-how and knowledge to organize together in a system.

It would lead RENAULT and KEOLIS:

- to define precisely the service and describe the actors
- to develop and implement the necessary technologies
- to assemble the parts to build a modular service
- to validate the SARACENE system
- to make the appraisal pointing out the right conditions of running and ability to transpose such a system.

Use cases

Some needs are already identified. Whatever be the field of activity (health, employment, leisure,) mobility deficiency is typical of the population of Abbeville area.

The service to build has to match up a wide range of needs and types of uses.

The most principal ambitions of the use cases are:

- to provide people without driving license with an access to car
- to offer multipurpose trips to a local population lonely and « held captive » of one place
- to strengthen the industrial and employment fabric and tourism oriented networks of services
- to fall back the travelers towards the train stations of the line Boulogne- Amiens- Paris
- to be a strong tool to federate territories and open up rural areas

Contribution to Community social objectives

Social innovation

The SARACEN system to build is supposed to combine both short term and long-term effects. The short term ones are mobility's behaviors changes and the long term will be able to change the socio-economic fabric of the territories involved in the service.

The system intends to develop scenarios of service for organizations for employment and training, accompaniment for health purpose trips, rounds of reception duty for public information, local administrative areas councils,...

Many central mobility units are under project in France. These of Abbeville is the only one to have such a global vision of mobility management, taking in account both all kinds of means and all sorts of needs. It is the only one to have a rule of readjustment and adaptation from the carriers and from the users point of view as well:

- the carriers have the feed backs of the demands expressed and may change their routes and schedules
- the users adapt their behaviors according to the transportation offers to be provided.

Moreover by its knowledge of micro-markets the central mobility unit brings to public authorities deciders, a strategic and foreseeing view for the development of their territories. It is a powerful tool for appraising the offer and the existing means. Through the data it allows transparency on suitability between offer and demand and makes readjustment of financial resources possible for a best use of public money, rationalizing public spending, and adaptation of the offers. It is an opportunity to think about the creation of new services in low-density areas. In that way the SARACEN system is able to bring flexibility, availability and reliability in balancing the solutions and the means between traditional, heavy and fixed modes and light virtual routes at request. The way of achieving the service through human scale relationships is prominent too.

Impacts

Obviously as previously written, the SARACEN system would have many positive impacts on the individuals or towards specific target groups (elderly people, households without car, young workers in training, tourists,...) or technical feature as intermodality. Moreover it can change deeply the vision of regional mobility proposing a global overview and focused answers.

Action plan

The aim of the project is to launch an experiment during the year 2003. A pre-feasibility study has been held for to years to finalize the concept and to gather all the partners of the project as politician figures, decision makers, social actors, and diverse partners having an added value to take part to the experiment. This period was strategic too to identify potential and active funds to finance part of the system.

The SARACEN project is a pilot site for the TRASCOM program (Traveler assistance for combined mobility in regional areas) which helps to develop and implement technological features (global transportation portal, prototype of devices system including mobile phone) which will be the first part of the project. Technologically the system has settled its technical and functional specifications. Vehicles such as Kangoo personal car and Trafic Mini-vans will be equipped in April to support tests in Abbeville Region from May. Then the fleet will be tested at the end of the year. The existing inputs are the central mobility unit managing mobility locally with public transports and taxis, strong political will, communication networks and fleet management systems. TRASCOM project has been beginning since March 2002 and will last till March 2004. So we are half path.

Customer Satisfaction Surveys for Public Transport Companies – Greater Efficiency through more Demand-Orientated Methods –

Workshop 1d: Public transport: How can public transport meet the increased mobility demand?

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1 Introduction

Growing competition, tighter financial margins and increased quality awareness have led to customer orientation in public transport companies in recent years. Like all other market-oriented service organisations, transport companies have to tailor their service supply to the wants and needs of their customers. Customer satisfaction surveys are an increasingly popular instrument for identifying the expectations of both existing and potential customers.

The results of these surveys are an important source of information for quality assurance and provide starting points for strengthening customer loyalty and for acquiring new customers. Taking these findings as a basis, companies can then target investment where it can make the best possible contribution to acquiring or increasing the transport market share.

It should be remembered that customer satisfaction analyses in the public transport sector are subject to different conditions than those that apply for example to the consumer goods sector. Satisfaction is not the only factor that influences behaviour when it comes to choosing a means of transportation. On the one hand, there are those who rely on public transport as a means of getting from A to B, while on the other there are those who have a choice between different means of transportation. Moreover, the freedom of the individual to decide can vary from one situation to another.

Traditional survey methods are not sufficient for this objective. They do not take into account that the personal choice of a transport mode is not only a result of the customer's satisfaction but also of a range of other factors, such as the accessibility to a certain mode in a certain situation.

The method for customer satisfaction surveys applied here therefore pays particular attention to the relationship between customer satisfaction and actual travel behaviour when it comes to choosing a means of transportation.

2 Requirements for a customer satisfaction survey in the public transport sector

The specific conditions that prevail in the transport market must be taken into account in customer satisfaction surveys for the public transport sector in order to achieve meaningful results that transport companies can work with.

In February 1999, the *Socialdata* institute, together with a number of transport companies, founded the working group 'Customer Orientation'. The aim was to combine expert knowledge of the transport market with methodical know-how on to the implementation of customer satisfaction surveys. Today, this working group is made up of transport companies from Austria, Germany and Switzerland, for example Wiener Linien GmbH & Co. KG, Hallesche Verkehrs-AG, Verkehrs-Aktiengesellschaft Nürnberg, Stuttgarter Straßenbahnen AG, BVB Basel and the *Socialdata* institute. The transport companies have given the *Socialdata* institute the task of carrying out mobility surveys and have shown great interest in the development of a method for customer satisfaction surveys for the public transport sector that provides clear indicators for a sound investment policy. The participation of the transport companies has helped to provide a practical orientation in the development of the method.

WORKING GROUP "CUSTOMER ORIENTATION"



- Objectives -

- To combine expert knowledge of the transport market with methodical know-how
- To analyse current customer satisfaction examination methods
- To further develop the method for customer satisfaction surveys
- To deduce specific recommendations for the participating transport companies for increasing customer loyalty and for acquiring new customers
- To promote an exchange of experiences among the participating companies

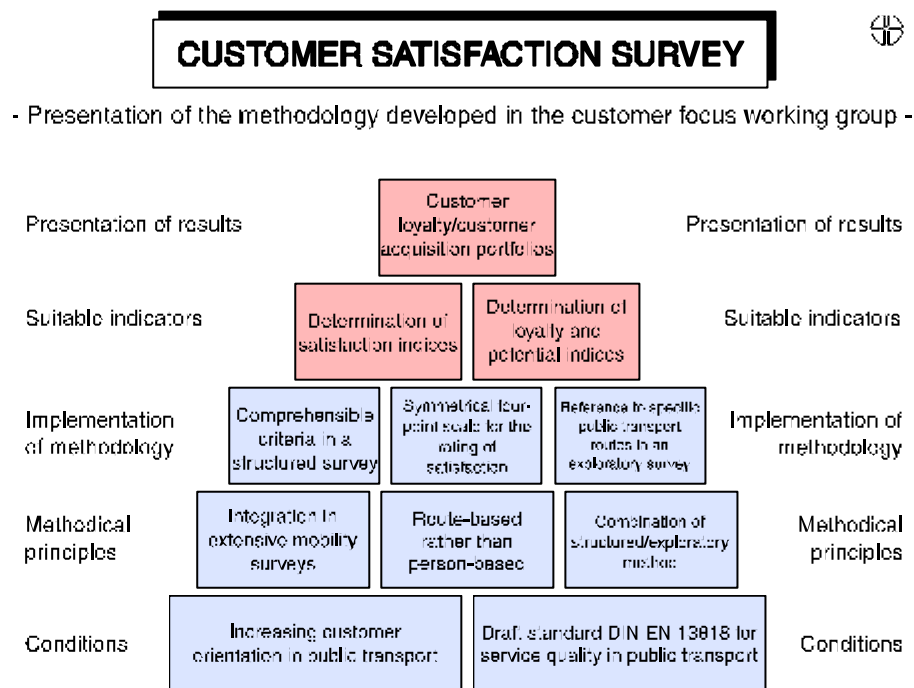
The working group 'Customer Orientation' looked at the specific conditions that prevail in the transport market, as well as the resulting consequences for the methodology of a customer satisfaction survey in the public transport sector. The methodology used in other customer satisfaction surveys in the public transport sector was also analysed.

A number of problem areas emerged in the course of the discussion. These covered issues such as the definition of a public transport customer, the methodical approach to be adopted, and the presentation and interpretation of the results. The results of this discussion are presented in the chapters below.

3 Methodical Principles and implementation of the method

The development of this method is based in principle on the assumption that peoples' choices of transport are influenced by a number of different components, and that there is no linear relationship between (dis)satisfaction and (non-)use of public transport. The decision for or against public transport is influenced by a combination of perceptions, opinions and experiences. However, the specific circumstances of a trip and the level of dependency on public transport also have an influence on peoples' choices when it comes to means of transportation. This has to be taken into account when issuing recommendations based on customer satisfaction surveys to public transport companies. Investment towards improving performance criteria that have been assessed negatively should ideally be made in situations where additional customers can be won or customer loyalty can be increased.

Apart from these basic considerations, specific conditions have been taken into account for the development of the method currently used by the public transport companies of the working group 'Customer Orientation'. The method is also based on carefully selected methodical principles, which are explained below.



The needs and requirements of (potential) customers have become the centre of attention when structuring the service supply.

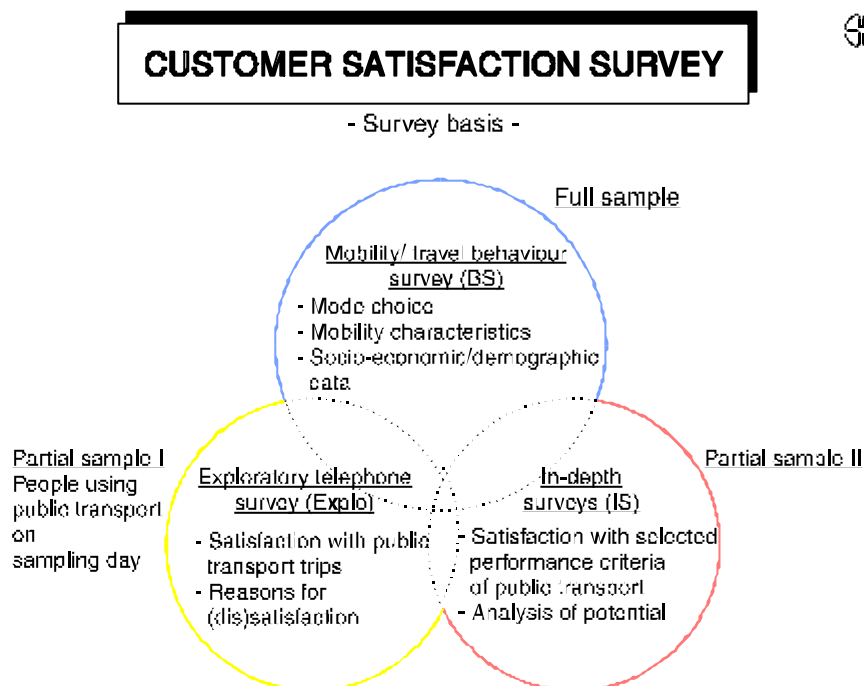
Customer orientation must also be the main priority when conducting customer satisfaction surveys for public transport companies so that communication for the customer is as comfortable as possible. For this reason, (potential) public transport customers were included at an early stage in the development of the current method. This was done, for example, by analysing the public transport criteria that are frequently the subject of questions in customer satisfaction surveys. Furthermore, the use of open questions in the event-based, exploratory survey shows the client that she/he is not only supposed to react to a predefined format, but that her/his actual experiences with public transport are of great interest for the companies.

The proposed method for a customer satisfaction survey was developed in compliance with the standard **DIN EN 13816** "Public Passenger Transport – Service Quality Definition,

Targeting and Measurement". This standard contains specific requirements and recommendations for conducting "Customer Satisfaction Surveys" in the public transport sector.

The new approach combines several methods to one efficient tool. The integration of the customer satisfaction survey in a comprehensive self-administered postal mobility survey, which used the **New KONTIV² Design** including intensive face-to-face follow-up interviews, produced data that indicates whether a change of behaviour of the respondents regarding a switch to public transport or other means of transport is actually possible. By this the potentials of public transport and the risk of losing a customer can be evaluated. It is also possible to determine the precise conditions under which the respondents made their journey (purpose of journey, duration of journey, starting point and destination, etc.). This information is extremely valuable for public transport companies, as investment can be targeted towards areas where increased satisfaction can lead to increased customer loyalty and use of public transport. A further part is a telephone survey, where the satisfaction is surveyed on the basis of actual conducted trips. This makes it possible to directly link the interviewed person's views and attitudes with her actual travel behaviour and her possibilities of using public transport or other modes. The whole approach is very customer-minded as many of the questions are developed together with customers. The use of open questions gives the customers the freedom to tell personal experiences instead of responding to a ready-made scheme.

The following diagram illustrates the points of intersection between the extensive mobility survey and the customer satisfaction analysis.



This will be expanded to include the application of a **micro-simulation model**, which illustrates the relationship between satisfaction, behaviour, risk of migration, and potential.

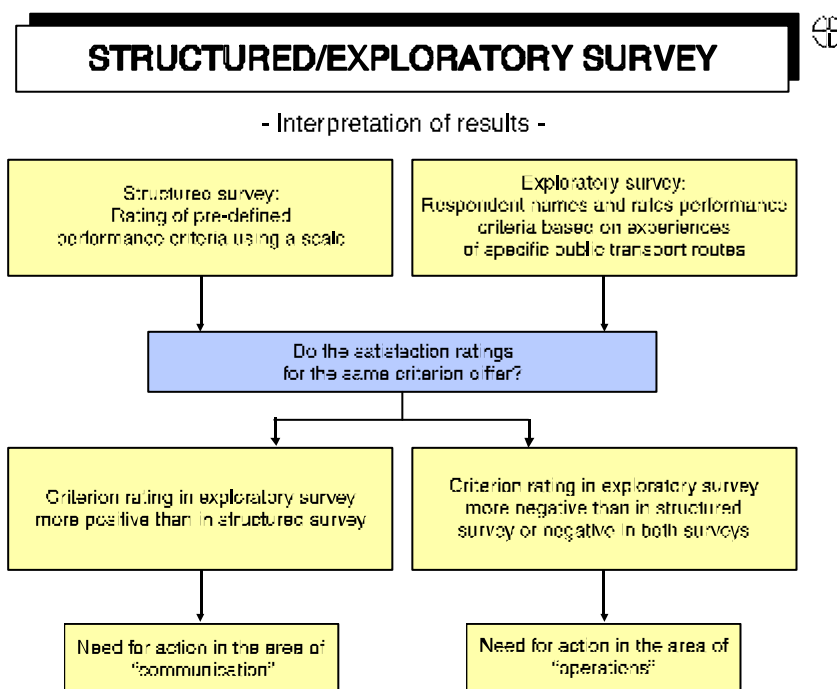
Given that both, structured and exploratory customer satisfaction surveys, have their strengths as well as their weaknesses, the survey method presented here is not restricted to the application of one of these principles, but instead offers a combination of both.

With the structured method, the respondent is presented with a list of public transport criteria (e.g. “punctuality”, “friendliness of staff”) and is asked to rate these criteria using a predefined scale of satisfaction levels. This survey is not based on specific public transport trips and therefore reflects the “overall impression” of the respondent, including any bias she/he may have.

The event-based exploratory survey, on the other hand, makes reference to specific public transport trips travelled. The benchmark data for these public transport trips is already known to the interviewer from the preceding extensive mobility survey. The exploratory survey is conducted by telephone once the data from the mobility survey is made available. The respondents are asked to express their satisfaction with the public transport trips travelled and to name the factors that influence their satisfaction rating. The problem of receiving strongly emotional responses in surveys conducted either during or directly after a public transport trip is avoided by employing the method of the exploratory telephone survey. At the same time, the important link to specific trips is maintained.

The combination of structured and exploratory methodologies means that both, existing customers and potential customers, are included in the customer satisfaction survey. Furthermore, the exploratory survey draws on the “expert opinion” of public transport customers. This also helps to put the criteria ratings from the structured survey into perspective. If, for example, the criterion “friendliness of staff” receives a much lower rating in the structured survey than in the event-based exploratory survey, this may in fact be a classic case of bias that doesn’t reflect the actual experiences of people travelling on public transport. In such cases, an advertising campaign depicting staff as friendly and competent might be a good investment.

A comparison of the satisfaction ratings for a specific criterion from the structured and exploratory surveys gives transport companies a good indication as to whether it is better to invest in information and communication with (potential) customers, or in operations (investment in infrastructure, technology, fitting out vehicles, etc.).



The interaction between satisfaction and the potential data from the intensive surveys can be used as a basis for conducting a potential analysis (customer acquisition), as well as for determining the risk of migration by customers (customer loyalty), which is related with the determined satisfaction ratings. The relevance of individual performance criteria with respect to actual public transport use can be examined accordingly.

To illustrate how interaction between satisfaction indices, and potential and risk of migration indices in the current method is a useful indicator of the actions that contribute to customer loyalty and customer acquisition, let us take the fictitious public transport company “Danube Lines” as an example:

According to the data obtained in the mobility survey based on the new KONTIV² design, around 30 % of the customers of “Danube Lines” are ‘Captives’, i.e. persons who only use buses and trains for the lack of a better alternative. 20 % of the customers use public transport as “choice riders”, which means that they may switch to another means of transportation at any time.

The greatest risk of migration lies with the choice riders who make up 20 % of the customer base. Their satisfaction is therefore very important for “Danube Lines”. The index for the “risk of migration” or, at the other end of the scale, “customer loyalty”, is calculated from the percentage of choice riders who are dissatisfied with a particular feature. The risk of migration is expressed as a percentage in relation to current public transport use.

When examining potential for new customer acquisition, the reasons for a specific trip not being travelled by public transport is significant. The more frequently a specific performance criterion prevents the public transport provided by “Danube Lines” from being used, the more important it becomes in terms of new customer acquisition. The results are expressed as percentage values here as well. They indicate the maximum value, by which the existing customer base can be increased.

The results of the determined satisfaction, loyalty and potential indices are presented in the form of two portfolios in order to illustrate the need for action by the public transport company in relation to performance criteria. The first is the portfolio ‘**customer acquisition**’ with the axes ‘**satisfaction and potential**’, while the second is the portfolio ‘**customer loyalty**’ with the axes ‘**satisfaction and risk of migration**’. The satisfaction axis is intersected by the mean value of all satisfaction indices. Similarly, the potential and risk of migration axes are intersected by the mean value of the potential and risk of migration indices respectively. The satisfaction indices that were determined for the individual performance criteria are entered on the satisfaction axis, while the potential that can be developed/risk of migration is entered on the potential axis/risk of migration axis with regard to public transport use for the respective city.

The “customer acquisition” and “customer loyalty” portfolios are each made up of four action areas/quadrants, which establish the different priorities with regard to the need for action:

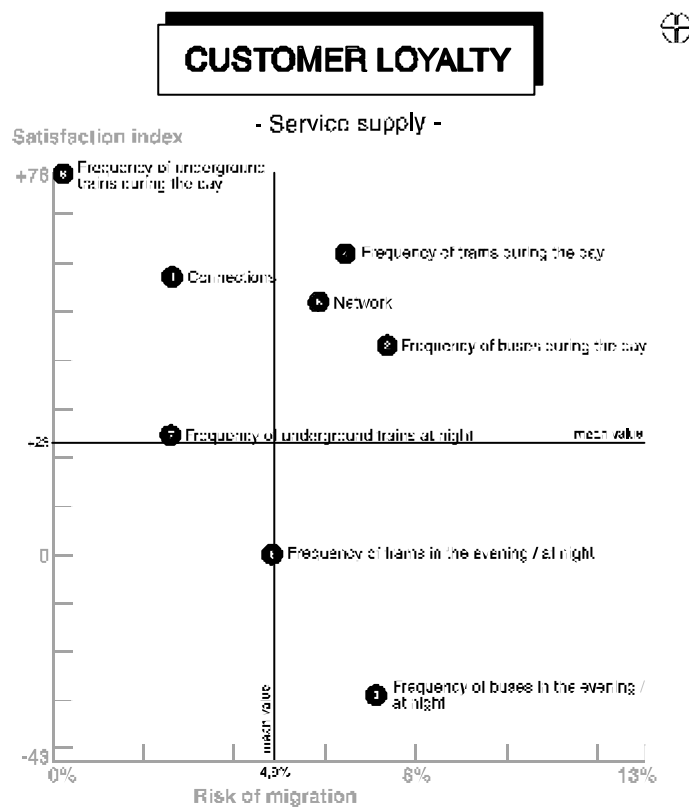
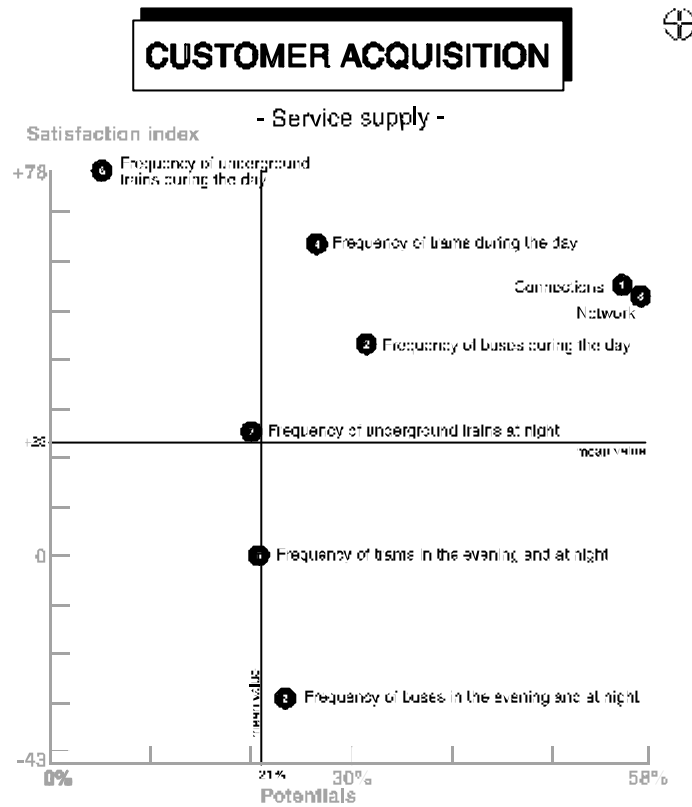
The greatest need for action lies in the bottom-right quadrant, as this area combines low satisfaction indices with high potential acquisition options or a high risk of migration.

The top-right quadrants contain criteria whose satisfaction rating lies above the average rating for all criteria, while at the same time demonstrating high potential acquisition options or a high risk of migration. Investing in communication with potential customers could help acquire new customers in this case.

The bottom-left quadrants contain criteria whose satisfaction rating lies below the average. However, given that there is also a low risk of migration or low potential acquisition options here, the need for action should be assessed in each case.

The top-left quadrant contains criteria for which there is no acute need for action.

The customer loyalty and customer acquisition portfolios below illustrate how the criteria relating to the topic of “service supply”, which were queried among the companies participating in the working group ‘Customer Orientation’, are classified.



This can be better explained by means of an example dealing with the interpretation of the previous portfolios. According to the “customer loyalty” portfolio, a maximum of 7.7 % of existing customers could be lost if the criterion “frequency of buses during the day” is not improved. On the other hand, according to the “customer acquisition” portfolio, the existing customer base could grow by up to 23 % if the criterion “frequency of buses during the evening/at night” is improved. Investment in this area would therefore be worthwhile.

4 Outlook

The transportation companies participating in the working group ‘Customer Orientation’ see the method for customer satisfaction surveys presented here as a demand-orientated approach, which provides a base for well-aimed and successful investment, which in turn contributes to customer loyalty and new customer acquisition. It offers a base for improving economic effectiveness.

Possible bad investments in areas that neither contribute to new customer acquisition nor to increasing loyalty among existing customers, and that are made simply because the majority of respondents in a customer satisfaction survey gave a performance criterion a negative rating, can be avoided by taking account of the probable future means of transport choices made by (potential) customers.

The method for customer satisfaction analysis presented here cannot, of course, remain static. It must undergo continuous optimisation. To presenting the results of customer satisfaction surveys at future meetings of the working group, the participants also plan to continuously monitor the surveys to determine whether they are suitable for fulfilling the needs of the service provider and the priorities of customers in their present form. Changed requirements of transport companies and of customers will then be incorporated in the method for customer satisfaction surveys.

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ECOMM 2003

“Clever Kids Travel with Public Transport” – An Integrative Marketing Strategy by the Styrian Transport Association

Workshop 1d: How can public transport meet the increased mobility demand?

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Preamble

What are the differences between McDonalds and Public Transport Companies?

Aside from the fact, that these companies offer different products, they differ distinctly in their marketing concepts. McDonalds works very successfully because they have recognised children and youths as a very important target group for their products.

What about Public Transport Companies?

Children and youths are one of the most important user-groups of Public Transport. Hardly any commercial enterprise has a product which is used by the majority of an age group which can still be influenced longer term.

Due to the ever increasing trend of more and more liberalisation for public transport this could be a big chance for Public Transport Companies to win new clients with a tailor-made marketing strategy. Unfortunately, only a few PT companies have realized this.

On the contrary: Usually kids in busses and trams are hardly recognised as adequate members of the society neither by grown-up PT-users nor by the employees of PT companies. As soon as children start using PT on their own, they often make bad experiences with other adults giving them the feeling that they are not really desired in busses and trams and that they are the ones responsible for vandalism in busses and trains. In the course of time this negative image increases. Small wonder that as soon as youths are allowed to drive by themselves they switch to the car. Unlike Public Transport, car-advertising consider children and youths as the foremost good in society so that they feel in good hands when becoming car-drivers.

A first step to change this situation was set by the Styrian Transport Association and the Austrian Mobility Research by creating an integrative marketing strategy for all primary schools in Graz, which was carried out in 3 workpackages.

Step 1: Teaching-material: “Clever Kids travel with Public Transport”

Creating an integrative education model on Public Transport in Graz including pioneer pedagogical and didactically sophisticated concepts and new forms of dissemination. A briefcase with five fully edited teaching-lessons containing games, work sheets, slides, and background information were developed by using modern and child adequate teaching methods.

Content:

- ✂ Behind the Scenes of a Transport Association
- ✂ Route Scouting
- ✂ Schedules ‘R’ Us
- ✂ The Ticket - Your Passway to Route Scouting
- ✂ What does this cost?

Step 2: How to motivate teachers to integrate the teaching material in regular lessons?

To reach the highest possible identification with the teaching material two mobility managers of AMOR visited all primary schools in Graz (about 50 schools). They held exemplary lessons in various classes in order to show teachers how to use the material in the best way.



Step 3: Evaluation and building of a teacher focus-group

Before, during and after the lessons a qualitative and quantitative survey was carried out. With this two aims were to be achieved: On the one hand the developed material and its handling could be evaluated, on the other hand the discussions with the teachers served to raise their awareness concerning Public Transport and to inform them about the mobility system as a whole. In addition to that the mobility managers gained insight about the needs of the teachers, which helped to further improve activities. The evaluation of the data shows that there are teachers who are interested in working in a focus-group in order to motivate other colleagues to integrate this issue more in traditional lessons.

The Educational Concept:

A marketing strategy must be tailored to the individual wants, if it is to be successful. Therefore it is important to have knowledge about the volume, the structure and the preference of the target group. To create tailor-made teaching material requires a lot of pedagogic skills in order to develop the right profile for each age-group. In "Clever Kids" an interdisciplinary project team of educators and public transport experts worked together to reach the highest possible success. One aim of the action was that those teachers and students using the material should feel comfortable and understood. "Winning instead of loosing" and "having fun" were the mottos of this new approach.

Respecting of young people as an important target group for PT companies

As our mobility attitudes are deeply influenced by our experiences in childhood, young people were addressed on the one hand as clients of today, on the other hand as clients of tomorrow. Kids and youths, were praised for their exemplary mobility behaviour, because most of them use environmentally friendly transport modes and are experts of PT. Under the motto "children are teaching adults how to use public transport in the best way" they should also motivate adults to use PT more often.

Closing the information-gap about Public Transport

It is understood that people learn how to drive a car. Usually nobody learns how to use a public transport system most efficiently.

This lack of information is one obstacle which keeps people from using public transport.

Who is to teach children about transport routes, how to use time tables, which tariff systems are the best, pros and cons of different transport modes?

Parents often are not familiar with the Public Transport System especially given that usually they are car-users.

Experiences in collaboration with schools have shown that the issue PT is very hesitantly integrated in traffic education as teachers are often car-users and they are scared, that this means also a change of their mobility behaviour as they are prominent role models for kids. It was assumed that external consultants could help to overcome this obstacle.

Results of the Integrated Marketing Strategy:

- ✍ Direct marketing for about 50 schools, about 1300 students could be reached
- ✍ Oral interviews with about 60 teachers
- ✍ About 250 teachers filled in the quantitative questionnaire
(rate of return: 94 %)

Summary of the oral interviews:

All teachers were enthusiastic about the new approach of materials, especially of the new didactics and the playful methods. They agreed with the pedagogical concept of the "Clever Kids" and wanted to continue in this sense. Some of the teachers complained that the traditional traffic education is out-of-date concerning the content as well as the methods of teaching.

Before starting the campaign the project team set up the hypothesis, that mobility behaviour of the teacher correlates with the commitment of the teacher. This could be confirmed during the project. In fact teachers coming to school by car agreed to integrate Public Transport in common traffic-education, but the commitment differs from those who walk, cycle or use Public Transport on their way to school. The latter were proud to be praised as a prominent role model, they feel reassured especially because the fear of being ridiculed continues.

"My colleagues laughed about me, because I walk to school" (verbatim teacher).

Some teachers stated that due to the ever increasing rate of car-transport children more and more lose their perception of space and aggression is also increasing.

Summary of the lessons:

Children felt very much recognised by this kind of mobility education especially when they realized that it had nothing to do with traditional traffic education. During the lessons the knowledge of the children about the Public Transport System could be made visible, they liked to learn, because the content of the program addressed their needs when using public transport after school. They were keen to show time-tables and route maps to their parents under the motto "children are teaching adults how to use public transport in the best way". Lots of pupils using the Public Transport every day had big knowledge and taught the others, who were not familiar with the system. They were happy to be (maybe for the first time) praised as PT-experts. Top rated were the "Transport association Memory", a game with 38 cards, where kids had to find two cards (one card shows the number of the bus- or tram route, the other shows a station), that fit together and the "cost disc".

Summary of the questionnaire:

Number of teachers in primary schools: n=226 (rate of return: 94 %)

99 % of the teachers stated, that it is important to integrate Public Transport and other alternative transport modes in traffic education. This means that the teachers have recognised that car-use has negative effects on the quality of living and on the environment. To what extent this means they are willing to change their mobility behaviour, cannot be said.

Most of the asked teachers consider PT in Graz as environmentally friendly, expensive and not friendly to kids.

96 % of the teachers stated, that there is a need of information about PT, which means a confirmation for the carried out action.

Teachers are keen to get teaching material, games and external consulting. This is also a confirmation for being on the right path.

35 teachers have seen the exemplary lessons, 33 of them stated that the lessons were an enrichment for their lessons, 2 persons stated that this is not " the duty of the school".

61 % of the teachers come to school by car, only 12 % use PT. Looking at these figures it becomes apparent that special marketing strategies for teachers would be needed.

6 % of the teachers are keen to work in a focus group about Public Transport because of the reasons "interest", "makes sense to raise the awareness of others", "the good pedagogical concept".

Conclusions and Recommendations:

- ✗ Schools are an important target-group for Public Transport companies for marketing strategies as they are able to reach lots of people (students, teachers, parents) with (relatively) little effort
- ✗ Basically most of the young people like using PT, give young people respect as important clients for PT (address young people with various give aways, be open-minded for their needs and requests) so that they need not to switch to the car when they get older
- ✗ Close the information gap which keeps people from using PT
- ✗ To win schools as partners for PT companies it is important to have high quality standards because more and more commercial companies are also interested in this target group.
High quality means:
 - Knowledge of the curriculum
 - Experience in the contact with teachers and students
 - Not only specialised knowledge but also knowledge about new didactical methods
 - New pedagogical approach (differences to traditional traffic education)
 - Integrate factor "Fun"
- ✗ External consulting is often needed

A network of interested teachers will collaborate in form of regularly meeting focus-groups with the aim to empower ambitious teachers, support the exchange with others, show them how to use the teaching-materials and create new materials and games for older classes.

If marketing is to work successfully - so that the image of the public transport system can be improved - each strategy must be tailored to the individual wants. Often public transport companies have not enough knowledge about the needs of their youngest clients and teachers don't teach about PT, because they don't use it themselves. Therefore it is important that marketing-experts find new methods how to make the information more comprehensible and it is especially important to also address the emotional needs of the youngsters. Although it is often cited in speeches that mobility starts in the brain, a holistic approach to mobility management should also take into consideration that mobility starts in the heart. Therefore use only positive affirmation and address the three marketing-keywords: freedom, prestige and love.

The project "Clever Kids Travel with Public Transport" is a shining example, of what successful mobility management can do. It can serve as a prominent role model for other European transport companies. The teaching material can be downloaded at the PROVIDER web-page in six languages: www.schoolway.net

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Mobility Management through land use management: The Spanish N-III corridor as a good practice

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Workshop 1 c): Interaction between spatial planning and mobility management
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1. Introduction: why land use and transport co-ordination?

Our starting point tries to answer one apparently simple question: are there good examples regarding transport and urban development policies? The answer is not, unfortunately, easy, since there are not many examples. Here, we will present what we think is a good case of land use and transport rational interaction: the construction of a new Metro Line, connecting Arganda and Rivas municipalities, both in Madrid, along the National-III corridor (Madrid-Valencia), located at the East of Spain), proving the increasing importance of having in mind urban transport as a step before urban development. It is a corridor with a high potential development, given the amount of available land and nearness to Madrid (27 km and 19 km from Arganda and Rivas, respectively), which results in an excellent test-bed for different types of transport strategies. Regarding population, in 2001 there were 32,807 inhabitants in Rivas and almost the same in Arganda: 32,927

This could be the current state of the art: urban sprawl, increases car availability, and the concentration of working places and shopping facilities in out of town locations, have resulted in continuing increases in journey length for all purposes, but specially for commuting journeys. Generally speaking, we could state that access to basic services is becoming more and more dependent on car transport. Trying to find out a solution, the European Union Transport Policy is focusing more and more on the concept of mobility – and more specifically “sustainable mobility”- rather than accessibility; and, from the view of sustainability, the railway solution seems to be the most appropriated,

So, the case we are writing about, shows, indeed, a good solution for new developments suffering from poor accessibility, and involves the integration of policies and measures at several levels, finally showing the possibility of achieving a better balance between public and private transport, shifting demand onto public transport and reducing the amount of private vehicle trips. In other words, it is necessary to overcome the classic paradigm infrastructures ? development, taking advantages from the existing modes more than investing in new programmes.

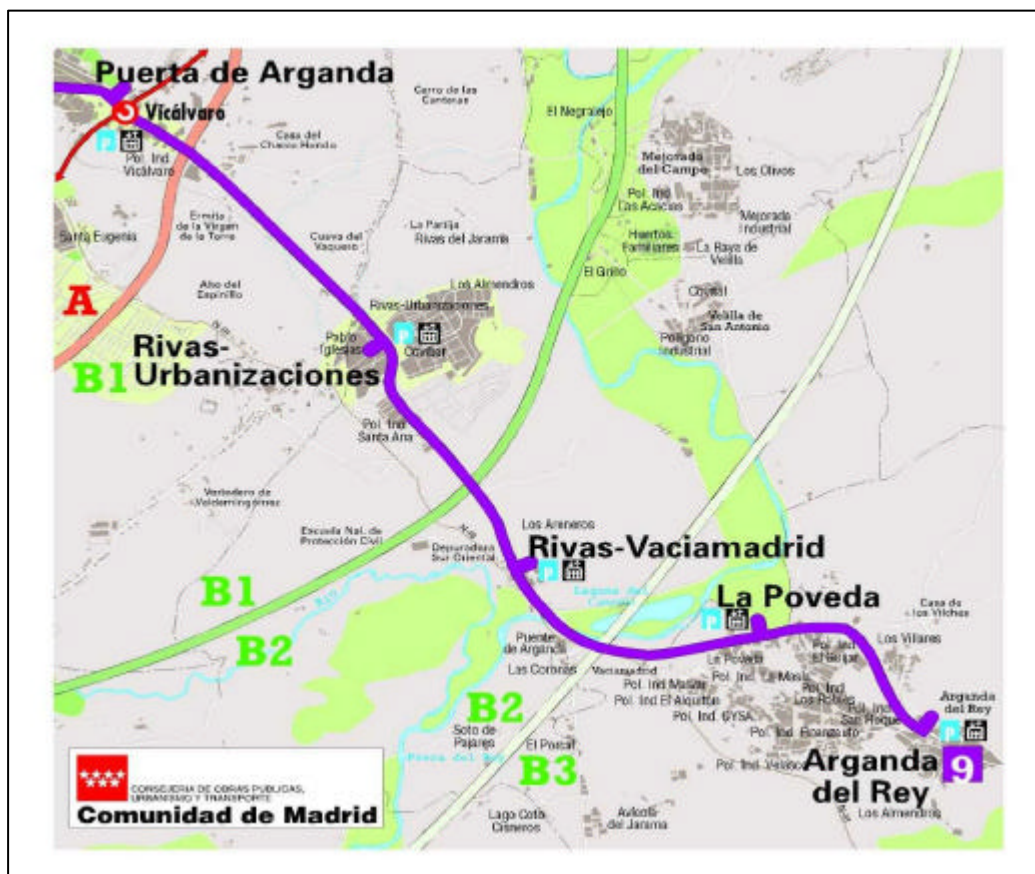
Anyway, fair is to say that here we will show just one of a wide range of policy measures as were identified in the PROSPECTS project (5th UE framework programme); in fact, we deal just with one forming part of a group called “land use measures”: a transport corridor-based development designed to encourage provision and use of public transport, but, obviously there are a lot of policy measures which are available to cities. More than ever is indispensable to design policies aimed to foster and

improve the current transport system, having in mind the different perspectives at hand: from legal to financial, not to mention those organisational and even operational. In this sense, we are firmly convinced that an efficient transport passengers planning depends on its co-ordination with other policies; more specifically, would be more than appropriated that the financial system worked together with land planning co-ordination and new information technologies

2. Project description: the N-III corridor then and now

First of all is worth to mention that the Madrid National III corridor shows a lower development standard than others. As Monzon points out (Monzón A., González , J, 2000), this may be due to the fact that most wastes sites form Madrid have were traditionally located along the Jarama River. Until the construction of the new Metro Line in 1996, private car had the highest modal share in the area, whilst bus demand had more or less the same level that other corridors, i.e., between 20% and 25%.

Once the problems with the waste deposits disappeared thanks to the new modern techniques, the fact is that a lot of new developments –both housing and industrial- were carried out, mainly because of its nearness to Madrid (no more than 27 km), and the possibility to acquire a brand new house at a reasonable price, as strange as it may seem!



So, anticipating forthcoming conditions¹, the Madrid Regional Government decided to promote a new rail/subway line in November, 1996. This proves the crucial importance of considering public transport within the urban development process at an early stage. It is, in fact, as “simple” as getting a better integration of transport planning and spatial planning.

3. The call for tenders and the financing: a good case for PPP

The construction process had to face strong budgetary constraints, imposed by the European convergence requirements, which explains the very in favour that Regional Government was of allowing and stimulating the private participation into the project, i.e, into the provision of public transport services.

From the legal point of view, the Spanish Land Transport Act (LOTT), sets up the possibility to launch calls for tenders for construction and exploitation of any new rail line, provided that are not a part of the so called Integrated National Network(INN)² On this basis, and giving the fact that the new line entirely passed through the Madrid Region, and was not a part of the INN, the decision was, finally, to open a call for tenders for the building and operation of a 18.3 km rail/subway line.

The project would benefit from an existing rail track of a concrete factory located near Arganda. Due to this, the tenders should only have to upgrade the existing track for passengers services, solving the conflicts related to goods and passenger movements.

The tender process was as follows: once the General Conditions of the contract were passed by the Regional Government, the contract was put out for tender in the Madrid Region Official Gazette in November 3rd 1996. The interested Groups had a 3 months period to make their bids. The tender should cover:

- The line project
- The civil works
- Rolling stock supply
- Land expropriation
- Operation of the line during 30 years at least, with guaranteed services level
- Global Maintenance of the railway

In February 1997 the process for admission of tenders was closed, starting the evaluation process. To summarise, two groups submitted their proposals, which included projects design, demand forecast, solution to problems derived from the operation of the line (stations and co-ordination with good movements), rolling stock supply, timetable and fares and solicited subsidies. Finally, the Regional Government adopted a decision, based on the following criteria³:

- Fare framework, including ticket pricing and solicited compensation

¹ It is worth to mention that the train arrived before the urban settlements were consolidated, which is very important for sustainability. However there are other actions to take into account, such as the projected new Madrid airport, to be developed in the area by 2015, which has opened good perspectives for new developments in the area.

² Lines and railway public transport services which form part of the basic structure of the general railway transport system. The decision on which lines are or are not a part of this INN is responsibility of the National Government.

³ 20 points were assigned to each of them

- Connectivity and compatibility with the public transport network
- Service efficiency and quality
- Technical standard of the technical solution
- Reduction in construction time

The contract was awarded to a group formed by the following companies

| Main activity/responsibility | Concessionaire Group | |
|-------------------------------------|-----------------------------|------------------|
| | Company | % capital |
| Operator | Madrid METRO | 42.5 |
| | NECSO | 12.5 |
| Construction | FCC | 12.5 |
| | OCP | 9 |
| Financial | Madrid Regional Bank | 25 |

The original budget was estimated in 108.4 Meuros, which included:

- Construction of the new railway infrastructure
- Four new stations (the last in Arganda centre)
- Rolling stock
- New safety system (Automatic Train Protection –ATP)
- Expropriation costs

Despite all this, the municipal bodies demanded some modifications, so the final budget increased to 113.3 Meuros

The concessionaire group committed to construct 4 new intermediate stations: Rivas Urbanizaciones, Rivas, La Poveda and Arganda, connecting this new rail line with the existing subway line 9, with a total length of 18,306 m/double track. The concession period will expire in December 2029, when the line will revert to the Regional Government.

Currently, the concessionaire group decided to constitute the so called Transportes Ferrovarios de Madrid S.A. company (TFM), which acts on behalf of the above mentioned group⁴.

It has played, as well, an important role the bringing of the land for the construction of the infrastructure, which is normally by the way of expropriation. In this case, the formula was an agreement among all the parts involved: Regional Government, Madrid Municipality and land owners and concessionaires as the case may be. In such a way, the Regional Government obtained free land and the land owners a guarantee for re qualification of the land in order to build new houses.

⁴ The funding of the project is based on a mixed system of fares, subsidies depending on demand, and use of the travel card. For further information, see “La solución ferroviaria del corredor NIII de la Comunidad de Madrid”, Comunidad de Madrid, Consejería de Obras Públicas, Urbanismo y Transporte, 2001

4. Impacts on mobility and land uses

The line started to operate on April 7th, 1999. As stated above, the concessionaire offered to connect and operate the new line as an extension of a line already existing: the line number 9 of the Metro network which presented high connectivity standards with destinations located in the city core. Furthermore, the bus network –provided with urban and suburban coaches- has been restructured to achieve an integrated public transport system, improving as well the accessibility to the new stations in the corridor.

We could claim for two main effects of the Metro line on public transport services. First, the generation of an induced demand, and second the transfer of some users from bus services. Comparing data from the Madrid General Mobility Survey (EDM) in 1996 with an specific household survey carried out two years after the implementation of the subway line, we can draw the following table which illustrates both effects:

| Impact of metro line on modal split Daily trips from Arganda and Rivas to Madrid central | | | | |
|---|-------------|----|-------------|----|
| | 1996 | | 2001 | |
| | daily trips | % | daily trips | % |
| car | 8,601 | 57 | 8,912 | 51 |
| bus | 6,332 | 42 | 2,417 | 14 |
| metro | 0 | 0 | 6,160 | 35 |
| Total | 14,933 | | 17,489 | |

Source: EDM/96 and 2001 household survey

So, the impact on modal split highlight the strong effect of the new metro line which attracts 70% of the Public transport demand, and together with bus services has reduced car patronage by 6% after implementation.

Between these two dates, in 1999, and only some months after the line was opened, the Madrid Public Transport Authority (CRTM), carried out another survey to obtain the characteristics and profile of the Arganda's metro line user. 7,927 interviews were taken, along different stations, with the following results:

| Profile of subway users /July 1999 | | |
|--|-------------------------------------|------|
| 24.5% New trippers (reason to trip now) | new residents | 6 % |
| | Changes in study/work place | 24 % |
| | Occasional, recreational activities | 47 % |
| | Others | 23 % |
| 75.5% previous travellers (previous mode) | Car | 30 % |
| | Bus | 66 % |
| | Others | 4 % |

The survey shows that 75% of travellers has been transferred from other modes; more specifically 2/3 from bus and 1/3 from private car. The new travellers are still occasional, but some 30% could be attributed to new housing developments and change in destinations (work or study). As main conclusion, we could state that there is a big potential of the new metro line in restructuring and drawing new land uses and developments.

Apart from this, but closely connected, it is necessary to mention that policies and actions have been taken to increase the appeal of the new infrastructures for users, such as the reschedule of bus services, the upgrade of connectivity levels, including park & ride facilities near the stations, bike facilities, etc.

5. Conclusions

This case study show the important role of the integrated packages -with planning and operation- when talking about sustainability. We can see that the construction of the new metro line with stations at the core of new developments, has produced a more balanced modal split, with metro attracting trips from car - and even more from bus- and both using the same motorway to Madrid. We could dare to say that it is possible to analyse not only the relationship between land use and transport –and more specifically the impact of the new metro line- but the equilibrium between residential land and industrial activities, in a way that the corridor does not suffer any important imbalance in terms of origin/destiny of the trips.

Even in residential framework, with a rapid growing rate, public transport has increased its share of demand, reducing car trip trends down from 57% to 51 for all motorised trips.

Furthermore, one of the best thing that could be said about the extension of the Madrid Metro line 9 to Arganda, refers to its early planning. As we have stated, through all this paper, the metro coaches arrived before the urban settlement was consolidated whilst, historically, the opposite used to happen, with the metro arriving once the constructions have been built up.

Regarding financing, this unique experience in Spain shows the possibilities for public private partnerships in building infrastructures in a record time; a goal that could have not been achieved otherwise. This was, as well, the first time that the Madrid subway network exceeds the limits of the core city⁵, and illustrates a good example that could have seen the light had it not being for the decision to adopt a cross public/private finance system.

One more positive thing to mention is that the cost of construction and operation works was tantamount to the planned, which maybe would have not happened if construction and operation were have been left to public companies, when actual costs generally exceeds estimated costs. On the other hand, the completely private management of the construction has facilitated that terms and deadlines had been strictly observed, in spite of being short terms in fact, which has been a success even from a social point of view:

⁵ Currently, the so called Metro-Sur, which links Madrid South outskirts population with the city centre is almost finished. It should be operating by mid 2003...but this will be another paper!

users has suffered disturbances not particularly long, taking advantages of the railway services very fast.

Finally, the success of the project is very much due to the political willingness to develop the idea, and secondly, to the effort and efficiency displayed by the private concessionaire.

To summarise, it is of crucial importance considering public transport within the urban development process at an early stage. It is a matter of getting a better integration of transport planning and spatial planning. In the same line, it is necessary to point out the importance of the brand new (2001) Local Instruction for Designing the Public Thoroughfare, passed by the Municipal Government of Madrid, as a step ahead in the long way to the land use and transport co-ordination. This regulation recommends, among other things, to include a transport study in every urban development plans of certain size (i.e., 150 flats). At regional level, it is also worth to mention the new passed on Madrid Region Land Use Act, of July 2001.

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- White Paper. The European Transport Policy 2010. A time to decide. European Commission

Analysing the demand for different traffic scenarios in inner cities - A useful tool in local planning?

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Workshop: 1c, Interaction between spatial planning and mobility management

Background and methodological considerations

This paper has been produced as part of the research theme “Optimal balance between access by private car and the environment in town and cities”. The background to the project is the increasing use of cars in towns and cities, which has been a major problem for town planners and politicians during the whole post-war period. The increasing use of private cars threatens the safety of other road users, especially pedestrians and cyclists. It is also related to a reduction in the number of people using public transport systems which, as a consequence, forces the operators to raise fares, run fewer routes, reduce frequencies and so on. There is no doubt that the increasing volume of motorised traffic has negative impacts on the environment in towns and cities. Important, but analytically difficult, values such as “beauty, comfort, and safety” are under constant pressure from the space-consuming private car in urban settings. The underlying objective for the entire research project is to investigate if the documented development in this area is in line with the public interest, or if there is an imbalance between the actual outcome and the inhabitants’ preferences.

The central issue concerns the balance between the benefits to an individual of car-access and the public benefit of a good urban environment. There is no functioning market where this balance can be effectively settled because “urban environment” is an example of a public good that can not be purchased in desired quantities on a traditional market. Problems of non-rivalry in consumption and free riders hamper the functioning of the market as an efficient mechanism for allocating scarce resources. The isolated behaviour of an individual, or a household, has a negligible impact on the total outcome, which in turn influences the behaviour in certain directions.

An individual, or a household, may find it very attractive to use the car frequently, due to its advantages in terms of carrying capacity and travelling speed, over walking, cycling or public transport. The private car facilitates transportation over large distances, directly monitored by the individuals own decisions concerning departure times, routes, frequencies and so on. The car facilitates, for instance, the transportation of heavy carrier bags between stores and homes.

However, the efficiency of an individual’s use of the car is dependent on other car-users decisions. The ideal situation, from the point of view of a particular household, can only be reached if everyone else chooses not to use the private car as a means of transportation. The possibility to use the car in an efficient manner, on an individual level, is threatened by increases in the total usage of cars in urban areas. Congested streets, noise and emissions also reduce the general attractiveness of inner cities and residential areas, with negative consequences for

commercial activities such as stores, restaurants, bars, cafés, and for “beauty, comfort, and safety” etc. There is no mechanism a single individual can use to alter the situation in a more favourable direction, due to the absence of functioning markets. The revealed preferences, manifested in the actual car usage, can, at least in principle, result in a situation that is demanded only by a minority of the individuals. This discussion can perhaps be seen as an application of the well-known theorem “the tragedy of the commons”, as far as urban traffic and local environmental consequences are concerned.

In order to prevent major costs occurring due to the possibly presence of market failures, town planning and other policy measures have to work as a proxy for an ideal consumer acting on a well-functioning market. Town planning should, at least ideally, function as an institutional regulation capable of mitigating the problems associated with market failures. Therefore, it is necessary in order to foster right decisions, that the planning measures and policies are based on relevant research and knowledge. The rationale for this study is to contribute new knowledge to this problematic, but nevertheless, important and interesting research field.

This can be achieved in several ways. One alternative can be labelled “social engineering” and involves identification, quantification and evaluation of different environmental factors in an expanded cost-benefit framework, where different methods can be used in the analysis, especially when evaluating. There are, however, major obstacles to be overcome when applying a traditional cost-benefit framework to these research questions. “An attractive inner city” is a very complex commodity with several attributes and qualities, difficult to decompose and value separately, which is necessary when performing cost-benefit calculations. Without rejecting the possibility of using traditional cost-benefit methods entirely, one must accept the severe problems associated with the approach in this particular case.

There is also the political alternative of asking people directly through a referendum, which in a sense would make the research discussed in this paper somewhat superfluous. The actual approach chosen in this project is a survey by means of questionnaires, the purpose of which is to determine the preference structure of individuals regarding different urban designs, with respect to the balance between individual car-access and the public benefits of a decrease in motor traffic.

By allowing individuals to choose between different scenarios “packages” of environmental effects and transport benefits are in focus, thereby, at least in the ideal case, bypassing the decomposition problem following the traditional cost-benefit approach. If this approach is successful it can be used as an alternative to costly referendums and the results can be interpreted in economic terms and give the same information as a traditional cost-benefit calculation. All approaches, following traditional economic theory, must in an analytical sense be founded on the same balance between costs and benefits that would have been reflected in the equilibrium conditions and solutions on an ideally functioning market.

The approach applied in the study is best suited for situations where the same individual confronts both costs and benefits as a result of different level of car access. The actual choice between different scenarios should in this case be the outcome of individuals balancing costs against benefits. This should be the factual situation for households living in residential areas in suburbs, and when the motor traffic in the inner city is in focus. Households living in the inner city can achieve

individual gains from an extensive car access but encounter costs caused by the increase in the total motor traffic volume, in the same manner as the suburban inhabitants in their residential areas. Moreover, the quality of the inner city environment concerns everyone in the actual city, including those who travel to the central business district for shopping, recreation and, of course, work purposes.

The approach adopted here is, however, not suited for analysing the problem of private car traffic in the residential areas located around the inner city. Motor traffic in this part of the city is to a large extent characterised by through traffic to and from the inner city. Therefore, it would be wrong to assume that winners and losers are the same individuals. Contingent Valuation Methods (CVM) and other approaches can be used in order to deal with the problem of evaluation in an analytical economic framework. The essential research problem to tackle is the optimal balance between ordinary traffic benefits “on the road” and environmental costs suffered by the households in the nearby surroundings. Studies using CVM have been carried out as part of the project, but the results will not be discussed in this paper.

The challenge confronting the research methodology is to construct and describe different scenarios correctly and in such way that the individuals answering the questionnaire can absorb and understand all the information given. This is extremely important when focusing on the differences between the various alternatives and the associated trade-off between individual car-access and the public benefits of a decrease in motor traffic.

Data acquisition

The research question is tackled by letting individuals choose among different scenarios concerning the design of inner cities, by means of a questionnaire. These scenarios are presented by using different, but complementary, techniques. Each scenario has a heading. The questionnaire used in the main study describes three different scenarios. Drawings and short paragraphs of one or two sentences illustrate the scenarios. The paragraphs are clustered in different groups. One group of paragraphs describes the main feature of the particular scenario and five groups with the subheadings car, car parking, bus, cycling and walking, respectively. The descriptions of the scenarios do not specify the possible investment costs associated with the transformation of streets, pavements, bicycling lanes etc., in order to achieve the actual traffic situation in each alternative. Many of the differences, however, can be realised by means of regulations with almost no investment costs at all, thereby justifying the attention on the particular economic costs and benefits following different levels of car usage, as discussed above.

By allowing the individuals express their attitudes towards different parts of the scenarios and answer questions concerning their socio-economic background and travelling behaviour, the analysis is further advanced.

The shaping of inner cities

The questionnaire used in the main study describes three different scenarios, or alternatives, with the following headings:

- A. Increase in motor traffic and street space for cars
- B. Lesser space for cars and road pricing
- C. Lower speed limits on smaller streets

The first alternative entails an accommodation of the design of inner cities to a greater use of private cars. Street capacity and parking facilities are expanded to cater for more cars. The amount of pedestrian streets remains at the present level but public transport experiences a falling number of passengers, which will decrease the quality of the supplied services. Bicyclists will find it more difficult to travel safely in increasingly car-adapted surroundings.

The second alternative's major ingredient is a pricing system that imposes a charge on car usage in the inner city. The revenues are used to subsidise bus transport with lower fares as a result. Travelling by car decreases and travelling by public transport increases as a consequence of the system. Some streets and roads are converted to pedestrian streets and bicycle lanes.

The third alternative is a so-called "traffic calming" scenario. ("Traffic calming" will be used throughout the paper as a somewhat imprecise collective term for measures that calm down the motor traffic, including regulations, design of road and streets with narrowing and barriers, broader pavements and cycling lanes etc.) Private car traffic is limited by means of lower speed limits, more pedestrian pavements and bicycle lanes, and special lanes for public transport only. By calming the motor traffic other means of transportation increase their competitive capabilities and gain a larger share of the travellers, at the expense of the private car.



Figure 1 Drawings illustrating the scenario "Lower speed limits on smaller streets"

The following table shows in percentages the alternatives chosen by the interviewees in the survey:

Table 1 *The choice between different scenarios in inner cities, percentages*

| | | | | |
|-------------|----|----|----|-------|
| Alternative | A | B | C | Blank |
| Result | 16 | 20 | 49 | 14 |

Almost 70 percent of the individuals in the survey are in favour of more restrictions on private car usage, which will have positive consequences for walking, cycling, and travelling by public transport in the inner city. Around one fifth of those surveyed prefer the road pricing alternative, but nearly 50 percent of the individuals prefer reaching the targeted balance by imposing speed limits and other regulations, and by redesigning streets in the described way. Traffic calming should therefore be an easier alternative for local policy makers to choose than a strategy involving reducing private car usage by road pricing. The acceptance problem connected with pricing road and street capacity is well documented in the literature. Alternative C is the most popular choice among almost all categories of individuals in the research material. It is interesting to note that even among frequent car users, alternative C clearly stands out as the most popular scenario. This is not surprising considering the percentage in table 1 and the fact that a majority of households in developed western economies own one or more private cars.

There is, however, one group of individuals that prefer a continued accommodation of the inner city to a greater usage of cars, by increasing street capacity, parking facilities, regulation in favour of private cars etc. Car access is of course a very important characteristic of inner city quality for these individuals. The results suggest that around 15 percent of the population in Swedish cities embrace this preference regarding the design of inner cities. It can also be shown that a vast majority of these individuals do not live in the inner city.

Despite the fact that the alternative C is consistently the most favoured alternative, different explanatory factors can be used in order to focus on some crucial differences concerning the choice between the design alternatives. Factors such as gender, car ownership and/or car access, car usage, type and location of housing and travelling behaviour in general seem to influence the choice.

The following table displays, as an example, how the preferences expressed by men and women differ.

Table 2 *Choice of scenarios, differences between women and men, percentage shares*

| | | |
|-------------|-------|-----|
| Alternative | Women | Men |
| A | 6 | 27 |
| B | 22 | 17 |
| C | 59 | 40 |
| Blank | 13 | 15 |
| Sum | 100 | 100 |

The largest relative difference concerns alternative A, popular among men, and alternative C, popular among women. Although there are differences between men and women, alternative C is clearly the most favourable scenario for both sexes. Similar patterns can be found when analysing the impact of other types of explanatory variables such as car access, type of housing and travelling behaviour.

Adjusting to local conditions in actual cities

The questionnaire discussed above can also be adjusted to more local conditions in cities. The initiatives for a more integrated town- and traffic planning such as Local Transport Plans in Great Britain and Plans de Déplacements Urbains in France, strongly emphasize the necessity of strategic visions for the development of cities and transport systems in general. It is of fundamental importance that these visions are based on the will of the public opinion. However, following the discussion above, it is not an easy task to formulate visions and, especially, let the inhabitants choose among different scenarios concerning the future development of the city and its transport system.

One possible way of accomplish this task is to use modified versions of the questionnaire presented above and perform similar investigations in the city in question. Conducting such studies give the local authorities the opportunity to link the general planning process and other planning measures to the demand, i.e. the will of the inhabitants. The approach developed in the research discussed in this paper present a relatively cost-effective method to supply the local authorities with information and knowledge about the state of the opinion and the relevant preference structures among the inhabitants. Traditional planning exhibitions and local debates in media often suffer from systematic biases from a statistical point of view, due to the majority's unpleasant habit to remain quiet. Modified versions of the questionnaires have been used by the Swedish middle-sized city of Sundsvall, supporting the work with new and more integrated master plans, with similar results as discussed in the previous section. (Svensson and Haraldsson, 2002)

General conclusions

The results of the study clearly show that, within the boundaries of the applied methodology, a majority of the individuals prefer scenarios where all kinds of road-users relatively safely coexist on streets and roads in towns and cities, and where this condition has been reached by traffic calming measures. Compared to the present situation in many Swedish towns and cities, this means a rather large reduction in car-traffic and parking in inner cities with corresponding improvements in safety and assigned capacity for pedestrians and cyclists. The results clearly indicate the importance of performing research in this field of inquiry. In general there is a strong tendency towards a preference for a mixed traffic situation, distinguished by the absence of a dominating means of transportation. The majority stresses the importance of guaranteeing the safety and comfort of pedestrians and bicyclists. The results show that traffic-calming measures have a great potential to limit car traffic in urban areas while road pricing and prohibitions will meet with greater resistance among public opinion, with consequences for the feasibility for the authorities to initiate different policies at local level.

One conclusion from the research so far that has to be investigated in future research is the relative unpopularity of road pricing compared to traffic calming measures, which in practice will have identical impacts on car usage in towns and cities overall. Road pricing is currently seen as the main solution to the congestion dilemma that plagues car crowded cities. The theory of optimal pricing of street capacity is well developed and founded on conventional, but controversial when it comes to practical applications, economic price theory. By pricing relevant externalities, such as congestion imposed on fellow road users, an effective allocation of scarce resources, e.g. street capacity, is facilitated. If these measures can be used in practice without unreasonable high costs for charging and monitoring, there seems to be much to gain by pricing road capacity in towns and cities.

Traffic calming, on the other hand, can be seen as a bundle of administrative, or even bureaucratic, policies associated with high investment costs necessary to alter the design of streets and roads. Furthermore, it seems impossible to achieve the same degree of precision and economic efficiency with traffic calming as compared with road pricing. Following this line of argument traffic calming can be labelled as a measure belonging to a command economy ideology, with its well-known inefficiencies, and road pricing its corollary: a decentralised market solution to the dilemma of congestion etc.

However, this line of argumentation may be over simplified. There are still many problems to solve before road-pricing systems can be widely used at a reasonable cost. Translating theoretically based recommendations and principles to applicable and practically working road pricing systems is still problematic and expensive. The investment costs required before any pricing system can be implemented is considerable and some technological problems have yet to be solved. But the acceptance and legitimisation problems seem to be the real stumbling blocks. With traffic calming, on the other hand, it is possible to combine reductions in traffic by private cars with considerable improvements for other users of the streets, such as pedestrians and bicyclists, with identical measures. Compared with road pricing, the combined effect of traffic calming has greater potential of producing a larger number of positive consequences for the urban environment. Furthermore, the potential to create improvements in “beauty, safety and comfort” with traffic calming measures is considerable, which is enhanced by the fact that traffic calming can avoid the acceptance problem more successfully than road pricing, as is indicated from the results in the study. It should be remembered that speed limits, pedestrian streets, bicycle lanes, driving lanes for public transport only etc., are common features in many towns and cities.

The tendency to view road pricing and traffic calming measures as diametrically opposed ideas can be questioned, following traditional reasoning in transport economics. Both road pricing and traffic calming measure entail a rise in the generalised cost imposed on the traffic by cars; road pricing by monetary payments and traffic calming by increases in travelling time, i.e. costs elements that can be treated identically in an analytical framework.

To sum up the discussion so far it is clear that further research is needed with the purpose of investigating and analysing the relevant preference structure concerning the balance between the benefits to an individual offered by unlimited car-access and the related consequences of the overall traffic by private cars. It can also be stated that both theoretical and applied research have to be carried out in order to integrate road pricing schemes and traffic calming measures, which

hopefully can contribute to more alternatives for local town planning and policy and, accordingly, a better urban environment. It can also be stated that we now possesses methodologies which can be used to gain knowledge about the demand for different designs of the transport system in cities. There is no reason anymore for local authorities to be in a severe state of uncertainty in this line of investigation.

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7th EUROPEAN CONFERENCE ON MOBILITY MANAGEMENT

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Mobility management at district level - The impact of car-reduced districts on mobility behaviour

Workshop: 1c: Interaction between spatial planning and mobility management
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1 Introduction

The model district Freiburg-Vauban is one of the first low-car housing projects in Germany. Within the project "Optimisation of the Traffic Concept of the District Freiburg-Vauban during Implementation" sponsored by the German Federal Foundation for Environment, an evaluation of the traffic concept was carried out.¹ The analysis described in this paper is part of the project and delivers data in a new scientific quality about the way in which these kind of car-reduction measures influence mobility behaviour.

In order to promote sustainable development of urban transport, one of the objectives of Mobility Management is to inhibit and reverse the growth of traffic by limiting the number and length of motorised journeys and the need for such journeys, and to encourage people to make use of sustainable modes of transport. As there is a close link between car ownership and car use, the mobility behaviour of people living in car-owning households is usually highly dependent on the availability of a car. This makes it difficult to draw the attention of these people to alternative means of transport and convince them to use these, since these measures have to overcome car-oriented habits and practices to be successful. In contrast with Mobility Management concepts which try to influence mobility behaviour with "soft" tools such as information about sustainable modes of transport, marketing measures or the improvement of transportation offers, car-free projects tackle the problem at its roots. Such projects focus on the very ownership of cars and so trigger long-term changes to one of the factors which determine mobility behaviour.

Pedestrian areas and car-free city centres are nowadays taken for granted. Car-reduced or car-free districts, on the other hand, are still rare, even though the discussion of car-free districts in Europe has already been continuing for about ten years. Many urban districts are burdened with traffic noise, pollution and the high use of space for motorised individual traffic. The advantages of urban life, such as good shopping facilities and a broad range of cultural offerings, are often overshadowed by the disadvantages of car-oriented transportation planning. As a result, many people move out of the cities and reinforce splinter development and urban sprawl with their problematic effects on traffic. The concept of car-reduced and car-free districts therefore plays an important role in urban sustainability.

¹ Project partners are the Forum Vauban e.V. and the Eco Institute e.V., Freiburg.

2 The car-reduced district Vauban

In 1992, when the French army pulled out of their military base Vauban, the city of Freiburg in Southern Germany had the unique opportunity of using the attractively located 38 hectare area for city development. The idea was to create a new city district providing 2.000 apartments for approximately 5.000 people and about 600 jobs. As the town planning process was characterised by extensive integration of ecological and social aspects, a high standard of sustainability could be reached: Vauban is, for example, one of the largest passive-housing areas in Germany. Vauban's energy is provided by an efficient co-generation plant run on natural gas. A system for the filtration of rainwater ensures that almost 100% of the rainwater remains within the district. Amongst the social aspects are the far-reaching citizen participation during the planning and construction phases of the district. Last, but not least, a new traffic concept has been developed in order to reduce the number of cars and the volume of motorised traffic within the district. Housing construction started in 1998 and by now a large part of the area is populated. The development of the district will be finished by 2006.

2.1 Good general conditions for car-reduced housing areas

The Vauban district offers good general conditions for the implementation of a car-reduced traffic concept, in that the creation of a city of short distances has become reality. Most of the daily needs of its inhabitants can be satisfied within the quarter itself or in its near surroundings. The infrastructure of the district includes a variety of shopping facilities (a shopping centre, a food co-op, a farmers' market, a bakery and several other shops such as a stationers shop and a bicycle dealer), green areas within the district, a recreation area just outside the district, as well as nurseries, a primary school, a high school and a neighbourhood centre with a large number of social and cultural offerings. In addition, downtown Freiburg and its main line station can be reached by bus or by bike within 10 to 15 minutes. By 2006, when Vauban is connected to the tram and possibly to the suburban train line, it will be optimally integrated into the public transportation system.

2.2 The Vauban traffic concept

The Vauban district is one of the biggest car-reduced projects in Germany. The goal of the traffic concept is not to create a small, car-free enclave, but rather to reduce the use of cars in the entire district to the benefit of all inhabitants. The result is the combination of two forms that are not usually integrated into one concept: "parking-free" and "car-free" living. For large parts of the residential area, the Vauban development plan prohibits the building of parking space on private property. Instead, private cars are parked in a communal car park located at the periphery of the residential area ("parking-free" living). Cars are only allowed to enter the residential area for pick-up and delivery. The speed limit on the district's main road is 30 km/h, in the residential area cars should not drive faster than "walking speed" (5 km/h).

Residents without cars are exempted from the financing of the communal car park. Car-free households thus save the substantial cost of a parking space. The same is true for development companies who build "car-free" apartments for rent. The "car-free" households are not forced to subsidise the communal car ensuring the fair distribution of costs.

Since the building regulations of Baden-Württemberg require car-free households to prove that they do not need a car and also require them to reserve space for parking that may be required in the future, a formal, legal regulation of car-free living was necessary. To confirm that no car is needed, the households have to sign a 'car-free declaration' which has to be renewed annually. In this declaration the house owner guarantees the city of Freiburg and the Association for Car-Free Living that he neither owns nor regularly uses a car or a motorcycle with more than 50 ccm cylinder capacity. Since householders are not permitted to build the parking space on their own property, they cannot reserve any parking space on their own ground. For this reason the "Verein für autofreies Wohnen" (association for car-free living) was founded. The association bought a property at the periphery of the residential area which could be turned into a parking area if needed and each car-free household enters

into a contract with the car-free association. At present the space is used for barbecues and sporting activities.

Up to now approximately 400 households have decided to live in Vauban without a private car. This corresponds to 40% of all households in that part of the residential area, in which parking space on own property is not allowed.

The concept that households with and without a car live in the same area has advantages as well as disadvantages. One advantage is an increase in the size of the area because there is no separation of that area into (small) car-free enclaves and areas where only car owners live. The inhabitants all benefit from the larger living area, and all the households enjoy the advantages associated with the concept, whether they own a car or not. Another positive effect is that the inhabitants enjoy greater flexibility, since households are not tied to one way of life (car-free or car-owning) but can switch between the two forms. The car-free lives of their neighbours and their experience of the quality which car-free surroundings bring, may lead people who own a car to reconsider their own mobility behaviour. And if car-free households should decide to buy a car, the quality of life in the area is not affected since the car is kept outside the residential area.

Unfavourable is that the streets are not completely free of motorised traffic, and that the quality within the area depends on the discipline of the car-owning households in keeping their car outside the area. Because of the costs involved in membership of car-free association, car-free households still have costs that are linked to car ownership even though they do not have one.²

3 Field study: Evaluation of Freiburg-Vauban's traffic concept

3.1 Research Methodology

The survey took place in the form of written interviews. Two questionnaires were developed: a household questionnaire to be filled out by one person in the household and a main questionnaire to be filled out by all adult persons i.e. those aged 18 or more. The objective of the household questionnaire was to gain information about sociodemographic data of all household members and their access to the various transportation modes. The main questionnaire dealt with the topics: current mobility behaviour, the change of mobility behaviour since moving into the district, and satisfaction with the traffic concept. In addition, the residents were able to make proposals for the improvement of the current traffic situation in Vauban.

In order to gain information about the specific situation of the households, the questionnaire contained two special parts marked in different colours. One part was directed at people living without a car in Vauban, the other part contained questions for people who owned a car and used the communal car park.

The survey took place in Mai 2002. 247 household questionnaires and 438 main questionnaires were returned and could taken into account for the analysis. The number of questionnaires answered, 32% of the total population of the district, was regarded as highly satisfactory.

3.2 Results of the survey

In this chapter the most important results concerning the availability of means of transport, the mobility behaviour, and answers to the specific questions for car-free and car-owning households are presented. To begin with, the specific social structure of the district will be discussed.

² Nobis, C. (1999): Neue Mobilität. In: Sperling, C. (Hrsg.): Nachhaltige Stadtentwicklung beginnt im Quartier: Ein Praxis- und Ideenhandbuch für Stadtplaner, Baugemeinschaften, Bürgerinitiativen am Beispiel des sozial-ökologischen Modellstadtteils Freiburg-Vauban. Freiburg: Öko-Institut, S. 201-262.
Forum Vauban e.V. (1999): A Journey through the Model District Vauban: A Vision Taking Shape. Freiburg

3.2.1 Social structure of the district

Compared to Freiburg as a whole, the average age of the inhabitants of Vauban is lower, there is an appreciably higher proportion of multi-person households, and a larger proportion of children. In Vauban the multi-person household with children predominates, and single-person households are seldom found. In the city as a whole, the situation is quite the opposite: single-person households are the rule, and the majority of the multi-person households are without children.

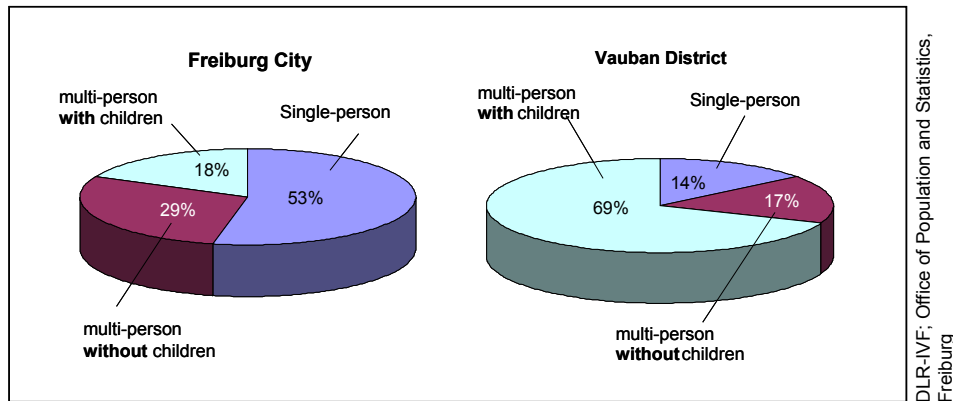


Fig. 1: Distribution of Household Types in Freiburg and in the Vauban district

The age-distribution in Vauban also differs appreciably from that of Freiburg. It displays two peaks; people of up to 15 years old and people aged between 25 and 45. Compared to the whole of the city these two groups are particularly well represented.

These statistics show clearly that Vauban is predominantly populated by young families whose special needs must be taken into account by the development of the mobility concept and the provision of transport facilities.

3.2.2 Availability of transport

The access to public transport and the availability of season tickets and travel cards for both local and long-distance transport show the importance attached to the use of the integrated transport system (public transport, pedestrians and cyclists) for the mobility of the people who live in Vauban. Two aspects stand out: the large number of people who own a Railway Travel Card³ and the large proportion of people in the district who are members of a car-sharing organisation.

According to the German Mobility Panel (Deutsches Mobilitätspanel)⁴ every 10th native speaker in Germany aged 10 or more owns a Railway Travel Card (BahnCard). Amongst the people surveyed in Vauban the figure is over 50% i.e. over half the inhabitants are Railway Travel Card users. The age distribution in Vauban is not an important factor here, since the proportion of Travel Card users is much higher than usual for all age groups.

Car sharing shows a similar effect. In 39% of the households surveyed one or more persons are members of a car-sharing organisation. If individual people are considered, we see that 33% of all the over 18 year olds surveyed belong to such organisations. Bearing in mind that, nation-wide, only 55.000 people⁵ take part in car-sharing, we see that such an accumulation in one district is absolutely exceptional.

³At the time the survey was carried out the old conditions for travel cards were still valid i.e. a discount of 50% on all train journeys was granted. The conditions for travel cards were altered radically in December 2002.

⁴The German Mobility Panel refers to an investigation of mobility habits carried out annually by the Traffic Institute of the University of Karlsruhe (Institut für Verkehrswesen, Universität Karlsruhe) in conjunction with Infratest. The figures quoted above are taken from the 2001 survey, based on a sample of 2009 people.

⁵ Press release of the National Association for Car Sharing (Bundesverband CarSharing (bcs): car sharing in 2001 is still on the increase, 4. Juni 2002

An examination of the results under the aspect of car-ownership shows that both factors (travel cards and car-sharing) are particularly marked in car-free households. 10% of the people in car-owning households take part in car-sharing. This value is still very high in comparison with the national average – only 0,1% of all German drivers participate in car-sharing. Compared to people who live in car-free households this figure is very low. The percentage of persons in car-free households who belong to car-sharing organisations is much higher and reaches 59% for this group.

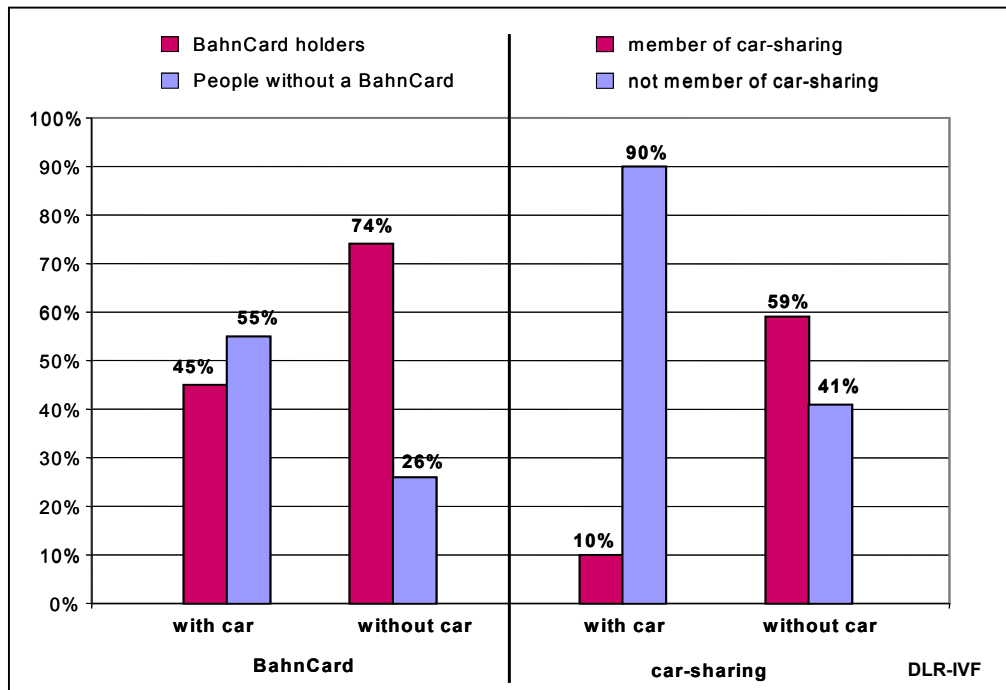


Fig. 2: The proportion of BahnCard holders and membership in a car-sharing organisation in relation to car-ownership

The concept of car- and parking-free housing must obviously exert an influence on the frequency of car ownership. In this respect, it is, above all, interesting to observe the extent to which the density of cars can be reduced by such a concept, and to determine whether this reduction is mainly a result of car-free households.

In Freiburg as a whole, the density of car ownership is 427 cars per 1000 inhabitants. This varies greatly in the different districts. In the outlying districts the figure can exceed 500 per 1000. In the city centre some district show a much lower value (300 per 1000). The profile of inhabitants in Freiburg-Riesfeld is in many ways comparable with that of Vauban since it is also a development area with a high proportion of multi-person households and – though less than in Vauban – of children. It lays further from the city centre than Vauban, but had, from the very beginning, better connections to public transport: a tram route was already available when the first people moved in whereas Vauban will not have such a service before 2006. The car density in Riesfeld is 270 cars per 1000 inhabitants.⁶

For Vauban the statistics are as follows: For all households in the survey (both with and without cars) the density is 150 cars per 1000 inhabitants. If we look only at the car-owning households, the figure is 240 per 1000. Even though this figure does not include any car-free households, the figure is still much less than that for Riesfeld. The lower density of cars in Vauban is mainly, but not exclusively, a result of the car-free households. The overall statistic shows that with the traffic concept applied in Vauban the car density could be reduced to half of the lowest density (approximately 300 cars per 1000) previously found in any other district.

⁶ Car density statistics: published by the Office of Population and Statistics: Freiburg im Breisgau: Statistical Information Services. 4. February 2003. <http://www.freiburg.de/statistik> (available only in German)

3.2.3 Mobility behaviour

The main reasons why people travel are: to go shopping; for leisure activities; to go to work or to a place of education. These three reasons make up 80% of all journeys taken by the inhabitants of Freiburg.⁷ The mobility behaviour of Vauban's inhabitants was therefore investigated under the three aspects shopping, leisure, and work or education. The questions asked dealt with the place involved, the frequency of movement and the means of transport involved.

Vauban can be regarded as a cycling stronghold. Compared to the Freiburg average, people in Vauban use their bicycles to cover a much greater distance. This is true for people who live in car-owning households and is even more pronounced for those who live in car-free households.

Commuter traffic is the major field for bicycles. People who live in car-owning households use their bicycles for 61% of the journeys to and from work. For people who live in car-free households the proportion is even higher at 91%. In Freiburg cycles are only used for 34% of the journeys to and from work.

Shopping habits, and the associated means of transport were split into "daily shopping" (e.g. for perishable food) and "bulk purchasing". As far as shopping for articles of daily use is concerned, there is almost no difference between the habits of those in car-owning and car-free households. With 53% and 54% both groups favour the local shopping facilities in Vauban. For bulk purchases the preference is quite different. The car-free households still mostly shop locally, in the majority of cases with their bicycles but also on foot. For car-owners, the hypermarket in the industrial area predominates and the local shops in Vauban are of lesser importance. As a result there is a great difference in the means of transport used. Where three quarters of the people in car-owning households state that they use their cars for bulk purchases, the bicycle is the main means of transport for the car-free households, and cars (through car-sharing) only make up 6%.

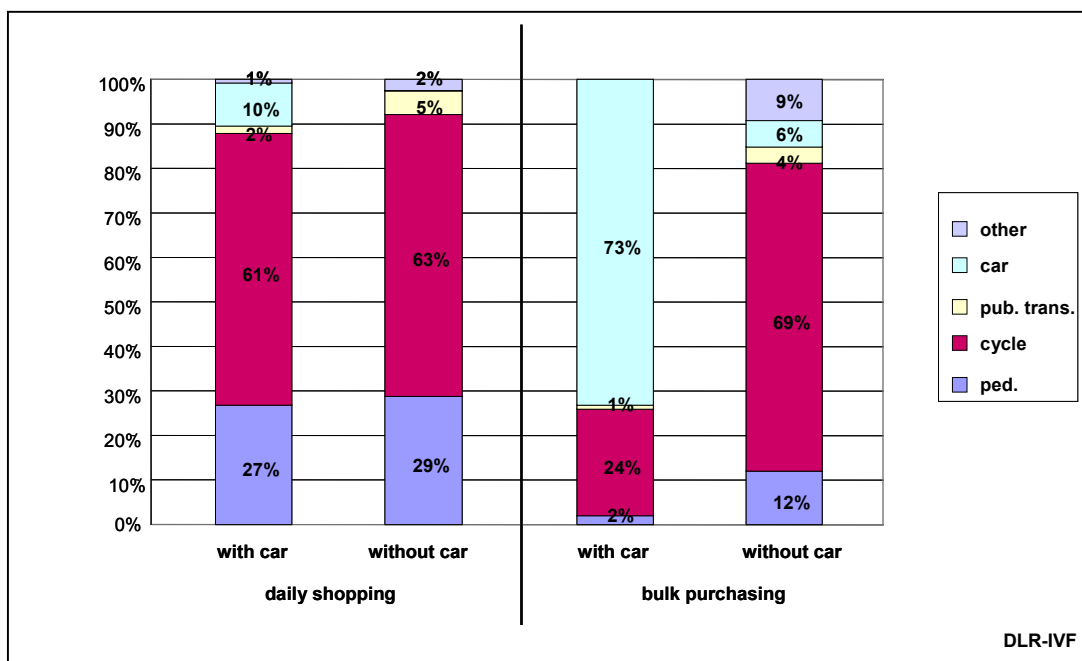


Fig 3: Types of transport used for shopping – parking-free households with and without a motor car

⁷ Büro R+T (2002): The Freiburg Traffic Development Plan. Part A: Problem Analysis. http://www.freiburg.de/download/verkehrsentwicklungsplan/vep_analysebericht.pdf (available only in German)

Studies of leisure activities have shown that eight of these are the most important ones, and these eight were examined in order to investigate people’s leisure activities. As was the case with their commuting and shopping activities, people were asked about the frequency and place of their activities, and which means of transport they used. On the basis of their responses it was possible to calculate a modal split which revealed differences between people from car-owning households and those from car-free households. As figure 4 shows, the transport used by people from car-owning households is very similar to that of the "average Freiburger". However, this group of Vauban inhabitants use their bicycles more frequently while public transport is scarcely used (this is also the case when they commute or go shopping). They use their motor cars more or less to the same extent as the average Freiburger. For people from car-free households the segment for individual car use is almost completely absent and its place is taken over by the bicycle. Car-free households use public transport much more frequently than car owners but less than the average Freiburger.

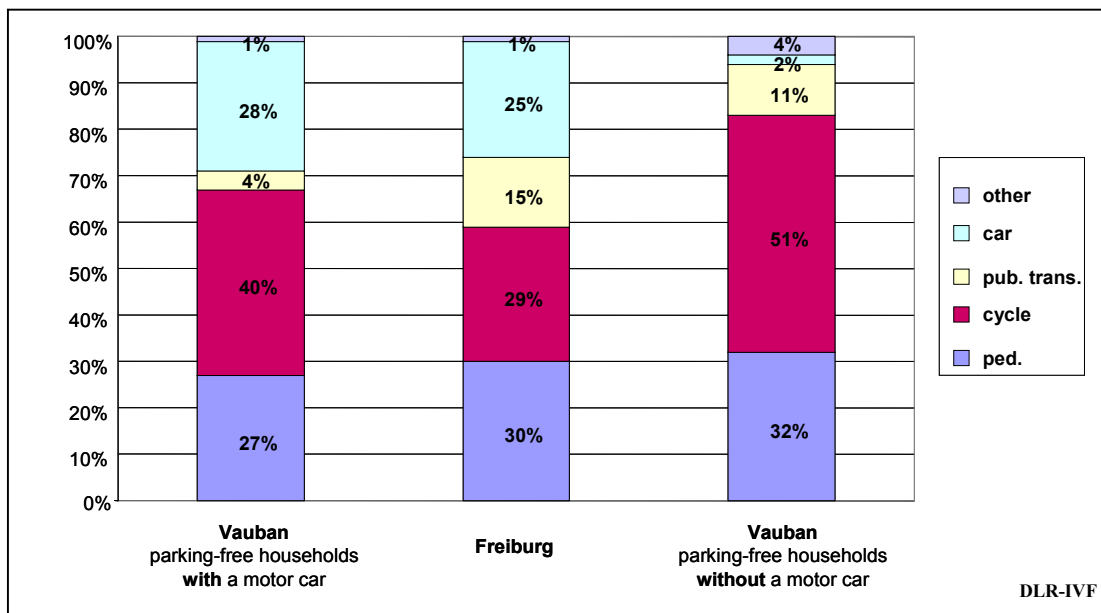


Fig. 4: Modal split for leisure activities – Freiburg and parking-free households with and without a motor car

The results show clearly that car-ownership strongly influences people’s mobility habits. The inhabitants of car-free households are by no means people who have been without a car for a long time and adjusted to the use of the integrated transport system. 81% of those in car-free households previously owned a car or had the regular use of one. Most of them had not long been without a car. 57% did not get rid of their cars until they moved into Vauban⁸, another 16% had given up their cars within the last 5 years. Almost three quarters of people in car-free households do not have long-term experience of car-free living.

The survey shows that a large number of car-free inhabitants altered their mobility habits after they moved into Vauban: 70% of those without cars stated that they use car-sharing more often than before and make less frequent use of a car. In this group, the role of the bicycle, of buses, trams and taxis has increased, even though most of those in this group state that they use public transport no more frequently than before.

Changes can also be seen in the mobility habits of car owners. The proportion who stated that they use their bicycle more frequently is, with 41%, even higher than for the inhabitants of car-free households. The use of buses and trams has also increased slightly. As far as cars are concerned, those who use their car more often are balanced out by those who use

⁸ The first apartments in the parking-free area were occupied at the end of 1998. Two main waves of occupation took place, in 1999 (29% of the people surveyed) and in 2001 (40% of the people surveyed).

their car less often. Most people stated that the frequency of car use had not changed since they moved into Vauban.

On the whole people who live in car-free households are satisfied with their mobility. On a scale of 1 to 5, 81% replied that they find organising their everyday living without their own motor car easy or very easy. About two thirds also stated that situations do arise in which they miss having their own car, but, for half of the people, this does not happen very often. Of the six possible reasons for missing a car, the most common one was "for excursions, short journeys and holidays". The ability to "just go and drive somewhere when I feel like it" was the second most common reason.

People in car-owning households are, in comparison, much less satisfied. In particular, the obligation to leave their car in the communal car park is still a major problem. 67% replied that it frequently bothers them not being able to park their car in front of their own house. Only 12% have no problem with this. The original idea of the project was to ease the everyday mobility problems of car-free households. The investigation has shown that car-owning households are more likely to have problems, and improvements should be aimed at this group. It also showed that car-free households have hardly any problems with their everyday mobility but that problems with leisure activities, even though they seldom arise, must be alleviated.

4 Conclusion

The investigation demonstrates that low-car projects are an effective way to reduce the number of vehicle trips, and to promote or to stabilise long-term mobility behaviour based on sustainable modes of transport. The fact that most of the car-free households owned a car before they moved into the district, proves that these kind of projects are attractive not only for households which are already car-free. Even though the residents of Vauban mainly belong to the group of young families which usually owns one or more cars, nearly half of the households decided to dispose of their cars. The results of the survey show that they are highly satisfied with their mobility and with the benefits of a car-free environment.

The current discussion in town planning and transportation research is characterised by two different positions. The one side believes in the possibility of exerting influence on mobility behaviour with town planning concepts such as "the city of short distances". Measures such as the mixed use of land, under which both residential housing and light industry are found in the same area, together with the avoidance of low-density housing where the houses are spread out over a large area, enable people to experience an environment of short distances, and make possible the use of sustainable transport modes.

The other side is convinced that the increasing expansion of space used for activities due to lifestyle changes exerts a greater influence on people's behaviour than town planning measures. The results of the investigation in Vauban demonstrate that the influence of town planning measures should not be underestimated.

Even though the experiences of Freiburg-Vauban cannot easily be transferred to other cities, the case study proves that it is well worth applying new mobility concepts like car-free living. Whether any single project will be a success depends not only on the traffic concept, but also on a whole variety of reasons such as prices, the town-planning concept, the attractiveness of the area, the connection to public transport, the image of the area and others. Market studies carried out in several German cities and the experience of Freiburg show that there is a demand for car-free housing areas, not only by car-free but also by car-owning households. This result, together with the positive aspects of the projects so far implemented, should encourage both politicians and those in charge of public administration to carry out these kinds of projects in their own communities, since car-ownership is still the best starting point for encouraging sustainable mobility behaviour.

Soft measures affect traffic in Lund

– effects from two years work with a sustainable transport system in Lund

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Workshop: Monitoring and Evaluation.
1b. Travel pattern analysis and process feasibility as a basis for mobility management strategy and actions

Introduction

Lund is a medieval university city in the south of Sweden with about 75000 inhabitants in the city and 100.000 inhabitants in the whole municipality. The City of Lund has since long worked with a better and less car intensive inner city, for example pedestrian zones, bicycle lanes etc. In spite of all efforts the traffic volume and the emissions increased, and the politicians decided to study how the City could strengthen the efforts to create a more sustainable environment in the whole municipality.

Since 1997 the City of Lund has worked with LundaMaTs, Lund's sustainable transportation system. The project started with a study concerning the before situation, followed by target setting and an action program with 8 main projects and 83 subprojects. The political involvement in the project was quite high, especially in the target setting phase.

In 1998 the City of Lund selected four projects to focus on over a three year period (1999-2001) and began the implementation process, much thanks to the political courage, an agreement over the party blocks, and not least a good timing with a grant from the Swedish Department of the Environment. The four selected projects was the Mobility Centre, the Bicycle City, Walk and cycle to school and the Lundalink, which are all part of the comprehensive LundaMaTs, at a total cost of about 16.5 Million of Euro.

The study that preceded the implementation of LundaMaTs was carried out by Trivector, a consultancy firm in Lund, and financed by the City of Lund. The City of Lund and the Swedish Department of the Environment are co-financing the implementation. The Technical Services Department and the Planning and Building Department in the City of Lund have chief responsibility for the realisation of LundaMaTs. The Mobility Centre, which was one of the first of its kind in Sweden, is a part of the EU-project MOST. Trivector has, as an external consultant, been responsible for the MOST part at the Mobility Centre, and also together with the Mobility Centre, realized the evaluation described below.

LundaMaTs – the first evaluation

Three years after the realisation of the four LundaMaTs projects started, in spring 2001, the first extensive evaluation has been carried out.

Soft and hard measures

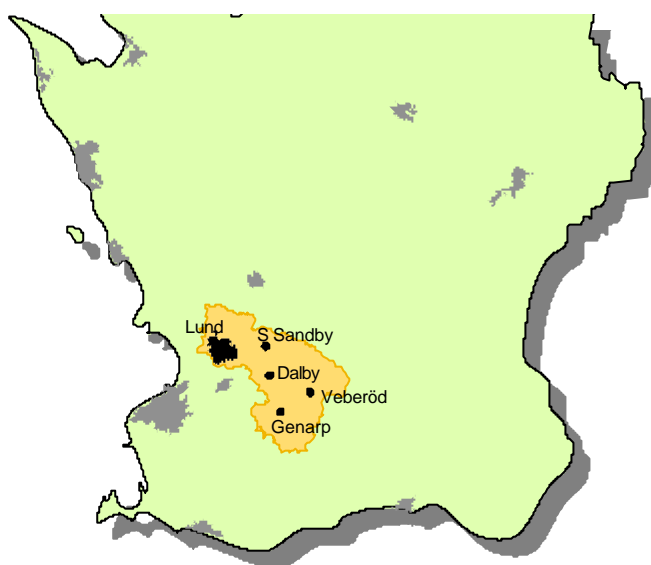
The measures that have been carried out within the frame of LundaMaTs are of both technical and mobility management character. Examples of measures are construction of new bike paths, improved school routes, commuting by bike, walking school bus, car

sharing associations etc. Another example is the 'In town without my car' event that was organized for the first time on September 22, 2000.

Purpose

The purpose of the evaluation is to investigate how aware the inhabitants in the City of Lund are of the different projects that have been conducted over the last few years, and how the inhabitants have been affected by them.

The activities have varied in size and intensity. In order to investigate the awareness and the effects of LundaMaTs in different areas in the City of Lund the evaluation study focused on the town Lund, and the villages Soedra Sandby, Dalby, Genarp and Veberöd. The division also enables future studies on the effects and how they relate to invested resources and involvement.



The City of Lund (yellow), the town Lund and the four villages.

Realisation

The investigation has been carried out in the form of a questionnaire survey. The questionnaire was sent out to 3,000 inhabitants in the City of Lund between the ages of 18-70. After two reminders – the first being a post-card and the second as a new questionnaire – the answering frequency rose to 62 percent.

In order to see if there are any differences between the people who did and did not answer the questionnaire, telephone interviews were made with about 50 randomly chosen persons who had not answered the questionnaire. In general there are very small differences between the two groups. In those cases where a difference has been noticed it has been taken into consideration in the analysis of the questionnaire.

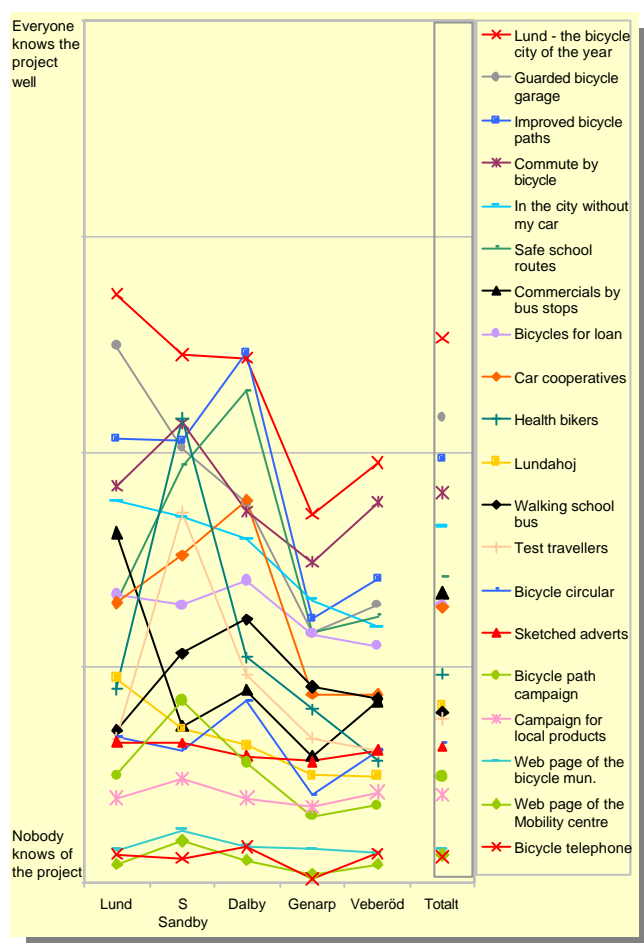
Awareness of the projects

The major projects within LundaMaTs are so far LundaMaTs in itself, the Mobility Centre, the Bicycle City, Walk and cycle to school and the Lundalink (a high quality public transport link between central Lund and the village Soedra Sandby, 10 km out-

side Lund). The major projects are fairly well-known in the City of Lund. Within every major project several activities and subprojects are carried out.

The largest awareness can be found in Soedra Sandby, where a lot of activities have been carried out. In Genarp, where the least number of activities have been carried out, the awareness is much lower. Regarding the project Walk and cycle to school the inhabitants in Dalby have the largest awareness, probably because of the extensive traffic safety measures that have been implemented. The village has also received both national and international attention due to the implementation of the project.

The more specific activities that have received most attention are the award Lund – the bicycle city of the year, the guarded bicycle garage by the railway station, the project Improved bicycle paths and the campaign Commute by bicycle.



Awareness index of the specific activities in Lund and the four villages.

The Mobility Centre

The purpose of the Mobility Centre is to run out-going activities of different kinds. It may be everything from working with campaigns and projects to assisting companies and individuals that work for a more sustainable transport system. The projects that are considered in this report include a bus rider project, health bikers and car sharing.

Bus Rider project

In the *Bus Rider* project, the aim was to convert half of a group of regular car commuters to go by public transport after a one or two month trial. This goal was almost achieved. In the three groups (72 persons in total) the use of public transport at the start was 0%. During the project time about 95% of the participants travelled by public transport at least 3 days a week. Even one year later it was still about 40%. During the project period the bus riders reduced car travelling by 82,000 km, and more than 200,000 km during the following year.

Change in travel mode in the Bus Rider project.

| | Persons (=3 days/week) | Trips |
|-----------------|------------------------|-------|
| Before | 0% | <5% |
| During | 95% | 70% |
| After 12 months | 40% | 30% |

Health Bikers

The ten Health Bikers have substituted car use on average by 4,300 kilometres per year and almost all were satisfied. Before their test they had used bikes in 15% of the commuting trips. During the test it was 86%, even 12 months after it was at a high level of 56%. During the project year the ten participants reduced car travelling with 43,000 km. The year after, car travelling was reduced with 29,000 km. The final medical investigation also showed an improvement of 10% in the participants' health condition and the stress factor had decreased by 10% (self-assessed through a questionnaire). From the main survey it was found that one-third of the population had heard about the Health Bikers. In addition, new Health biker groups have started independent of the Mobility Centre.

Change in travel mode in the Health Biker project.

| | Persons =3 days/week | Trips |
|-----------------|----------------------|-------|
| Before | 0% | 15% |
| During | 90% | 85% |
| After 6 months | 80% | 70% |
| After 12 months | 55% | 55% |

Car sharing

The Mobility Centre has worked to get more people to start or join car sharing associations. This has resulted in a very high awareness among the inhabitants in the City of Lund.

Car sharing awareness in the City of Lund (2001) compared to Sweden (1999).*

| | Lund 2001 | Sweden 1999* |
|-----------------------------|-----------|--------------|
| Well-known to me | 32,5 % | 15 % |
| I have heard the expression | 51 % | 42,5 % |
| I have never heard about it | 16,5 % | 42,5 % |

* *Vägar och trafik 1999, Markör AB*

The table shows that the knowledge about car sharing is considerably larger in the City of Lund compared to the rest of Sweden. Statistics of the Swedish average is from 1999, and can thus be a bit higher in 2001. The knowledge about car sharing is the highest in Dalby and Lund. In Dalby there were advanced plans of starting a car sharing association when the questionnaire was sent out, and in Lund the number of car sharing associations have increased since the start of the project. 5 percent of the inhabitants state that they would probably join a car sharing association if they were offered the opportunity.

The Bicycle City

Lund is today the city, which has the highest share of cyclists and pedestrians in Sweden. Measures taken in the Bicycle City project aim to further reduce the environmental effects of traffic by getting even more people to cycle instead of going by car. The concept Bicycle City is known by a majority of the people living in the City of Lund.

An important part of the work done by the Bicycle City is the investment in improved bicycle paths. The improvements mainly involve safe passages and measures taken on paths used by commuters and for journeys to school.

People living in the City of Lund have stated if they think there has been a larger or smaller investment in bicycle paths during the last two years compared to previous years. It should be emphasised that the question did not refer to the measures taken in a specific region, but how people have considered the measures taken in the whole City of Lund. In general 50 percent think that the investments have been larger or even a lot larger during the last two years. Slightly less than 15 percent have not noticed any difference, and less than 35 percent say that they do not know.

Walk and cycle to school

The purpose of the project Walk and cycle to school is to reduce carbon dioxide emissions by getting parents not to drive their children to school and pre-school, but instead to walk with them or let the children walk or cycle on their own.

One starting point has been that a lot of parents choose to take their children by car to school since they think that the school routes are too un-safe. An inventory of these school routes for the youngest has been made. By doing so, the most dangerous intersections and paths have been localised. The most critical places have been assembled in a plan, which has been accepted by the Technical Committee. A consequence of this plan is that the critical places are gradually being rebuilt.

In addition to the street improvements a series of mobility management measures have been conducted. These measures are carried out to persuade parents to stop driving their children to school. Information at parent meetings, traffic safety work in school, campaigns and preventative health projects are some measures.

The project group has mainly been involved in activities such as Safe routes to school, which 55 percent of the inhabitants have heard about, and Walking school bus, which 30 percent have heard about.

Regarding school routes, most of the reconstructions have been carried out in Dalby. This has contributed to 70 percent of all parents and schoolchildren in Dalby consider the school routes to be safer or even much safer today. In Soedra Sandby several soft measures, but no physical measures, have been implemented. Around 30 percent of the parents consider the school routes now to be safer.

The evaluation of the Walk and cycle to school project shows that the percentage of parents that drive their children to school has reduced from 17 to 13 % since the project start. This means that the number of parents driving to school after the project are about 20 % less than before.

Effects on travelling and emissions

Effects on behaviour

Earlier in this report it has come to light that the majority of people living in the City of Lund are aware of the work with LundaMaTs and the projects and activities involved. The scheme has also affected the inhabitants' travelling:

- ? 2 percent have to a large extent switched from car to bicycle and public transport
- ? 2,4 percent have to some extent switched from car to bicycle and public transport
- ? 4,3 percent sometimes try to take another transport mode than the car
- ? 3 percent have started thinking of alternatives to the car



Share of people that have changed their travelling routines because of the activities within LundaMaTs.

The figures above are an average for all inhabitants in the City of Lund, and are different in Lund and the four studied villages. People living in Lund and Soedra Sandby, where most measures have been carried out, are recognised as being more positive towards alternative modes. The highest shift in travel mode can be noticed in Soedra Sandby where only soft measures had been implemented at the time of the evaluation. In this village 13 percent have changes their travel mode to some extent, and 6 percent have started thinking about it.

Changes in car travelling and emissions

Approximately 10 percent of the inhabitants say that LundaMaTs has influenced them to cycle more and make more use of public transport. A large proportion of the inhabitants have also stated that they have reduced the distance in kilometres that they travel by car during an average week. The total effects are shown in the table below.

The impact of cycling and public transport as a result of the LundaMaTs projects.

| | Bicycle | Public transport | Total effects |
|------------------------------|---------|------------------|---------------|
| Million km/year | 2,0 | 1,9 | 3,9 |
| Tonnes CO ₂ /year | 520 | 380 | 900 |

The people living in the City of Lund have reduced their car travelling with nearly 4 million kilometres – or about 1 % – during the last year. This should be compared to an annual traffic increase of 1-2 % over the last few years in Lund. With the LundaMaTs measures the traffic increase has thus been reduced, something that also can be seen in the annual traffic counting. The change corresponds to a 900 tonnes reduction in carbon dioxide emissions.

In addition, other measures not investigated in this project can positively contribute towards a better environment. For example car pooling, replacing travelling with distance work, by more efficient car usage created by people joining car sharing organisations, or by more efficient goods transports can all help to create a sustainable transportation system in the City of Lund.

Conclusions

LundaMaTs covers a large variety of tools to establish an environmentally friendly transportation system in the City of Lund. The project consists of a number of measures, of both physical and mobility management in character. The evaluation shows that the soft measures are of the same, or even higher, importance as the physical measures regarding the effects. The highest shift in travel mode can be noticed in Soedra Sandby where only soft measures had been implemented at the time of the evaluation.

It seems like most people in the City of Lund are satisfied with what has been done within LundaMaTs. This does not only show from the answers in the questionnaire, but also on the response received in the different subprojects. About 10 percent of the inhabitants have altered their travelling behaviour in a positive direction thanks to the activities and more than 90 percent state that the investments in sustainable transports are good.

The evaluation shows that the activities after a couple of years have given measurable effects. Behavioural influence often requires hard work and in the beginning it can be difficult to achieve measurable effects. The City of Lund is obviously on the right track, since effects have already been received after a relatively short period. Our judgement is that the City of Lund can expect even larger effects ahead, assuming that the investments in LundaMaTs will continue. One can also expect synergy effects when several measures are being conducted at the same time. The City of Lund must therefore continue giving the inhabitants the information and the prerequisites that are required for an altered behaviour, and also point out the individual's gains such as better health, time and money.

The whole LundaMaTs project has been a collaboration between different actors: the City of Lund as initiative taker and Trivector as consultant during the study phase. The implementation of the measures has been done by the City, in collaboration with the public transport sector, the business sector different associations and authorities. The evaluation has been done by Trivector and some other different private partners. The collaboration between the official and private partner has developed during the project, much thanks to the different phases in the project. This means that the different competences have been used in a more optimal way. Some phases have been easier for an external partner to do, for example the evaluation which requires both knowledge and independence. More and more the external private partners have been used as discussion partners in specific questions.

The interest from other partners and their involvement, for example the public transport provider and the companies involved, has increased during the project. The gain for different actors and target groups are more evident today than in the beginning of the project.

Customer driven development of the service landscape

A video based analysis of non-frequent travellers and travellers with functional limitations handling the seamless multimodal door-to-door experience

Main topic/workshop:

1b (day 1) - Travel pattern analysis and process feasibility surveys as a basis for mobility management strategy and actions.

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This paper presents a new approach to investigating customer experiences in public transport. It's a work in progress. Still, we are convinced that this project will have some substantial contributions to quality in public transport. After a short introduction where some of the problems we face in passenger transport are described, we discuss the aim of the project, chosen methodology, some preliminary results and possible implications for management and customers.

Introduction

Participating in everyday activities is an important determinant of health and well-being and the opportunities to participate in societal life should be equal for all people (UN, 1993). Some of our daily activities are located outside home. Our activity areas mostly cover great geographical areas. To reach shops, work, leisure activities, etc., we must move outdoors and sometimes go by public transport modes.

We often identify problems for passengers to manage the "landscape" of the transport service. The experience of travelling from door to door in a multimodal transport system is not an easy task. In traffic planning, the expression "the entire travel chain" has been introduced to emphasise the scope of a trip. In the nodes between different transport modes, ordinary people have problems navigating the system. Physical prerequisites and communicative symbols, signs and artefacts are not always in accordance with customer thinking (cognitive categories) and physical movements. These problems are even bigger when it comes to disabled people with different kinds of handicap, sometimes not visual. Travelling is more difficult for a person with one or several functional limitations than for a person without functional limitations (Ståhl 1987). The door-to-door experience invites the passenger to substantial problems, both in the nodes between transport modes as well as in the beginning and end of the trip.

If these problems could be managed in a relevant way we would have a more accessible public transport system. We might see an increased sense of social well being at customer level and much lower costs for the society as a whole. Public transportation would also be more appealing for a broad customer base.

In Sweden we see a radical change in the view of what is quality in public transport. More emphasis is put to customer experiences than specific features of the very service. Also governmental policy say that the Swedish public transport system should be “accessible for all” in the year 2010. Individual citizens should have the ability to reach different areas of the society. Having a handicap or a functional disorder should not be a hinder. There is a clear ambition to create a transport system accessible for all kind of customers. To take in consideration what people find problematic in travel chains and take appropriate measures is a clear cut customer orientation approach and increased mobility for all citizens.

Theoretical frame of reference

In literature a service is defined as something that becomes real when a customer interact with some specific prerequisites (organisational structures, activities, people and other customers). This is refereed to as the service system approach. Some services are based on processes. Public transport services are of this type. Passengers need to manage a system, which could include different modes of transport during a single trip. For disabled people it is important to have trust in each specific links in the chain. If one link is missing the whole trip could be a horrible experience. The lack of trust customers have on the transport system is a problem.

Since service gets real during interaction it is not easy for the customer to get a clear understanding of what one get until the very interaction take place. During this there are a lot of other factors that have impact on the customer experience. The service interaction are surrounded by physical and communicative elements which gives information of what the service really is and gives clues of quality.

There is a body of theories in environmental psychology that tries to explain this. The phenomenon of service environment is also refereed to as “servicescape” in American literature of service management (Bitner 1992). Concepts like design, aesthetics, functional quality and service logic are found in this body of theory. The servicescape could have impact on customers by creating approaching or avoiding behaviour on customer level. Aubert-Gamet (1997) split the environment into a physical and a psychological part, where the psychological part is created in the customer mind. Situational factors have impact on customer perceptions and concrete behaviour.

In consumer behaviour theory we find different aspects of environment as the social and the physical (Peter *et al* 1999). The social environment could be split into a macro (culture, subculture, social class) and a micro social environment. For passengers in a public transport system it is relevant to take into account macro social factors impact on customer attitude, emotions and behaviour. Going “public” is in different societies linked to specific values and norms. For “car goers” public transport is a necessary evil. For disabled people public transport is linked to social well being and quality of life. Managing public modes as an individual is associated to having a “normal” life. The micro social environment includes social interactions between people, reference groups and other customers in the environment. In public transport this social appearance is obvious. Other passengers could change from “just being there” to be “audience”, involved co-passengers”, “helpers” etc. Other passengers could become “co-producers” in the service system. The physical environment includes all non-human, physical aspects and could be divided into spatial and non-spatial elements. Spatial elements include physical objects, architecture, lay out etc. Non-spatial elements include factors like temperature, noise, light, odour etc.

In public transport these factors normally have a substantial impact on customer satisfaction. Bitner (1992) identify three aspects of individual impact: cognitive, emotional and physiological. The spatial features influence customer perceptions of reliability, security, comfort etc. The servicescape talks (“object language” in Ruesch & Kees 1956).

Bitner (1992) identify three types of services – self-service, interpersonal services and distance services. When managing transport services all three are relevant. As a non frequent or a disabled traveller you need to handle parts of an information system, ordering, using telephone or Internet (distance service), handle personal interaction, talking to service persons before, during and after the trip (interpersonal services) and finally handle equipment, elevators etc (self service).

The spatial environment needs to be organised in a way that customer mobility is possible for different customer segments. What is easy and logical for disabled and non-frequent passengers, is easy and logical for frequent passengers. Wakefield & Blodgett (1994) means that service environment/servicescape has greater importance when the service is time consuming and when the service is build on pleasure. They distinguish functional and experience based services. Wakefield & Blodgett (1996) found in a study of leisure services that five factors had major impact on quality perceptions: 1 Accessibility; 2 Aesthetics; 3 Sitting-comfort; 4 Electronic equipment; 5 Cleanliness.

Aim of the project

These problems are highlighted in this study and the project focus on the customer experience as a resource for developing a more accessible, safe and functional travel environment. The aim of the study is to develop a more profound methodology to investigating customer quality. Though the case used in this project is public transport, several areas could take advantage of this approach. We would like to focus on important factors in the service process. For this we draw on different theories like environmental psychology, service quality and communication theory. The specific aim is to develop a methodology that gets close to the subjective experience of accessibility and quality in public transport environments.

Methodology

Studying customer perceptions is not an easy task. Traditional surveys, with its fixed and *à priori* concepts are not very good for collecting relevant data of this subjective and very personal experience. There will always be a substantial gap between the collected data and the experience of what really happened out there in the natural occurring situation. Other methods relevant for documenting perceptions are personal interviews. These methods go closer to the phenomenon and could better respond to the subjective experience of transport. The verbal exchange between the respondent and the interviewer can manage the retrospective version of the complex experience.

Still this kind of data is retrospective by nature. Collected data represent an experience of a former situation, as it comes to memory during the interview. Retrospective methods makes it difficult to identify what really had impact on customer perception.

To overcome these data problems researcher develop different kinds of observational methods to get closer to the phenomenon. Researcher could participate in natural situations, taking field notes and document environmental details by cameras. This also gives a distance to the

customer perceptions of good or bad quality. There is a need for approaches, which could collect data on the spot, natural occurring data during the very experience. This kind of data is introspective by nature and is the best representation of what people really perceive.

We will use two different samples. One consists of seven individuals with functional disorders (1 Severe loss of sight; 2 Complete loss of sight; 3 Inability to use lower extremities/wheelchair user; 4 Reliance of walking aid/rollator; 5 Complete loss of hearing; 6 Parent with child in a baby carriage; 7 Difficulty interpreting information.).

The second sample consists of people without any functional limitations. Three of them we define as non-frequent travellers. The other three we define as frequent travellers. Both groups will face two “well known” travel chains and two “un known” travel chains.

In this study, different customers are equipped with a mobile microphone to document customer perceptions, thoughts and emotions, during a trip from their home to some chosen destination. During the transport a second person (researcher) use a mobile video camera to document the physical and communicative environment perceived by the customer.

The passengers are triggered to contribute to the researcher by a “think-loud methodology”, a psychological method for documenting spontaneous and introspective perceptions of the travel experience. We catch empirical data “on the spot”, which is more accurate, contextual and dynamic in comparison with traditional retrospective surveys and interviews.

Preliminary results

This work is in progress. For the moment we have just finished some tests with a few people with functional disabilities (severe loss of sight, reliance on walking aids). But in the sample we will invite ordinary passengers without any functional limitations to participate in the project. The video technology and the think-loud methodology are tested. Though some preliminary findings are at hand.

People use the think-loud methodology quite easy. They find it convenient to report on different things in the environment. Since we follow them in natural occurring situations, during real life trips, they could directly point out physical details, communicative signs (or lack of signs), good or bad accessibility etc. The data is extremely valid and reliable.

The real life experience remind them of other experiences in the past, which they can report on as well. Our test persons come up with more vivid data, because of the direct link between the first grade experience and the physical or social environment the experience is related to.

They report on problems managing the final link (from final transport mode to final destination). Getting information on this final part of the door-to-door experience is critical. Electronic information systems are difficult to use.

Handling telephone menus are really tricky (even for frequent passengers). The overcrowded and noisy environment makes it more difficult to concentrate and hear what the automatic voice is saying. Some new services (ordering footlights for Stockholm subway, using telephone) are suffered from malfunction.

Implications

The study has some implications for marketing information procedure. The method, using natural occurring data “out there”, could be a tool to get more detailed information on actual purchase and consumption of transport services. Passenger perceptions could be the starting point for re-engineering different service components, produced by different actors in the transportation system. Different commercial transport sectors (bus, taxi, train, tram, airway, boat etc), community authorities, regional authorities and different customer representatives could use this kind of information as a platform for a more profound dialogue, promoting a long term, accessible and sustainable society.

On customer level we see how physical attributes, spatial factors, self service machines, guiding sounds, communicative signs (or lack of signs), transport noise etc. are important factors. The travel process is perceived as difficult, less accessible and gives a sense of being unsecured. Passengers hesitate to use the public modes in the first run with social segregation and high community costs as a consequence. We find that this methodology has potential to use the customer as a service innovator for customer driven development. Often accessibility is associated with adaptations when environment should be designed for equal use for all citizens from the beginning. Passengers report on a sense of being stigmatised (Preiser & Ostroff 2001). The marketing function could give more accurate information to passengers, in before hand.

During the conference we will give a presentation of the study and give some examples by using a video presentation, just to illustrate some of the natural occurring “servicescape” problems but also some opportunities this methodology gives to transport planners, developing transport services for different kinds of customers.

Using new video technology, for a better understanding of customer experiences of service processes for ordinary and disabled travellers could be of substantial help in the development of public transport systems. This approach could have a substantial impact on customer level on switching from costly road based special transport modes (different kind of taxi vehicles), which is very expensive to society, to public transport modes. Developing work in and between organisational entities involves several actors. We see challenges to organisational cross boundary co-operation in the network of actors.

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Ecomm 2003

21 – 23/05/2002

Title: Towards a more qualitative survey method in green commuter plans ; the experiences in two case-studies.

Workshop : Monitoring and evaluation
1b, Travel pattern analysis and process feasibility surveys as a basis for mobility management strategy and actions

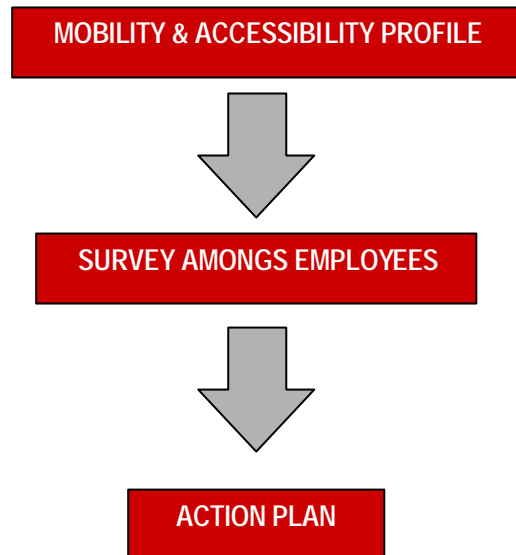
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Introduction

In two recent projects, Traject tried out a new methodology of making a green commuter plan for companies. The methodology used in the past was somehow changed to raise the input and consultation with the involved parties : the employees and the management. Instead of having a more quantitative, only objective collection of data this new approach is a more qualitative one. In my presentation I will describe and evaluate this methodology by showing the process and the outcome of two commuter plans : one for the Province Council of Limburg and one for the Gasthuisberg Hospital in Leuven. In this paper I describe in a more theoretical way the differences between the former methodology we used and the newer one.

The traditional methodology

In the past, all the green commuter plans made by Traject used more or less the same steps :



The accessibility profile presents the supply site of the mobility market. It gives an overview of the accessibility of a work location by all transport means : public transport, bike, car, walking... An overview is made of the buses, trains and trams that come in the neighbourhood of this location. The quality of the cycle routes near the company were evaluated a.s.o. In fact, the accessibility profile gives an idea of all possible ways to reach the company.

On the other hand, the mobility profile gives information about the demand site of the mobility market. The mobility profile is based on information provided by the company : a database with the addresses of the employees, an overview of the working schedules (e.g. the time window in which employees are allowed to start), the frequency of business trips etc. It gives an overview of the need for mobility employees of the company have : where do they come from, when do they have to start and stop working, do a lot of people need there own car for business trips ...

By comparing the mobility profile with the accessibility profile, information is provided about the way the supply site fits with the demand site. Answer is given to questions like "Does the time schedule of the public transport fit with the working hours of the company ?". "Is there a good offer of buses from the surrounding regions where most people working in this company come form ?" "If the mobility profile shows that the

majority of employees live in a town nearby the company, are there safe and comfortable cycle routes between the town centre and the company?"

Answers to these questions give a first insight on which mobility actions could be useful for this company. It can be noticed that introducing a bus line between a village where a lot of employees live and the working spot could be a good idea. Based on the home to work distance of most employees the use for the company of investing in good bicycle storage facilities can be evaluated.

Briefly, the objective data provided by the accessibility and the mobility profile give a first indication of possible actions. Even if some actions seem to be useful based on this objective information, there is no guarantee that this is what employees are waiting for. Suppose a new bus line links the town centre with the company, there is no guarantee that employees will take this bus. Mobility management is no exact science ; the reason why people do or do not use the bike, public transport or carpool to their work location is more related to personal, even psychological reasons. Especially for their home to work trips, people expect a minimal level of quality (comfort, time, flexibility...) for their trip. Gathering information about these personal needs and wishes is necessary to come to a efficient list of measures in a green commuter plan. The traditional way to get this information, is by organizing a survey amongst employees.

In our opinion, getting information about what employees want, is only one of the advantages of organizing a survey. In general there are four aims we try to reach with a survey amongst employees :

1. to communicate about the commuter plan

The questionnaire is in most cases the first moment employees are informed about the fact that the company is making a green commuter plan. In the introduction or in the accompanying news letter, the company can inform his employees about the reasons for making a commuter plan, about the working schedule and the timing. Some key data from the mobility profile (e.g. "where do most people working in this company, come from?") can already be presented as an introduction to the survey.

2. to complete the objective data needed for the mobility profile

Most companies have only limited mobility information about there personel. Based on the number of public transport travel cards the company has to reimburse employees for¹, companies have a good view of the

¹ The belgium low obliges companies to pay back 60% of the cost of a public transport *abonnement* for the home work distance

(theoretical) number of public transport users. The number of cyclists and especially the number of people carpooling, is usually unknown. In most cases, one can only get information about the modal split by organizing a survey. The same for business trips : while companies can give general information about the estimated number of business trips employees have to make, information about the destination, the mean and the frequency of business trips on the individual level can only be provided by survey results.

3. to collect remarks or problems about mobility related issues

A survey gives every single employee the chance of formulating his or her personal input to the commuter plan. The questionnaire gives a least the idea that the company will take into account the meaning of the employee. Via the survey employees can point at problems or mobility issues they want the company or the study office to know about.

4. to get information about the basis for sustainable transport modes amongst the employees

Based on the information provided by the mobility and accessibility profile, one can already have a good view on which actions could be effective for the mobility issues of the company and her employees. However, employees and employers do not always agree with the solutions suggested by the mobility specialists. A survey gives an idea of about the existing basis for mobility actions amongst employees. It indicates the positive or negative attitude of employees against mobility measures and in this way shows the degree of resistance that can be expected when introducing different actions.

In fact, the survey is the last step in collecting the necessary information for developing an efficient green commuter plan.

Evaluation of the traditional methodology

The fact that this methodology is used for more than ten years shows already the usefulness of this method. It is a standardised methodology, easy to use and it does not need a lot of collaboration and time investment of the company and its employees. Only for the (organisation of the) survey collaboration of the employer and the employees is needed. Lately, however, the limitations of this methodology became more and more clear. A lot of commuter plans made in the last decade did not really get beyond the planning phase. Quite often a plan was made with a lot of measures to be implemented, but in often only a part of these actions or only minor measures have been implemented. We believe that a higher involvement of the employees in the planning process can contribute to more realisations after the plan is made.

As mentioned above, the survey was the only moment where employees could give their ideas and opinions. As the aim of the surveys was to have as much answers as possible, in most cases a closed questionnaire was used with only limited possibilities for the employees to raise issues that were not in the questionnaire. Therefore, employees often felt that the green commuter plan was made above their head and that the result of the plan were only new obligations and rules, especially against the majority of the employees : the car drivers.

In the past, most surveys organized in green commuter plans, reached a response rate of 40 tot 50%. Not bad, but on the other hand the dark number (the number of employees who did not answer the questionnaire) is quite high. It is expected that employees that bike, use public transport or drive together with colleagues, are more likely to answer on a mobility survey than the "hard liner" car drivers. If this is true, the results of the survey could be biased and more critical approach of the survey results is needed. Another problem is that recently the number of surveys people are confronted with in their daily life, becomes too high. Sociologists are even talking about an over-questioned society. The willingness of people to fill in the umpteenth questionnaire is getting lower and lower and a response rate of 50% is hardly ever reached.

These problems, but especially the fact that too many green commuter plans did not reach the implementation phase because employees did not feel involved in the planning process, made us think about adapting the existing methodology. The adapted methodology was tried out in two recent commuter plans : one for the Council of the Province of Limburg and one for the Gasthuisberg Hospital in Leuven. Before giving the results of this new approach in these tow plans, I will first describe the adaptations we made in the planning process,

The *new* methodology

It is not correct to talk about a new methodology. We did not start from zero, but kept all elements and steps of the traditional methodology because we still believe in the usefulness of this methodology. To get a good insight in the problems and opportunities a company has concerning mobility, a mobility and accessibility profile is necessary.

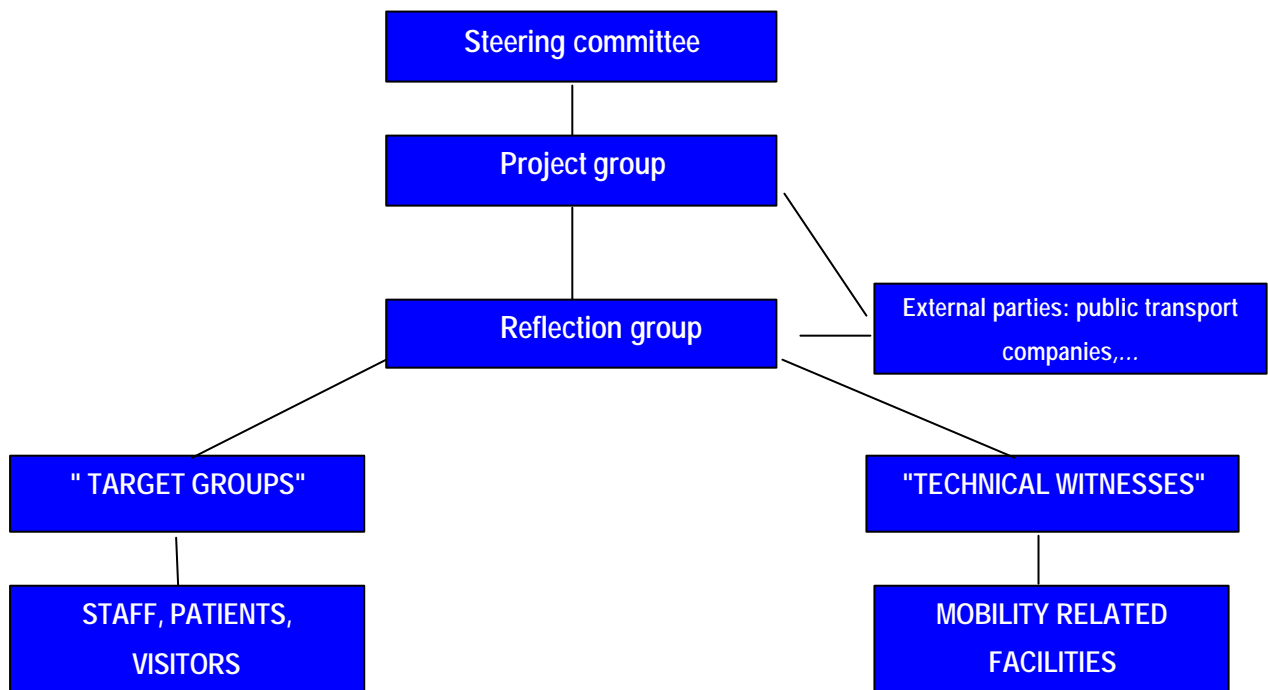
The aim of the adapted methodology was to increase the involvement of the employees in the planning process. We tried to reach this aim by creating a clear consultation process and by introducing a new part in the planning process, the discussion groups.

An enlarged discussion structure

The new discussion structure has three functions :

1. to support the whole planning process
2. to verify the basis for mobility actions ; to estimate the feasibility of measures
3. to take decisions and commitments

These functions were divided over three different groups : the steering committee, the project group and the reflection group (see scheme below). The new consultation structure was first introduced for the Gasthuisberg hospital in Leuven. For the Province Council of Limburg the structure was similar.



The engine of the planning process is the project group. The project group consists of the contact persons of the initiator (in case of the Gasthuisberg Hospital : the environmental coordinator and a key person of the human resources department) and the mobility consultants of Traject. In fact, most study work is done by Traject, but necessary information is provided by the two "internal" people from the hospital in the projectgroup. If the mobility consultant has some questions or wants to check some information, he knows who to contact and he is sure these persons will have an answer. In this way, the initiator is following from very close the whole planning process. Beside fulfilling the first function (following the process), the project group is also the first forum where information about the feasibility of mobility measures can be won.

The reflection group plays a very important role in the planning process. On the one hand the reflection group helps realising the project by providing complementary information, on the other hand this group reacts on proposals made by the project group. To fulfil both functions, the constitution of the reflection group is crucial. The reflection group consists of representatives of different departments and / or type of employees. These representatives of the target groups are not necessarily the heads of the department. On the contrary, to have an open discussion in the reflection group, it is better not to have too many hierarchical differences between the members of the reflection group. By representative we mean someone who knows what is going on in his or her department. He or she does not have to make decisions in the name of his colleagues, but knows which mobility problems or concerns people in his department have. E.g. a department where employees have to make lots of business trips will have other requests towards a green commuter plan than employees who work nine to five at the same desk. Beside the representatives of the different departments the reflection groups consists of so called "technical witnesses" : people who are well informed about mobility related issues like parking infrastructure, future plans about the building etc. They have to be aware that the green commuter plan is linked to other plans the company has or that actions from the green commuter plan are also included in other plans e.g. about parking infrastructure. Finally, the trade unions are also invited to have a representative in the reflection group. In this way the trade unions are involved from the start and they have the opportunity to present their mobility issues from the beginning of the process.

The green commuter plan is made by the interaction and the discussions in the project group and – especially – in the reflection group. In this way, the green commuter plan is not something that is done only by so called experts, but is something that is made together with key persons and employees from the whole company. Of course, the proposals are made in the project and reflection group, but the decisions have to be taken at management level, i.e. in the steering committee. The steering committee consists of the decision makers themselves (e.g. head of the human resources department, general manager...) or their representatives. The steering committee takes decisions during the planning process (e.g. about the content of the questionnaire) and approves the final action plan.

Discussion groups of employees

Beside the enlarged discussion structure, another change compared to the former methodology was made by introducing discussion groups following on the survey amongst employees. These discussion groups are outside the above outlined discussion structure and are formed after the survey is held. As in the past, all

employees receive a questionnaire dealing with mobility problems and proposing different measures. In this questionnaire, employees are also invited to take part in a discussion group to be able to formulate their wishes or problems and to discuss the green commuter plan. The survey is usually anonymously, but people who want to participate in the discussion are invited to give their name and contact data. After the survey results are analysed, all volunteers are split up in several discussion groups. The aim of the discussion groups is to critically study the survey results and – if necessary – to complete information gained out of the survey. A second function of the discussion groups is to provide detailed information that cannot be gathered by doing a survey. In this sense, the discussion groups fulfil the same function as the reflection group but with a larger number of people.

By organising discussion groups all employees are given the possibility to formulate their idea and wishes on the green commuter plan. Unless in the former commuter plans, there is now a direct involvement with the employees. The discussion groups are also a good way to inform a large number of interested employees about all study work that is done. At the moment decisions are made, a large number of employees know the how and the why of the mobility measures that are to be implemented and can communicate this in an informal way to the colleagues of their department.

As in the past, the survey gives the possibility to all employees to give their meaning on issues dealt with in the green commuter plan. With this new methodology however, people can really go into discussion with the “makers of the plan”. Their remarks or complaints are presented to the reflection group and are really taken into account in the whole planning process. The benefit of working with discussion groups is clearly demonstrated in the green commuter plan for the Province Council of Limburg.

Example : a green commuter plan for the Province Council of Limburg

The whole planning process in the Province Council of Limburg was followed and conducted by the discussion structure as presented above. After the mobility and accessibility profile were made, an internet based survey² was held amongst all 1240 employees. 570 employees filled in the questionnaire, resulting in a high response rate of 46%. 61 employees respond to the invitation to participate in a discussion group. As the aim of the discussion groups was to gather more information and not to persuade one another of the need or advantages of the different modes, the project group decided to choose for a “consistent” constitution of the discussion groups : cyclists together, users of public transport together and car drivers

² Employees who did not have internet access got a paper version of the questionnaire

together. Spread over three days, 6 discussion groups were held : one with cyclists, one with public transport users and four with car drivers, including carpoolers. The outcome of the discussion groups was amazing : lots of small actions and easy to implement measures were suggested by the employees. As noted in the accessibility profile the Province Council does have a guarded bicycle parking in the basement, but some cyclist testified that in the past some bikes had been stolen because the secured door was not secure at all. Though the door could only be opened with the employees badges, a small push at the door was enough to open it. In the survey no one mentioned this problem. It was only in the discussion with the cyclist that this problem was introduced. One of the first realisations of the green commuter plan was to install a new security system in the bicycle parking. The discussion with the public transport users also showed problems the project group was not aware of. One employee came 4 days in a week by bus to the Council but was obliged to come 1 day by car because the time schedule of her bus (only one an hour) did not fit with her working hours : the bus arrived 15 minutes before the start of the gliding hours and, because of the low frequency of buses, she could not stay too late in the afternoon, so she "lost" every day 15 minutes. To recuperate this time, she came ones a week by car. By allowing this woman and her colleagues in the same case, to start working (7.45 am) earlier than generally allowed (8 am) she can come every day by bus.

Car drivers came up with solutions too : a lot of people came from the north of the Province and although in theory they had a good bus connection to the work location, it turned out that the connection between the regional bus and the city bus was missed 60% of the times. Based on a suggestion made by an employee, the public transport company made a connection between the regional bus and an (empty) school bus going to the main work location of the Province.

Apart from these smaller measures, nearly all measures of the action plan (approved by the Deputation of the Province in December 2002) are already implemented or will be implemented this year. Others (e.g. a system of pool cars for business trips instead of the actual reimbursement of private kilometres) will be studied more in detail before being implemented. The most important actions amongst a list of 25 are : a cyclist allowance of 0,15€ / km, subscription to the Flemish Carpool Database, reserved parking lots for carpoolers, cycle storage facilities for all locations where employees of the Province are working, a bicycle repair service every two weeks provided by a local bicycle trailer, shuttle bikes for public transport users, a mobility lottery etc.

Evaluation of the “new” methodology

The methodology with the enlarged discussion structure and the introduction of discussion groups after the survey, proved its use in the green commuter plans for the Province Council and for the Gasthuisberg Hospital.³ It is clear that the involvement of the management and the employees is much larger than in the past. Employees feel really involved in the process and this increases the feasibility of all mobility measures. The parts of the traditional methodology (mobility profile, accessibility profile and a survey) are still indispensable but the increased involvement of the employees facilitates the transition from planning phase to implementation phase.

The workload of this new methodology is more or less the same as in the traditional methodology but it demands extra skills of the mobility consultant. While in the past most work was done from behind the desk, now the discussion structure and the discussion groups with the employees demand good communication skills of the mobility consultant. The frequency of meetings is quite high too, especially with the project group and the reflection group. However, while in the past the emphasis laid on the plan (the report) itself, now it is more the process that is important. If the actions in the green commuter plan are discussed and approved by the different groups, the chance that these actions are implemented is high.

Based on the experience of the two described plans, Traject uses this methodology in all recent green commuter plans we are asked for. The future will have to confirm the real surplus of this methodology.

³ Due to a change in the management of the hospital no official decision about the implementation phase has been taken yet, but unofficially there is an agreement about which actions (e.g. parking management) to take.

Effects on mode choice with individualised marketing (IndiMark) in Göteborg

Workshop:

Marketing

1h, Key factors in achieving sustainable change in attitudes and behaviour

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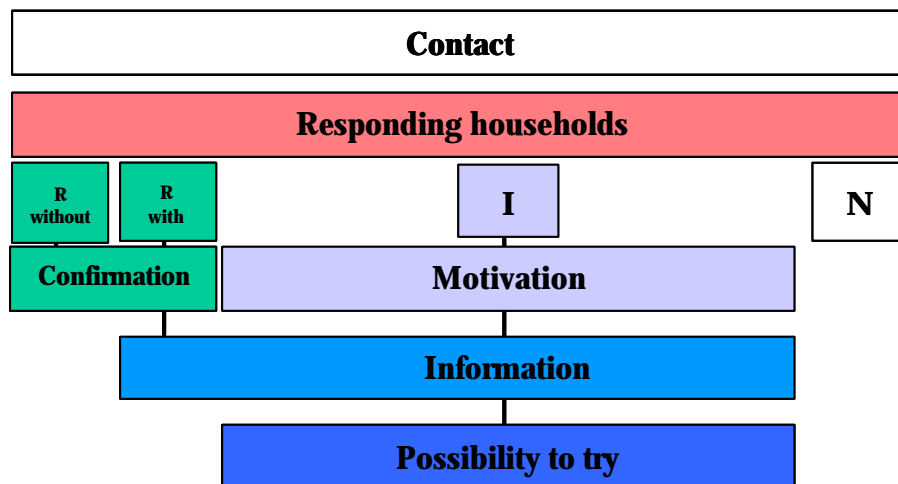
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Background

In order to increase the number of trips made by public transport Västtrafik in 1998/99 began to contact and give information to households within the community of Göteborg. Through tendering Socialdata was contracted to do the job. Socialdata's method, IndiMark, is based on interaction with people. Through this interaction/dialogue you can help the individual by providing information regarding her need for daily transport. The information we give is based on her individual needs. And different people have different needs...

The first contact results in three basic groups of households:

- ? Regular user (R)
- ? Interesting/interested households (I)
- ? Not interesting/interested households (N)



Through this method we reach people interested in more information of the alternatives to the car. We don't tell people what they should do but we provide them with information so that they can make a choice. And, when provided with information that is suited to their individual needs they are more motivated to change their behaviour.

IndiMark in Majorna and Torslanda

In the first campaign we contacted approximately 50% of the households in two different areas, Majorna and Torslanda. These two areas are quite different in terms of demography and geography. We wanted to see the effect of IndiMark in two so different areas. The pre-study showed that Majorna had a market share for public transport of 27%, and the corresponding figure for Torslanda was 8%. In this first campaign we contacted 10 000 households (Majorna 7 500 and Torslanda 2 500). By doing this we reached just over 20 000 people.

The groups (R) and (I) were offered more information about availability and the different possibilities and advantages of public transport. All regular users of green modes got a small gift as a confirmation of their choice of mode. Then the households that requested/needed more information were provided with the information they wanted. The information offered to the households was different types of timetables and maps and also information on current prices. We also gave group (I) the possibility to try the service for 30 days.

The IndiMark campaign in Majorna and Torslanda made the market share for public transport to increase by 2% in both areas. In relative figures, we saw an increase of 22% in Torslanda and 9% in Majorna. The market share for car as a driver was practically unchanged, but without IndiMark it was likely to have increased by 1% (as it was in the control group). In relative figures we can say that the campaign inhibited an increase in the number of trips made by car by approximately 3% in the target group.

After this first campaign Västtrafik made yet another one in Lundby with similar results.

IndiMark in Örgryte

In 2002 Västtrafik, together with The Traffic & Public Transport Authority, contacted 10 000 households in Örgryte and we reached about 17 000 people. This time we coordinated the information about public transport with information about walking and cycling in order to further reduce the number of trips by car in favour of green modes (walking, cycling and public transport). The reason why we chose to include information about walking and cycling was that we believed we would get a greater reduction in the number of trips made by car. This is because it is often easier to walk or cycle a short distance than to use public transport or the car.

As in the previous campaigns the first contact resulted in three basic groups of households.

52% of the households in Örgryte were in group (R), 25% in group (I) and 23% in group (N). Group (R) consisted of regular users of green modes and the (I)-group were households interested in green modes. Both groups were offered more information. This time we also offered the households information about the advantages of walking and cycling together with different types of timetables and maps and information on current prices. All regular users of green modes got a small gift as a confirmation of their choice of mode. 69% of the households in group (R) wanted more information. This shows that even if you are a regular user you often don't have all the information you want/need. We also offered group (I) with interest for green modes the possibility to try public transport for free for 30 days.

275 households said they wanted to try public transport. Group (I) with interest for walking and cycling were given a personal invitation to a "start-to-walk"- and "start-to-cycle"-activity. A total of 414 "start-to-walk"- and 297 "start-to-cycle"- invitations were sent out. The activity was arranged by The Traffic & Public Transport Authority and was an event to inspire to walking and cycling. The event took place one evening in May, with a national profile from television as speaker. The participants could win a cycle and look at different models, accessories and helmets. For those interested in walking there was a lottery with a pair of hiking staffs to the winner. The participants could also look closer at different types of shoes and other walking accessories.

Considering that we contacted about 10 000 households, it is only a small part of them who need to be “kicked-out” into trying new ways of transport, and that most of them only need more information to actually change their attitude and behaviour.

After the test-period we evaluated the use of public transport among those who got free trips for 30 days. 95% actually tried our service and 89% of them were positive after having experienced the service.

In some other cities that have used IndiMark the after study has been repeated after one year, two years, ... The results show that the change in behaviour is sustainable over time.

Effects...

...on mode choice

The pre- and after-studies show that without IndiMark in Örgryte the private car would probably have had a market share of 47% (as in the control group) and with IndiMark it was only 41% (target group). Corresponding figures for car as a driver is 36% and 31% respectively. Thus, the campaign gave a decrease in the number of trips by car as a driver by 14% (relative). Or a decrease in the number of car trips made per person and year by 46 trips. The market share of green modes increased from 53% to 59% (11% relative). The largest increase was noted for cycling: +45% (relative). Walking and public transport both had an increase, in relative figures, of 4% each.

On average each new trip in public transport generates 6.50 SEK and with the result of 8 new trips per person and year the yearly revenue from the campaign is approximately 880 000 SEK.

... on CO₂-emissions

In all of the IndiMark campaigns we have had the largest increase in public transport between 9.00 am and 3.00 pm. This means that we also have the capacity needed. In other words we make the assumption that the increase does not mean an increase in emissions of CO₂.

In Örgryte the number of kilometres driving a car was reduced with on average 878 kilometres per person and year (878 km x (17 000/1,3 person in the car)= 11,4 million km per year).

On average the fuel consumption is approximately 8 liters/100 km. This means a decrease in fuel consumption of 912 000 litres per year. In turn this means a decrease of CO₂-emissions by approximately 2 150 tons¹ of CO₂ per year.

According to the output relation² of Swedish National Road Administration (SNRA) and SIKA the value of the emissions of CO₂ is 1,50 SEK/kilo.

With this valuation of CO₂-emissions the economic effect is calculated to be 3 225 000 SEK per year.

The valuation is only an estimation of the value of the reduction in CO₂-emissions and not a complete cost-/benefit analysis of the total economics.

| | Cost of the campaign | Expected reduction in CO ₂ | Economic effect of reduction in CO ₂ |
|----------|----------------------|---------------------------------------|---|
| IndiMark | 2 700 000 SEK | 2 150 tons/year | 3 225 000 SEK/year |

Conclusion

¹ According to the Swedish National Road Administration (SNRA) one litre of fuel generates 2,36 kilos of CO₂

² Swedish National Road Administration (SNRA), 2001:75

The results of the IndiMark-campaigns show that the number of activities and trips per person and day is unchanged. This indicates that we do not change peoples need for transport, but we do contribute to behavioural change in transport. And in order to reach the goal of lesser trips by car as a driver we should work with information about all green modes at the same time.

The campaign also shows that with marketing and information to those interested or already regular users of green modes, you can achieve substantial effects in the way people chose mode of transport. It also shows that when you cooperate between organisations and offer information about different green modes at the same time, you get a larger decrease in the number of trips made by car than you would have otherwise.

And not the least important, you get a reduction in emissions of CO₂ among other positive effects on congestion, health etc which we have not taken into account here.