

## **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.

Organisiert wurde die Veranstaltung von der Stadt Karlstad mit Unterstützung der EPOMM (European Platform on Mobility Management). Sie bildet ein Netzwerk von sieben EU-Staaten, das von der Europäischen Kommission unterstützt wird.

### Weitere Informationen:

European Platform on Mobility Management

[www.epomm.org](http://www.epomm.org)

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# CONFERENCE PROGRAMME

Subject to changes, for the latest information check our web site [www.karlstad.se/ecomm](http://www.karlstad.se/ecomm)

## WEDNESDAY 21 MAY

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**Mobility management excursions in Stockholm, Göteborg, Lund, Oslo and Karlstad**

## WEDNESDAY 21 MAY

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07.00 p.m.	Registration	Carlstad Conference Centre (CCC) Tage Erlanderogatan 10
07.30 p.m.	Welcome drink	
08.00 p.m.	Buffet and welcome speech by Lena Melesjö Windahl, City of Karlstad	

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## THURSDAY 22 MAY

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08.30 a.m.	REGISTRATION AND COFFEE	Karlstad University
<b>09.30 a.m. – 12.30 p.m. PLENARY SESSIONS</b>		
09.30 a.m.	Welcome	
09.45 a.m.	The Swedish perspective on traffic growth	Claes Roxbergh, the Committee on Transport and Communications, the Swedish Parliament, Sweden
10.00 a.m.	The good journey in a sustainable perspective	Ingemar Skogö, the Swedish National Road Administration, Sweden
10.30 a.m.	Mobility Management in Sweden – creating a sustainable development	Christer Ljungberg, Trivector, Sweden
11.00 a.m.	COFFEE	
11.25 a.m.	What about Mobility Management – the European Commission's perspective	Marcel Rommerts, DG Energy and Transport, European Commission
12.00 p.m.	Mobility Management Strategies for the next Decades (MOST)	Astrid Wilhelm, Austrian Mobility Research, Austria
12.30 p.m.	LUNCH	

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01.30 p.m.	Workshops 1a, b, c, d	
03.00 p.m.	COFFEE	
03.30 p.m.	Workshops 1e, f, g, h	
05.00 p.m.	End of sessions	
07.00 p.m.	Dinner	Sandgrund Restaurant Västra Torggatan 28
	ECOMM 2004 in Lyon	Jean-Louis Touraine, Greater Lyon, France
	Music entertainment and dancing	

#### **FRIDAY 23 MAY**

08.30 a.m.	REGISTRATION AND COFFEE	Karlstad University
<b>09.00-12.00 a.m.</b>	<b>WORKSHOPS</b>	
09.00 a.m.	Workshop 2a, b, c, d	
10.30 a.m.	COFFEE	
11.00 a.m.	Workshop 2e, f, g	
12.30 p.m.	LUNCH	
<b>01.30 p.m.</b>	<b>PLENARY SESSIONS</b>	
01.30 p.m.	Congestion charging schemes - background and report on the situation and experiences in London, Stockholm, Göteborg	
02.50 p.m.	Conclusions from the workshops	Christer Ljungberg, Trivector, Sweden
03.20 p.m.	Closing speech	
03.30 p.m.	COFFEE	



# WORKSHOPS

**THURSDAY 22 MAY**

**Workshops day 1:** How can mobility management be used to decouple economic growth and transport growth?

## **TRAFFIC, ENVIRONMENT AND GROWTH**

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**1a, Best practice - focusing on decoupling**

*Chairman: Lars Berggrund, Swedish National Rail Administration, Sweden*

Road charging and parking policy - tools for breaking the link?  
*Peter Austin, Asplan Viak, Norway and Malcolm Buchanan, Colin Buchanan and Partners, UK*

The socio-economic effects of the metro line "U3" in Vienna evaluated under the European research project TRANSECON  
*Oliver Roider and Roman Klementsitz, Institute for Transport Studies, University for Bodenkultur, Austria*

Transports in a sustainable society  
*Göran Rosenberg, Swedish Road Haulage Association, Sweden*

## **MONITORING AND EVALUATION**

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**1b, Travel pattern analysis and process feasibility surveys as a basis for mobility management strategy and actions**

*Chairman: Eric Schreffler, ESTC, USA*

Towards a more qualitative survey-method in green commuter plans; experiences in two case-studies  
*Vincent Meerschaert, Traject, Belgium*

Customer driven development of the service landscape - a video based analysis of ordinary and disabled travellers handling the seamless multi-modal door-to-door experience  
*Per Echeverri, Karlstad University, Service Research Center, Sweden*

Soft measures affect traffic in Lund - effects from two years' work with a sustainable transport system in Lund  
*Pernilla Hyllelius, Trivector, Sweden*

## **INTERACTION BETWEEN LAND USE AND TRANSPORT PLANNING**

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### **1c, Interaction between spatial planning and mobility management**

*Chairman: Angel Aparicio, Ministry of Environment, Spain*

MM on a district level - impact of car-reduced districts on mobility behaviour

*Claudia Nobis, German Aerospace Center, Germany*

Analysing the demand for different traffic scenarios in inner cities - A useful tool in local planning?

*Tomas Svensson, VTI, Sweden*

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

*María Eugenia López Lambas and Andrés Monzón, ETSICCP, Transport Department, Spain*

## **PUBLIC TRANSPORT**

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### **1d, How can public transport meet the increased mobility demand?**

*Chairwoman: Astrid Wilhelm, Austrian Mobility Research, Austria*

"Clever Kids Travel with Public Transport" - An Integrative Marketing Strategy by the Styrian Transport Association

*Cosima Pilz, Austrian Mobility Research, Austria*

Customer satisfaction surveys for public transport companies - greater efficiency through more demand-orientated methods

*Werner Brög, Socialdata, Germany*

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

*Jean Grebert, Renault Research Department, France*



## **DIFFERENCES IN CITIES/ REGIONS AND RURAL AREAS**

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

*Chairwoman: Barbara Swart, EPOMM, the Netherlands*

Possibilities and constraints for Mobility Management in small urban and rural communities

*Werner Gronau, University of Paderborn, Germany*

Green Tonnage - A renewable option for transport of goods

*Maria Dalmalm, Danzas ASG Eurocargo AB, Sweden*

Mobility Management in Borlänge

*Karin Lundgren, Envia and Jobanna Ingre, Stiftelsen Teknikdalen Borlänge, Sweden*



## **EFFECTIVE PARTNERSHIP**

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### **1f, Quality partnerships to generate demand for alternative transport**

*Chairwoman: Karen Vancluysen, Access, Belgium*

The Evolving Role of Transportation Management Associations in North America

*Stuart M. Anderson, Association for Commuter Transportation, USA*

The added value of mobility to the company performance - the consequences of a new perspective to mobility management policy

*Robert Boot, Ministry of Transport, Transport Research Center, the Netherlands*

Cambridgeshire Travel for Work Partnerships: progress since ECOMM 1998

*Mark Webb, Cambridgeshire County Council, UK*

## **THE TRAVELLER**

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### **1g, Services and products for the traveller**

*Chairman: Hans Kramer, Ministry of Transport, Transport Research Center, the Netherlands*

Strong partnership to produce effective services for the traveller: Swiss application in promoting sustainable recreation traffic

*Roberto De Tommasi, Synergo Planung und Projektmanagement, Switzerland*

MobiHarz-project: Integrated mobility management and services for visitors

*Patrick Hoenninger and Klaus Kalwitzki, Planersocietät, Germany*

Modernising small railway station infrastructure with the eyes of a passenger: Offering new services after the reorganisation of the former state-owned railway companies

*Ludger Strathmann, Agentur BahnStadt Berlin, Germany*

## MARKETING

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### 1h, Key factors in achieving sustainable change in attitudes and behaviour

*Chairman: Lars Haglund, Karlstad University, Sweden*

SMART Road User - individual marketing campaign for environmentally sound transports

*Päivi Elmkvist, Mobility Centre, Technical Services Department, City of Lund, Sweden*

Odense Bicycle Town - an example of successful promotion of bicycle traffic

*Marianne Weinreich, COGITA, Denmark*

Effects on mode choice with individualised marketing (IndiMark) in Göteborg

*Caroline Almgren, Västtrafik Göteborgsområdet AB, Sweden*

Using GIS to implement mobility management in the planning process

*Jessica ter Schure, Trivector, Sweden*

## NEW PARTNERSHIPS

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### 2b, The need for new structures, partnerships and interaction for implementation

*Chairman: Bert Svensson, Swedish National Road Administration, Sweden*

The campaign "YOU-move.nrw" - New partnerships for a youth-oriented and environmentally friendly mobility management

*Oscar Reutter, Wuppertal Institute for Climate, Environment and Energy, Germany*

## FRIDAY 23 MAY

**Workshops day 2:** Implementation of mobility management in the spatial planning process

## LINKS BETWEEN POLICY FIELDS

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### 2a, The role of mobility management within the planning process for sustainable development and transport

*Chairman: Herbert Kemming, Research Institute for Regional and Urban Development of the Federal State of North Rhine-Westphalia (ILS), Germany*

Vision Lundby - exploring the potential of Mobility Management in Göteborg

*Lisa Sundell, Traffic and Public Transport Authority, City of Göteborg, Sweden*

The European Air Quality Directive and the new chances for Mobility Management

*Marien G Bakker, the Netherlands Agency for Energy and the Environment and Hans Schmitz, the Information centre for the environment, the Netherlands*





Vi MöTs i Kalmar - a forum for new partnerships and a joint force between the City of Kalmar and the Swedish National Road Association, South-Eastern Region, in the implementation of mobility management

*Bo Lindholm, Linda Herrström, City of Kalmar and Krister Wall, Swedish National Road Administration, Sweden*

New Partnerships

*Henk van de Hoef, Province of Zuid, Netherlands*

## **INCENTIVES**

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**2c, Driving forces and incentives for implementation**

*Chairman: Steven Calvert, Nottinghamshire County Council, UK*

Alternative implementation strategies for radical transport schemes

*Marcus Enoch, Department of Civil and Building Engineering, Loughborough University and Sarah Wixey, Transport Studies Group, University of Westminster, UK*

Can we leave the car at home?

*Thomas Krag, Thomas Krag Mobility Advice, Denmark*

Road User Charging - Creating a Supportive Environment for MM

*Jo Baker, Transport and Travel Research, UK*

## **CARPPOOLING AND CAR-SHARING**

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**2d, Flexible work, flexible travel and the new technology**

*Chairman: Frank Smit, Ministry of the Flemish Community, Belgium*

Swedish carpooling service

*Birgit Sievers, Lars Pousette, Datessa AB and Stefan Berg, Swedish National Road Administration, Sweden*



SunFleet - a green car when you need one  
*Per Lanevik, Sun Fleet Carsharing, Sweden*

About the "egg-laying wool-milk-sow" of Car-Sharing : new concepts of integration, partnerships and awareness raising  
*Michael Glotz-Richter, Free Hanseatic City of Bremen, Germany*

## MARKETING

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**2e, Key factors in achieving sustainable changes in attitudes and behaviour**

*Chairman: Marco Viviani, Ökoinstitut, Italy*

Breaking habitualisation in choice of transport-mode: traffiQ as a new brand for mobility-information/counselling - using the right moments and be present at the right place  
*Walter Bien, traffiQ Frankfurt (local public transportation organisation in Frankfurt/Main), Germany*

Targeting mobility management POLICY using market segmentation

*Jillian Anable, University of Surrey, UK*

Summary of Three Key Campaigns from the TAPESTRY Project

*Alan Lewis, Transport and Travel Research Ltd, Nottingham, UK*

## BENCHMARKING

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**2f, Learning to perform good benchmarking**

*Chairman: Robert Stussi, Amerlis, Portugal*

Cost Effectiveness Benchmarking: Lessons from MOST and U.S. Evaluation Experience

*Eric Schreffler, ESTC, USA*

Making Public Transport a Preferred Mode - the role of Benchmarking and Quality Tracking in knowing what customers want and informing Transport Managers of service priorities

*Torbjörn Ericsson, TE Marknadskommunikation AB, Sweden and John Porter, Interaction, Ireland*

BYPAD (BicYcle Policy AuDit), a European benchmarking and quality management tool for improving local cycling policy

*Tim Asperges, Langzaam Verkeer, Belgium*

## THE MOST EXPERIENCE

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**2g, Results, products, recommendations**

*Chairman: Marcel Rommerts, DG Energy and Transport, European Commission*

Results from the MOST Practice: schools, hospitals, tourism, development, events, mobility consulting

*Astrid Wilhelm, Austrian Mobility Research, Austria*

Monitoring and Evaluation of Mobility Management - Practical Experience with the MOST Toolkit (MOST-MET)

*Timo Finke, RWTH Aachen University of Technology, Germany*

How to Improve the Framework Conditions for Mobility Management

*Guido Müller, Research Institute for Regional and Urban Development of the Federal State of North Rhine-Westphalia (ILS), Germany and Sarah Wixey, Transport Studies Group, University of Westminster, UK*

ECOMM

Karlstad 21-23 May, 2003

Workshop 2 a:

Links between policy fields – The role of mobility management within the planning process for sustainable development and transport

## **Vision Lundby – exploring the potential of Mobility Management in Göteborg**

Lisa Sundell / Project Manager

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### ***Background***

Göteborg is Sweden's second largest city with 470 000 inhabitants. As the biggest port in the Nordic Region Göteborg is of tradition a centre for trade, transport and industry but also for tourism and major international events. For Göteborg to continue developing as an attractive regional centre, a well functioning traffic environment is needed, one that fulfils high demands on accessibility, safety and environmental sustainability.

For 130 years shipbuilding was most important for the Göteborg economy. During the 1960s Göteborg was one of the world's biggest shipbuilding centre with three big shipyards situated in the city centre. The industry went into terminal decline in the 1970s, leaving a 5 km stretch along the north banks of the River Göta.

This strip of embankments and industry buildings, including the surrounding area called Lundby, is now undergoing municipal redevelopment. The area will soon accommodate some 50.000 people with a spread of housing, study facilities and working space. A new city is under development in the centre of Göteborg.

In this strong redevelopment process we face some great problems:

- With only three river crossings we already today have a big accessibility problem for this area in peak hour.
- Through Lundby goes the main road to the outer harbour with all its heavy through traffic. It seems like we will have difficulties to meet the European Air Quality Standards for this area.

In this environment the Vision Lundby project was set up as a long-term, collaborative project for development and acquisition of knowledge about Mobility Management solutions that will reduce environment impact while meeting

accessibility and safety requirements. The idea is to use Lundby as a test-site for future full-scale introduction of Mobility Management solutions in Göteborg.

One of the main reasons for choosing Lundby as our test-site was because of the chance to introduce MM solutions early in the planning process in the development of an inner city area, which doesn't happen very often.

Vision Lundby was initiated by the Traffic & Public Transport Authority and is run in co-operation with the District Administration of Lundby, the City Planning Authority, Västtrafik (Regional Public Transport Authority), Norra Älvstranden Utveckling AB (Municipal Development Company for the area) and the Swedish National Road Administration.

## ***Vision Lundby***

The Vision Lundby project was set up in early 2000 and should be seen as a development project with the following main tasks:

- Knowledge building in the area of Mobility Management & Sustainable Transport solutions
- Develop new partnerships with internal municipal as well as external partners
- Identify the main obstacles for introducing MM solutions by practical work
- Suggest changes that have to be done to support introduction of MM solution
- Setting up a MM support service for individuals and workplaces in Lundby
- International exchange of know-how

Below follow some examples of our work and the idea of planning for all types of travel modes and MM solutions in a new high profile business and housing area.

### **Developed Public Transport**

Public Transport is the backbone in a sustainable transport system and if we would like to make Lundby the "good town", traffic volumes must be reduced, meaning less private and more public transport. A special Public Transport plan for the area is set up including a new main biogas bus line with the same capacity as a tram, departing every 5 minutes at peak hours and with the latest information technology for the passengers. A new high capacity environmentally optimised river shuttle is under construction. A new flexline has been set up in Lundby as a complement to public transport for elderly and people with disabilities. The buses, modern spacious minibuses with low floors, only stop on request where travellers are being picked up or dropped of.

### **Smart Travel Card**

We do not think that an attractive Public Transport system is enough. We need to develop new services that could complement and make public transport even more attractive. The idea of a Smart Travel Card is one way of combining public transport with access to other transport alternatives like discounts on taxi, rental cars or car sharing. A Lundby Travel Card was tested during 2002 to start the dialog and to market the concept towards the Regional Public Transport Authority, the transport companies (taxi, carsharing etc) and towards the residents of Lundby.

Another service that has been developed during 2002 is that companies in Lundby have been offered a new service, subscribing on monthly public transport cards for their employees. The companies may then choose to give the PT cards to their employees as fringe benefit.

### Car Sharing

The introduction of the concept of car sharing has been prioritised work. New technique has made car sharing into an attractive mobility solution today, with vehicles being booked via Internet and the communication car-booking centre via the mobile phone network. It has been judged that the best way of reaching tenants in the Lundby area is to co-operate with owners of real estate and to market and offer the car sharing service to new tenants moving in to new housing areas. This work has resulted in four new carpools in the area.

One of the main problems that comes up in this work is the difficulties to find parking places for the car sharing cars due to old parking policies and lack of definition of car sharing cars.

### Alternatively Fuelled Vehicles

Since five years the Traffic & Public Transport Authority runs a "Green Vehicle in Göteborg" project to market alternatively fuelled vehicles towards companies and municipal departments. A demonstration fleet of alternatively fuelled vehicles (AFV) has been set up. This allows companies and municipal organisations to try out such vehicles in their ordinary activities. In Lundby companies have been offered free consultation and to use the demonstration fleet. As a carrot for those who invest in an AFV the City of Göteborg has decided to have free parking on streets for those cars.

### Business Bikes

We think that bicycles could be a good complement for short business trips and lunch trips for people working in Lundby. Our plan is to set up a business bike system with smart card technology and pools of bicycles at strategic places in the district. The idea is that companies in the area could subscribe on a number of smart cards that allows their employees access to bikes.

### Green Travel Plans

In our work towards companies in Lundby our goal is that they should find our diversity of mobility solutions so attractive that they think it is a good idea to write a Green Travel Plan for the Company. In order to stimulate this process two information and inspiration folders have been produced, "Sustainable Transport Management" and "Smarter Communication for Companies", and they have been sent out to companies in the area.

### Freight Collaboration

Many new buildings, enterprises and businesses will dense the Lundby area and make traditional freight distribution difficult. A freight collaboration project has started and the first area to look at is the distribution of office supplies. Now five wholesalers are collaborating with their customers in Lundby to reduce the frequency of transport in to the area. Around fifteen client companies have joined so far, and the wholesalers currently recruit more. One of the aims of the project

is to reduce the number of deliveries to customers by 30 %. The idea is to continue including other product groups as well.

#### Research & Development

The problems we face are by no means unique for us. It is important that we find out how other cities have solved their problems, that we follow development in the field and participate in international research projects. Vision Lundby collaborates with Chalmers University of Technology and University of Göteborg and is currently participating in three European projects.

#### TELLUS – Transport & Environment alliance for Urban Sustainability

European project in co-operation with Rotterdam, Berlin, Gdynia and Bukarest.

Göteborg participate with five subproject;

- Development of the Environmental Zone

- Environmental Optimised River Shuttle

- Freight Collaboration in Lundby

- Heavy Gas Vehicle

- Improved Load-factor in Inner City Goods Distribution

#### TARGET – Travel Awareness and Regional Groups for Environmental Transport

European project in co-operation with Yorkshire & Humber, Bremen, Odense, and Euregio Scheldemond.

Göteborg participate with the establishing of a Lundby Mobility Centre and four subproject;

- Smarter communication for companies in Lundby

- Smarter communications for individuals in Lundby

- Cycling in Lundby

- Mobility Education in Lundby

#### Lundby Mobility Centre

In order to develop the ideas in Vision Lundby further a Lundby Mobility Centre was established during 2002. Lundby Mobility Centre will provide support to both organisations and the local residents with regards finding efficient and sustainable transport solutions for people and goods. Seven people work at the centre, which is situated in the InfoCenter in the former shipyard area.

# The European Air Quality Directive and the new chances for Mobility Management

Workshop: 2a) Links between policy fields; the role of Mobility Management within the planning process for sustainable development and transport

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## 1. Introduction

Traffic-related air pollution and the health of the European citizens are growing issues in the European Community. The recent years many studies have conducted a strong relation between traffic, air pollution and the health of people living close to big arteries. In June 2001 the European air quality directive 1999/30/EG has been implemented in the Netherlands by the publication of the Dutch air quality decree. This decree forces the municipalities to measure and calculate their air pollution. The municipalities have to report the regional and national government about locations with air quality problems. Neighbourhoods, schools, playground and hospitals, close to freeways and big arteries in the cities are the most risky areas to suffer air-pollution problems. At these problem locations the air-pollution exceeds the limits, fixed by the European Council, of chemicals like nitrogen dioxide (NO<sub>2</sub>), particulate matter (PM<sub>10</sub>), sulphur dioxide (SO<sub>2</sub>), carbon monoxide (CO) or benzene.

The first results of this decree show a lot of municipalities in the Netherlands will have problems with traffic-related air pollution. In practice it means these municipalities have to solve these problem locations before the year 2010. They have to make an air quality action plan. They also have to prevent creating new problem sites.

It's obvious this decree will have an important impact on existing locations as well as new building areas. If municipalities don't take up their duty, if they don't make action plans to solve these problem sites, they will have big problems. The reason why is that any European citizen has the possibility to go to the European Court and, on behalf of this European legislation and the Dutch air quality decree, challenge new building plans and new or more road infrastructure. If municipalities don't take action this new legislation will hold up the nation wide planning process and economic development of areas. So this decree is important for the public as well as the private sector. The positive side of this new legislation is the positive effects on the public's health and the savings of the environment.

In this paper we will address the growing impact of Mobility Management and the role it can play in solving the traffic-related air pollution problems. We will focus on the Quick Scan method: "Selecting solutions for traffic-related air pollution" and the way this method will help the municipalities in the Netherlands to find the right solution for their specific air quality problems. We will explain three types of solution to be taken:

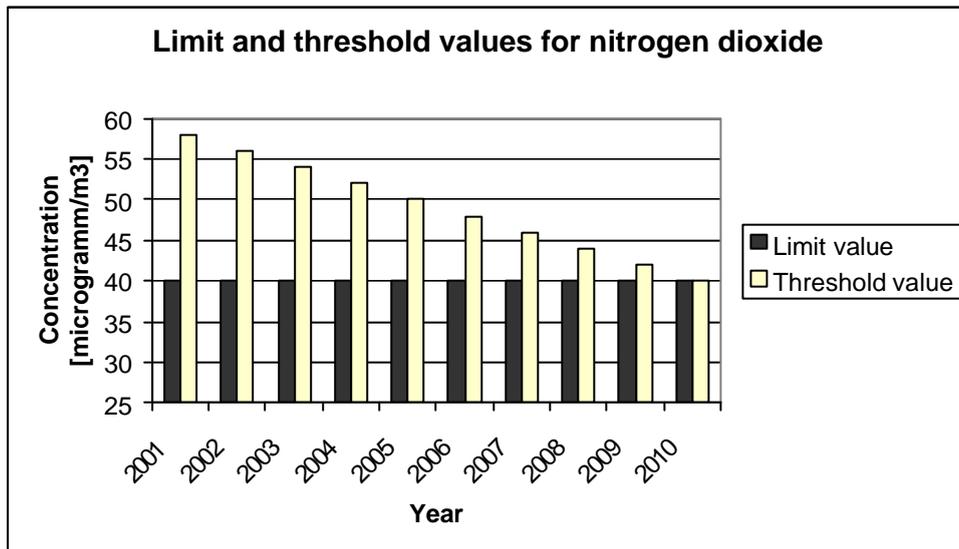
- Source solutions = measures focussed on reducing the volume and type of pollution from traffic;
- Transfer solutions = measures focussed on reducing of the transfer of pollution to the threatened areas
- Destination solutions = measures focussed on protecting the houses and their citizens.

Of course we will also explain, more in detail the European air quality. At the end we will discuss the new chances for Mobility Management to show their possibilities and power to solve these kind of problems and to discuss the role the ECOMM and the EPOMM network can play by finding new ways to tackle the traffic-related air pollution problems.

## 2. European Air Quality Directive

In June 2001 the European air quality directive 1999/30/EG has been implemented by the publication of the Dutch air quality decree. The air quality directive sets limits for concentrations of sulphur dioxide, nitrogen dioxide and oxides, particulate matter and lead in ambient air. A second daughter directive also sets limits for carbon monoxide and benzene. In Holland the most important limit values are for nitrogen dioxide and particulate matter because only these annual limit values are exceeded.

The goal of this directive is to protect man and the environment against the negative effects of air pollution. The directive focuses primarily on preventing health effects. To that purpose strict limit values are set for 2010. But what to do in the mean time? Expectations are that because of technological development (cleaner car technology for instance) the air quality will improve the next seven years. Therefore if you want to check if your plans are not in conflict with air legislation and limit values for 2010, you can use so called threshold values. Threshold values may not be exceeded and are less strict then limit values. The thresholds take into account that air quality will 'autonomously' will improve. But beware, there is no guarantee it actually will improve and air quality still has to be below the limit values in 2010.



## 3. Dutch Air Quality Decree

As said, in June 2001 the Dutch air quality decree was published. It's effect on decision making in Holland is big and widespread. The decree states that air quality should be taken into account with every decision a local, provincial or national government makes. So it also has effects on spatial planning, transport etceteras.

In Holland the roles for the different layers of government are as follows:

- national government: makes an Actionplan for reducing particulate matter, makes the yearly national air report that is being send to the EU;
- provincial government: they act as intermediar between the national government and municipalities. They also gather the local air quality report made by the municipalities;
- municipalities: they measure and calculate air quality and make an air quality report. If the concentration of air pollutants exceeds the limit, they also have to make an air quality plan which holds measures to improve the air quality.

In general sulphur dioxide, carbon monoxide, benzene and lead are not a problem in Holland, although on specific locations it can exceed limits. In Holland the focus of research is on nitrogen dioxide and particulate matter (PM10). Both are expected to exceed limits in all of Holland, especially close to very busy motorways. Because of this, the focus of most municipalities is on reducing nitrogen dioxide (NO<sub>2</sub>) in ambient air. The main source of nitrogen dioxide is traffic. Therefore most measures taken by municipalities are transport related.

The Dutch air decree forces the government and municipalities to measure or calculate their air pollution. Because PM10 is such a big problem, and municipalities have little control over it, the national government will make plans and take measures to reduce it. But it is not a very easy task, so it will remain a big problem for a long time.

The National Institute of Public Health and the Environment (RIVM) measures the concentration of nitrogen dioxide and particulate matter in ambient air in Holland. The European air quality directive sets a minimum number of sampling points a country should have to assess compliance with limit values. Based on measurements taken by the National Air Quality Monitoring Network a map is compiled of the air quality in Holland.

In 2001 the average annual concentration of nitrogen dioxide in the Netherlands was about 20 µg/m<sup>3</sup>. The highest concentrations were measured in the 'Randstad' urban agglomeration, the lowest in the North East of the country. Exceeding of the standard (40 µg/m<sup>3</sup>) for nitrogen dioxide occurred in and around a number of large cities. According to these measurements no limits were exceeded. Holland has reported this to the EU in Brussels in 2002.

In 2001 municipalities for the first time had to make an inventory of the air quality based on the Dutch air decree. 130 Municipalities were obligated to make an air report. Eighty percent actually made an air report. Besides that, a hundred non-obligatory municipalities made an air-report. In total, about fourthy percent of all Dutch municipalities made an air-report. They based their reports on calculation made. The Directorate-General for Public Works and Water management, manager of motorways, provided calculation on areas close to motorways. Municipalities made their own calculations of major trunk roads and arterial routes but also narrow, congested streets and shopping streets. To make calculation the national government has made an instrument for calculating air quality, the so called CAR II-model (Calculation of Air pollution from Road traffic). It is an easy tool for calculating air quality. Only the number of cars and the road type has to be known. Other parameters like meteorology and the background concentration of air pollutants is already known. According to these calculations, about forty municipalities have problem with nitrogen dioxide levels in air exceeding limits. In 2003 only the municipalities where limits are exceeded have to make a new air quality report. Through these reports changes in air quality can be followed.

#### **4a. Air quality plan**

Infomil was commissioned by the Ministry of Housing, Spatial Planning and the Environment to make several guidance's for local authorities. Theses guidance's describe how authorities should interpret the new air decree, how to make a air quality report and describe how authorities should interpret the new air decree, how to make a air quality report and what kind of content an air quality plan (action plan) should have. An air quality plan describes what kind of measures municipalities want to take, when measures will be finished, what kind of effect the will expect from these measures and what the costs will be.

In air quality plans, the following elements should be considered:

- What is the problem? What goal of your plan?
- Where can I get the information I need for calculating air pollution?
- In what way will air quality develop in the next ten years?
- Which measures can be taken to reduce air pollution?
- How can I put all this information in a readable air quality report?

The guidance gives answers to these questions and gives hint and tips on measures that can be taken. It also gives tips how to get commitment within your own organisation.

There are several measures on transport that can be taken, for instance traffic calming, parking controls or speed limits. Up to now only a few municipalities have actually taken any measures to improve air quality.

#### 4.b Quick Scan "Selecting solutions and solutions for traffic-related air pollution"

The Dutch municipalities have the responsibility to solve their Air Quality problems. While traffic and transportation are the most important sources of these problem locations, the solutions have to be found in the traffic and transportation sector too. To help the municipalities to find these solutions Infomil has developed a Quick Scan method to find the right solution for the diagnosed air quality problems. **What kind of problem situations** we will find in these municipalities the most?

1. A freeway, close to the municipality. The air-pollution exceeds the limits at a few locations;
2. A freeway is crossing a municipality, The air-pollution exceeds the limits at a lot of places, like houses, schools, playgrounds and hospitals;
3. Only in the surroundings of one or two main arterials the air-pollution exceeds the limits;
4. The air-pollution problem site is one location like an intersection or central bus station;
5. Municipality wide traffic-congestion is the cause of the air pollution exceeds the limits in big parts of the municipality;

For these kind of problems we distinguish 10 different **Directions for Solution**: They will be separated in:

- Source solutions = measures focussed on reducing the volume and type of pollution from traffic (**A till H**);
- Transfer solutions = measures focussed on reducing of the transfer of pollution to the threatened areas (**I**)
- Destination solutions = measures focussed on protecting the houses and their citizens(**J**)

#### The Directions for Solution

- A. Decreasing the need for transport: the effect will be less and shorter transport movements;
- B. Influencing the modal split: the effect will be a choice for cleaner and less pollutant transport modes;
- C. Influencing the choice of travel route: the effect will be an optimal use of the different routes and the avoiding of "weak areas"
- D. Influencing the part of freight traffic: the effect will be less freight traffic and less trucks.
- E. Influencing the way of driving: eco-driving will decreasing pollution and fuel use
- F. Decreasing Car emission: traffic homogenising, speed reduction using alternative fuels and car emission reduction
- G. Exclude different means of transport: it will be possible to create zero emission zones for the "Weak areas" (schools, hospitals, playgrounds and..)
- H. Communication as a part of all the directions of solution
- I. Influencing the transfer of pollution to the threatened, the "Weak areas"
- J. Protecting the houses and their citizens "the Weak"

**The first step in the Quick Scan method** is to indicate the most important Directions for Solutions for the main kind of problem situations with air pollution.

In this case the main problem is by example:

***1. A freeway, close to the municipality, the air-pollution exceeds the limits at a few locations***

The directions of solution will be:

C. Influencing the choice of travel route: the effect will be an optimal use of the different routes and the avoiding of "weak areas"

D/G. Influencing the part of freight traffic: the effect will be less freight traffic and less polluted trucks and / Exclude different means of transport: it will be possible to create zero emission zones for the "Weak areas" (schools, hospitals, playgrounds and..)

F. Decreasing Car emission: traffic homogenising, speed reduction using alternative fuels and car emission reduction

I. Influencing the transfer of pollution to the threatened, the "Weak areas";

J. Protecting the houses and their citizens "the Weak"

In an other case the main problem could be:

***2. Only in the surroundings of one or two main arterials the air-pollution exceeds the limits***

The directions of solution will be:

B. Influencing the modal split: the effect will be a choice for cleaner and less pollutant transport modes;

D. Influencing the part of freight traffic: the effect will be less freight traffic and less polluted trucks

E. Influencing the way of driving: eco-driving will decreasing pollution and fuel use

F. Decreasing Car emission: traffic homogenising, speed reduction using alternative fuels and car emission reduction

G. Exclude different means of transport: it will be possible to create zero emission zones for the "Weak areas" (schools, hospitals, playgrounds and

**The second step will be to diagnose which kind of measures can be taken.** There for we look to the advised directions of solution. In the table below we will find an overview of the measures per direction of solution. For each measure a factsheet, with detail information about the characters see annex 1, has been developed.

Table 1. Measures (factsheets) per Direction of Solution

		A. Decrease need for Transport	B. Influencing the modal split	C. Influencing the choice of travel route	E. Influencing the way of driving - eco	F. Decreasing car emission	G. Exclude different means of transport	I. Influencing transfer of air pollution	i. Protecting the "weak areas"
<b>Source Measures</b>									
FS. 1	<u>Local Traffic Performance Method</u>	X							
FS. 2	<u>Car sharing – Autodate</u>	X	X						
FS. 3	<u>Green Commuter Plans TDM</u>	X	X						
FS. 4	<u>Parking policy</u>	X	X	X					
FS. 5	<u>Park+Ride en Transferia</u>		X						
FS. 6	<u>Travel information</u>		X	X					
FS. 7	<u>Seamless Mobility</u>		X	X					
FS. 8	<u>"Eco Driving"</u>				X				
FS. 9	<u>Slow Driving Goes Faster" (LARGAS)</u>				X	X			
FS. 10	<u>Speed reduction</u>				X	X			
FS. 11	<u>Clean vehicles: Soot filter on city bus and freight trucks</u>					X			
FS. 12	<u>Clean vehicles: Electric vehicles</u>					X			
FS. 13	<u>Clean vehicles: Car on Natural Gas (CNG)</u>					X			
<b>Transfer Measures</b>									
FS. 14	<u>Tunnels</u>							X	
FS. 15	<u>Heighten and lower/deepen roads</u>							X	
FS. 16	<u>Barrier/wall constructions</u>							X	
<b>Destination Measures</b>									
FS. 17	<u>Low Emission zones</u>						X		X
FS. 18	<u>Take down buildings and/or Infrastructure</u>								X

## 5. The new Chances for Mobility Management

Mobility Management, as an integrated approach to solve traffic and transport problems, will be a most important instrument to solve the air quality problems in the municipalities. The challenge for the future is to get a more effective and more efficient traffic and transportation system that also takes care of the environment, the air quality and the health of the citizens of our cities.

Till just now it cost a lot of energy to convince the government, the municipalities and the industry to such an integrated approach. Why should they do it? Such an integrated approach takes time and money and the problems were not high enough. Also the knowledge of the

effects on accessibility, environment and costs are not known enough. Should the resistance to apply Mobility Management be too high?

For Years we have tried to stimulate the companies, and the municipalities by pilot projects, by facilitating them with knowledge, by fiscal rules, by inventing new way of transports, by PR campaigns and so on. Of course we made progress. A lot of initiatives were successfully, but overall Mobility Management stays in the shadow of building new Infrastructure to solve the problems with congestion.

.....But .....

The effects of the European Air Quality Directive and the Dutch Air Quality Decree are becoming visible. Some judges have already dismissed new spatial plans while these plans didn't answer the air quality conditions of this decree. Or the plans create new problem locations or the air quality of the area themselves would be to high. New and better chances for Mobility Management? The answer has to be YES. Mobility Management will be a solution the questions the Air Quality Decree is calling for, because

- Mobility Management is goal orientated - the air quality ask for limits
- Mobility Management is an integrated - more effective and efficient results
- Mobility Management involved all the actors -
- Mobility Management is a management approach for the short and the long term

Different municipalities are looking for answers for solutions for the air quality problems. So one of the measures is tested by the city of Rotterdam. Rotterdam, well known for its ports, is one of the biggest cities in Holland and a lot of traffic is on motorways very close to houses. In Overschie houses are about 15 metres from the motorway, with 150.000 vehicles, twelve percent of which are trucks. Because of complaints of citizens the Directorate-General for Public Works and Water management has implemented speed limits (from 120/100 to 80 kilometres per hour) on this motorway to calm traffic (less breaking and accelerating) and so reducing air pollution and noise. Provisional results show a ten- percent drop in the issue of air pollutants. In the future more of these kind of experiments will be started.

## 6. Conclusions and Acknowledgements

- In the Year 2010 everywhere in Europe the air quality have to be OK. If it isn't so or if there are new plans for road infrastructure or new plans for areas for living or commercial sites, these plans will be dismissed. The authorities have to take action to solve these problems because every European citizen has the possibility to go to the European Court to appeal to a plan;
- The municipalities have to find solutions to tackle these problems. If they don't, there will be a problem for building new roads and making new spatial plans. So all the actors will be involved, also the companies;
- New chances for Mobility Management while the municipalities are looking for solutions to answer the questions the air quality decree is calling for;
- The Quick scan "Selecting solutions and solutions for traffic-related air pollution" is a method to find the right measure for the right problem;
- The European Cities and countries can learn a lot from each other to tackle the problems and take up the chances inspired by the European Air Quality Directive;
- ECOMM should become the place to exchange information about the European Air Quality problems an measures to be taken;
- The EPOMM - network should become the European Platform to discuss these Air Quality issues with the European countries and the Network should take up their task in awareness raising about this Air Quality Directive

## 7. References

- Series Sustainable Mobility: Land use and Mobility, Dr. Henk Meurs, MuConsult, Novem Utrecht, 2002
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- On health risks of ambient PM in the Netherlands, Buringh en Opperhuizen, Netherlands Aerosol Programma, 2002
- Besluit Luchtkwaliteit nr.269; Ministerie van VROM, Den Haag 2001
- European Air Quality Directive, 1999/30/EG
- Verkeersgerelateerde luchtverontreiniging en gezondheid, een kennisoverzicht, IRAS Utrecht en TNO Apeldoorn, september 2002

### ANNEX 1. The characters of the different factsheets

<b>MEASURE: The Name of the Measure of the Air Quality Plan</b>		<b>CODE:</b>
<b>Subject</b>	<b>Description</b>	
Goals on Air Quality	Description on the goal of air quality. The kind of solution Source , transfer or destination	
Expected Effects	Not only the effect on air quality. Also the side effects possitive and negative will be explained	
Background of the measure/ the Principle	Description of the measure and the situation it can be taken	
Actors/ stakeholders	An analyses of the stakeholders who are effecting the realisation of the measure and the effects of it	
Responsibility	Which (public) actor will be responsible for the realisation	
Applicable characters	The critical characters for applying this measure (location and social situation	
Implementation	Who to implement	
Cost-effectiveness	Cost in relation to the realisation of the measure and in relation to effect on the air quality	
Time period for realisation	Time it will cost from idea to using it	
Feasibility Practical and political	The factors for success	
Practical examples	Where we can see it; Municipalities, locations	
Cost of the measure	Indication of costs and which actor have to pay for it	
Possibilities for subsidising and support	Where can You get money for it	
Reverences/ Literature	Information from studies and Internet sites.	

# The European Air Quality Directive and the new chances for Mobility Management

Workshop: 2a) Links between policy fields; the role of Mobility Management within the planning process for sustainable development and transport

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## 1. Introduction

Traffic-related air pollution and the health of the European citizens are growing issues in the European Community. The recent years many studies have conducted a strong relation between traffic, air pollution and the health of people living close to big arteries. In June 2001 the European air quality directive 1999/30/EG has been implemented in the Netherlands by the publication of the Dutch air quality decree. This decree forces the municipalities to measure and calculate their air pollution. The municipalities have to report the regional and national government about locations with air quality problems. Neighbourhoods, schools, playground and hospitals, close to freeways and big arteries in the cities are the most risky areas to suffer air-pollution problems. At these problem locations the air-pollution exceeds the limits, fixed by the European Council, of chemicals like nitrogen dioxide (NO<sub>2</sub>), particulate matter (PM<sub>10</sub>), sulphur dioxide (SO<sub>2</sub>), carbon monoxide (CO) or benzene.

The first results of this decree show a lot of municipalities in the Netherlands will have problems with traffic-related air pollution. In practice it means these municipalities have to solve these problem locations before the year 2010. They have to make an air quality action plan. They also have to prevent creating new problem sites.

It's obvious this decree will have an important impact on existing locations as well as new building areas. If municipalities don't take up their duty, if they don't make action plans to solve these problem sites, they will have big problems. The reason why is that any European citizen has the possibility to go to the European Court and, on behalf of this European legislation and the Dutch air quality decree, challenge new building plans and new or more road infrastructure. If municipalities don't take action this new legislation will hold up the nation wide planning process and economic development of areas. So this decree is important for the public as well as the private sector. The positive side of this new legislation is the positive effects on the public's health and the savings of the environment.

In this paper we will address the growing impact of Mobility Management and the role it can play in solving the traffic-related air pollution problems. We will focus on the Quick Scan method: "Selecting solutions for traffic-related air pollution" and the way this method will help the municipalities in the Netherlands to find the right solution for their specific air quality problems. We will explain three types of solution to be taken:

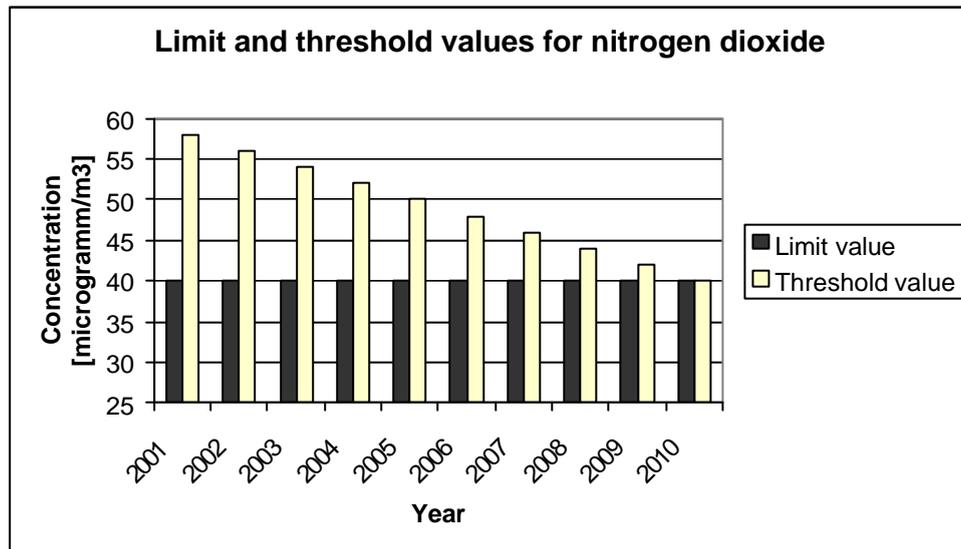
- Source solutions = measures focussed on reducing the volume and type of pollution from traffic;
- Transfer solutions = measures focussed on reducing of the transfer of pollution to the threatened areas
- Destination solutions = measures focussed on protecting the houses and their citizens.

Of course we will also explain, more in detail the European air quality. At the end we will discuss the new chances for Mobility Management to show their possibilities and power to solve these kind of problems and to discuss the role the ECOMM and the EPOMM network can play by finding new ways to tackle the traffic-related air pollution problems.

## 2. European Air Quality Directive

In June 2001 the European air quality directive 1999/30/EG has been implemented by the publication of the Dutch air quality decree. The air quality directive sets limits for concentrations of sulphur dioxide, nitrogen dioxide and oxides, particulate matter and lead in ambient air. A second daughter directive also sets limits for carbon monoxide and benzene. In Holland the most important limit values are for nitrogen dioxide and particulate matter because only these annual limit values are exceeded.

The goal of this directive is to protect man and the environment against the negative effects of air pollution. The directive focuses primarily on preventing health effects. To that purpose strict limit values are set for 2010. But what to do in the mean time? Expectations are that because of technological development (cleaner car technology for instance) the air quality will improve the next seven years. Therefore if you want to check if your plans are not in conflict with air legislation and limit values for 2010, you can use so called threshold values. Threshold values may not be exceeded and are less strict then limit values. The thresholds take into account that air quality will 'autonomously' will improve. But beware, there is no guarantee it actually will improve and air quality still has to be below the limit values in 2010.



## 3. Dutch Air Quality Decree

As said, in June 2001 the Dutch air quality decree was published. It's effect on decision making in Holland is big and widespread. The decree states that air quality should be taken into account with every decision a local, provincial or national government makes. So it also has effects on spatial planning, transport etceteras.

In Holland the roles for the different layers of government are as follows:

- national government: makes an Actionplan for reducing particulate matter, makes the yearly national air report that is being send to the EU;
- provincial government: they act as intermediar between the national government and municipalities. They also gather the local air quality report made by the municipalities;
- municipalities: they measure and calculate air quality and make an air quality report. If the concentration of air pollutants exceeds the limit, they also have to make an air quality plan which holds measures to improve the air quality.

In general sulphur dioxide, carbon monoxide, benzene and lead are not a problem in Holland, although on specific locations it can exceed limits. In Holland the focus of research is on nitrogen dioxide and particulate matter (PM10). Both are expected to exceed limits in all of Holland, especially close to very busy motorways. Because of this, the focus of most municipalities is on reducing nitrogen dioxide (NO<sub>2</sub>) in ambient air. The main source of nitrogen dioxide is traffic. Therefore most measures taken by municipalities are transport related.

The Dutch air decree forces the government and municipalities to measure or calculate their air pollution. Because PM10 is such a big problem, and municipalities have little control over it, the national government will make plans and take measures to reduce it. But it is not a very easy task, so it will remain a big problem for a long time.

The National Institute of Public Health and the Environment (RIVM) measures the concentration of nitrogen dioxide and particulate matter in ambient air in Holland. The European air quality directive sets a minimum number of sampling points a country should have to assess compliance with limit values. Based on measurements taken by the National Air Quality Monitoring Network a map is compiled of the air quality in Holland.

In 2001 the average annual concentration of nitrogen dioxide in the Netherlands was about 20 µg/m<sup>3</sup>. The highest concentrations were measured in the 'Randstad' urban agglomeration, the lowest in the North East of the country. Exceeding of the standard (40 µg/m<sup>3</sup>) for nitrogen dioxide occurred in and around a number of large cities. According to these measurements no limits were exceeded. Holland has reported this to the EU in Brussels in 2002.

In 2001 municipalities for the first time had to make an inventory of the air quality based on the Dutch air decree. 130 Municipalities were obligated to make an air report. Eighty percent actually made an air report. Besides that, a hundred non-obligatory municipalities made an air-report. In total, about fourthy percent of all Dutch municipalities made an air-report. They based their reports on calculation made. The Directorate-General for Public Works and Water management, manager of motorways, provided calculation on areas close to motorways. Municipalities made their own calculations of major trunk roads and arterial routes but also narrow, congested streets and shopping streets. To make calculation the national government has made an instrument for calculating air quality, the so called CAR II-model (Calculation of Air pollution from Road traffic). It is an easy tool for calculating air quality. Only the number of cars and the road type has to be known. Other parameters like meteorology and the background concentration of air pollutants is already known. According to these calculations, about forty municipalities have problem with nitrogen dioxide levels in air exceeding limits. In 2003 only the municipalities where limits are exceeded have to make a new air quality report. Through these reports changes in air quality can be followed.

#### **4a. Air quality plan**

Infomil was commissioned by the Ministry of Housing, Spatial Planning and the Environment to make several guidance's for local authorities. Theses guidance's describe how authorities should interpret the new air decree, how to make a air quality report and describe how authorities should interpret the new air decree, how to make a air quality report and what kind of content an air quality plan (action plan) should have. An air quality plan describes what kind of measures municipalities want to take, when measures will be finished, what kind of effect the will expect from these measures and what the costs will be.

In air quality plans, the following elements should be considered:

- What is the problem? What goal of your plan?
- Where can I get the information I need for calculating air pollution?
- In what way will air quality develop in the next ten years?
- Which measures can be taken to reduce air pollution?
- How can I put all this information in a readable air quality report?

The guidance gives answers to these questions and gives hint and tips on measures that can be taken. It also gives tips how to get commitment within your own organisation.

There are several measures on transport that can be taken, for instance traffic calming, parking controls or speed limits. Up to now only a few municipalities have actually taken any measures to improve air quality.

#### 4.b Quick Scan "Selecting solutions and solutions for traffic-related air pollution"

The Dutch municipalities have the responsibility to solve their Air Quality problems. While traffic and transportation are the most important sources of these problem locations, the solutions have to be found in the traffic and transportation sector too. To help the municipalities to find these solutions Infomil has developed a Quick Scan method to find the right solution for the diagnosed air quality problems. **What kind of problem situations** we will find in these municipalities the most?

1. A freeway, close to the municipality. The air-pollution exceeds the limits at a few locations;
2. A freeway is crossing a municipality, The air-pollution exceeds the limits at a lot of places, like houses, schools, playgrounds and hospitals;
3. Only in the surroundings of one or two main arterials the air-pollution exceeds the limits;
4. The air-pollution problem site is one location like an intersection or central bus station;
5. Municipality wide traffic-congestion is the cause of the air pollution exceeds the limits in big parts of the municipality;

For these kind of problems we distinguish 10 different **Directions for Solution**: They will be separated in:

- Source solutions = measures focussed on reducing the volume and type of pollution from traffic (**A till H**);
- Transfer solutions = measures focussed on reducing of the transfer of pollution to the threatened areas (**I**)
- Destination solutions = measures focussed on protecting the houses and their citizens(**J**)

#### The Directions for Solution

- A. Decreasing the need for transport: the effect will be less and shorter transport movements;
- B. Influencing the modal split: the effect will be a choice for cleaner and less pollutant transport modes;
- C. Influencing the choice of travel route: the effect will be an optimal use of the different routes and the avoiding of "weak areas"
- D. Influencing the part of freight traffic: the effect will be less freight traffic and less trucks.
- E. Influencing the way of driving: eco-driving will decreasing pollution and fuel use
- F. Decreasing Car emission: traffic homogenising, speed reduction using alternative fuels and car emission reduction
- G. Exclude different means of transport: it will be possible to create zero emission zones for the "Weak areas" (schools, hospitals, playgrounds and..)
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**The first step in the Quick Scan method** is to indicate the most important Directions for Solutions for the main kind of problem situations with air pollution.

In this case the main problem is by example:

***1. A freeway, close to the municipality, the air-pollution exceeds the limits at a few locations***

The directions of solution will be:

C. Influencing the choice of travel route: the effect will be an optimal use of the different routes and the avoiding of "weak areas"

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In an other case the main problem could be:

***2. Only in the surroundings of one or two main arterials the air-pollution exceeds the limits***

The directions of solution will be:

B. Influencing the modal split: the effect will be a choice for cleaner and less pollutant transport modes;

D. Influencing the part of freight traffic: the effect will be less freight traffic and less polluted trucks

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**The second step will be to diagnose which kind of measures can be taken.** There for we look to the advised directions of solution. In the table below we will find an overview of the measures per direction of solution. For each measure a factsheet, with detail information about the characters see annex 1, has been developed.

Table 1. Measures (factsheets) per Direction of Solution

		A. Decrease need for Transport	B. Influencing the modal split	C. Influencing the choice of travel route	E. Influencing the way of driving - eco	F. Decreasing car emission	G. Exclude different means of transport	I. Influencing transfer of air pollution	i. Protecting the "weak areas"
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FS. 14	<u>Tunnels</u>						X		
FS. 15	<u>Heighten and lower/deepen roads</u>						X		
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<b>Destination Measures</b>									
FS. 17	<u>Low Emission zones</u>					X		X	
FS. 18	<u>Take down buildings and/or Infrastructure</u>							X	

## 5. The new Chances for Mobility Management

Mobility Management, as an integrated approach to solve traffic and transport problems, will be a most important instrument to solve the air quality problems in the municipalities. The challenge for the future is to get a more effective and more efficient traffic and transportation system that also takes care of the environment, the air quality and the health of the citizens of our cities.

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The effects of the European Air Quality Directive and the Dutch Air Quality Decree are becoming visible. Some judges have already dismissed new spatial plans while these plans didn't answer the air quality conditions of this decree. Or the plans create new problem locations or the air quality of the area themselves would be to high. New and better chances for Mobility Management? The answer has to be YES. Mobility Management will be a solution the questions the Air Quality Decree is calling for, because

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## 6. Conclusions and Acknowledgements

- In the Year 2010 everywhere in Europe the air quality have to be OK. If it isn't so or if there are new plans for road infrastructure or new plans for areas for living or commercial sites, these plans will be dismissed. The authorities have to take action to solve these problems because every European citizen has the possibility to go to the European Court to appeal to a plan;
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- The European Cities and countries can learn a lot from each other to tackle the problems and take up the chances inspired by the European Air Quality Directive;
- ECOMM should become the place to exchange information about the European Air Quality problems an measures to be taken;
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Expected Effects	Not only the effect on air quality. Also the side effects possitive and negative will be explained	
Background of the measure/ the Principle	Description of the measure and the situation it can be taken	
Actors/ stakeholders	An analyses of the stakeholders who are effecting the realisation of the measure and the effects of it	
Responsibility	Which (public) actor will be responsible for the realisation	
Applicable characters	The critical characters for applying this measure (location and social situation	
Implementation	Who to implement	
Cost-effectiveness	Cost in relation to the realisation of the measure and in relation to effect on the air quality	
Time period for realisation	Time it will cost from idea to using it	
Feasibility Practical and political	The factors for success	
Practical examples	Where we can see it; Municipalities, locations	
Cost of the measure	Indication of costs and which actor have to pay for it	
Possibilities for subsidising and support	Where can You get money for it	
Reverences/ Literature	Information from studies and Internet sites.	

## **ECOMM 2003**

### **7<sup>th</sup> European Conference on Mobility Management**

Karlstad, Sweden

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Workshop: New Partnerships (2b) - The need for new structures, partnerships and interaction for implementation

### **The campaign “YOU-move.nrw” - New partnerships for a youth-oriented and environmentally friendly mobility management**

In the summer of 2002 the campaign “YOU-move.nrw” was successfully carried out in Northrhine-Westphalia, Germany and evaluated by the Wuppertal Institute<sup>1</sup>. The campaign sees itself as a form of the so-called “soft-policies” for the environmentally friendly modes of transport. It demonstrated to the target-group “youths” how the public awareness for the environmentally friendly modes of transport for a sustainable mobility can be improved.

#### **Background**

The youth is an important target group for mobility management: In the process of growing up, mobility patterns are developed which will have a long term influence on the transport behaviour habits of future adults. Predominantly while young, a basic model will be determined for a more or less environmentally sound mobility behaviour. Many teenagers acquire a drivers license on their 18<sup>th</sup> birthday and then change from using the environmentally friendly transport modes to transport by car. With this change of transportation systems, they are no longer regular customers of the public transport but contribute to the pollution of the environment by individual motorised traffic. Moreover, youths are endangered by an above average tendency to cause car accidents due to their inexperience in driving.

#### **Objectives of the Campaign**

Against this background, the campaigns has four objectives:

1. The creation of awareness about youths and transportation  
The campaign shall illustrate the public and the decision-makers in politics, administration and transport companies, that young people are an important target group for a sustainable mobility management and especially for public transport.
2. Motivation of youths for multi-modality  
The campaign shall motivate young people to keep to their familiar forms of mobility within the environmentally friendly modes of transport and to use the car in addition to, not instead of public transport. The political model “multi-modality” shall be more strongly embodied in the youths’ consciousness. The customers’ bond of the youths towards public transport shall be strengthened by

pointing out the emotional qualities of the environmentally friendly modes of transport for this target group as well.

### 3. Participation and empowerment of the youth

The campaign shall demonstrate, in what way youths can successfully get involved with concept and product development for a sustainable mobility management, so that they are provided more mobility with less car traffic. It shall be pointed out, how youths might be encouraged and enabled to develop such projects which meet their youth-specific needs by themselves.

### 4. Exemplary effect for youth-orientated traffic projects

The campaign shall illustrate on the basis of good examples, how youth-orientated, eventful and environmentally sound traffic projects might be designed, such that a long-term impact is achieved with these examples.

## **Design of the campaign as a project contest**

From May to October 2002, after two years of preparation work, the campaign “YOU-move.nrw” was carried out as a project contest in the state of North Rhine-Westphalia. The objective was to put as many exemplary youth-oriented ideas, concepts and projects for environmentally friendly modes of transport as possible into action. The steering committee wanted to have about 100 projects for the contest.

Preferably realisable projects were looked for, but it was also possible to submit drafts of ideas or visions. In all contributions to the contest a substantial gain for the environmental quality or the road safety had to be evident – in addition to the requirement of youth-orientation. These projects should be developed either by the youths themselves (bottom-up strategy) or by professionals, as - for example - experts in transportation companies or other organisations, in close co-operation with young people (top-down strategy).

For the contest, the target group of young people was defined from age 15 to 25. All youths living in North Rhine-Westphalia were eligible to take part in the contest: single, non-organised people, youth groups with or without group leaders as well as school classes supported by their teachers.

Several valuable awards were advertised for the contest, partly financed out of the campaign budget, partly donated by external sponsors.

The project contest was made public via three modes of communication.

- ? An active press campaign by the campaign direction
- ? The internet presence of the campaign ([www.you-move.nrw.de](http://www.you-move.nrw.de))
- ? The public relation of the different members of the steering committee in their particular networks and working connections, which was supported by a special campaign flyer.

## **Organisation of the Campaign**

The campaign „YOU-move-nrw“ was substantially supported by the traffic policy of the state Northrhine-Westphalia. The concept was developed, prepared and carried out by an uniquely broad coalition of honorary active institutions and professional actors on state level.

The steering committee of the campaign was set up by organisations active in the areas of transportation, environment and road safety and by the transportation companies. The practical realisation of the campaign was managed by a central campaign direction on state level. It was located with the “Bund für Umwelt und Naturschutz NRW (BUND – Alliance for Environment and Conservation North Rhine-Westphalia) – which is the work place of the managing campaign co-ordinator, Dr. Werner Reh.

In detail, the following organisations worked together in the central committee

- ? the most important traffic -orientated and environmental NGOs in NRW: the “General German Bicycle Club”, The Passenger Organisation “Pro Bahn NRW”, The Transportation Club Germany NRW, and the Allicane for Environment and Conservation NRW, which took over the campaign co-ordination
- ? chosen youth organisations in NRW, namely the State Student Council, the Youth Sport Association and the youth division of the BUND
- ? important transportation companies in NRW: the Union of German Transportation Companies as umbrella association, the German Railway AG NRW (DB) as the largest transport company, the Transport System Rhein-Ruhr (VRR) as the largest North Rhine-westfalian transport system, the extraordinary active local transport company Rheinbahn AG as well as the Car-Sharing-Organisation “Stadtmobil”, one of the larger CSO’s, represented in several North Rhine-Westphalian cities
- ? as relevant user and consumer councils the Consumer Office NRW, the National Association of the Physically Disabled NRW, the National Traffic Watch and an insurance association for school transport (Rheinischer Gemeindeunfallversicherungsverband RGUVV)
- ? The City and Community Council NRW
- ? The Ministry of Transport NRW, represented by the commissioned marketing agency CP-Compartner

The Steering Committee and the central campaign direction were continually advised by the Wuppertal Institute, the Research Institute for Regional and Urban Development of the Federal State of North Rhine-Westphalia, and by the Heinrich-Böll-Foundation NRW. The Wuppertal Institute has also taken over the scientific accompanying research of the campaign on behalf of the BUND and with support of the Ministry of Transport of North Rhine-Westphalia.

In the Steering Committee the principle decisions about the campaign were made in consensus. It dealt with the questions of contents and organisation such as how to address the target group, press work, marketing concept, constitution of the contest jury, and the preparation of the prelude and closing events. It was furthermore responsible for the development of a time schedule and a set of procedures, and acted as supervision for the managing campaign direction. The members of the Steering Committee used their particular networks to promote the campaign and to initiate and assist projects as contribution to the contest. At last, the members of the Steering Committee contributed as jury members to the jury decision about the choice of the winning projects. From December 13<sup>th</sup> 2000 to November 11<sup>th</sup> 2002, there were altogether 22 monthly meetings of the Steering Committee.

The realisation of the campaign was substantially supported by the Ministry of Transport. First, an according outline agreement in the coalition contract of the re-elected red-green State Government (in 2000) assured the basic rear cover for the campaign. In addition, there were two discussion forums in the Düsseldorfer Parliament with the representatives for youth and traffic policy of the parliamentary fractions about the rough concept (February 2001) and the detailed concept (October 2001). There, the political backup of the campaign concept was confirmed and a financial support for the preparation and realisation was agreed upon. Based on this, the Ministry of Transportation of the Federal State of North Rhine-Westphalia (Division “Financing of Public Transport“) supported the preparation and realisation of the campaign, including the accompanying research, with more than 250.000,- € At the end of the campaign, representatives of the Social Democrats, the Green Party and the Christ Democrats contributed as jury members to select the winning projects.

The deciding argument for the success of the campaign is the good co-operation among the various participants in the Steering Committee: the professional participants (in politics, in community

administration and the transportation ministry, in public transport companies as well as in research institutes) and the honorary activists in the numerous very different non-governmental organisations.

Key factors for success in this co-operation are:

- ? persistent political will,
- ? sufficient personal and financial resources,
- ? well working co-operation of professional and honorary activists in the campaign network,
- ? well-balanced teamwork with top-down and bottom-up strategies,
- ? solving topic-related problems and conflicts in the work process in a tolerant and success-orientated manner and
- ? a very high personal engagement of the all the participating persons.

### **Results of the project contest**

At the deadline on October 31st 2002, 97 projects had been submitted. Of these, 72 projects were approved of and evaluated more closely.

They deal with entirely different topic fields and are in various states of realisation – from the idea to the implemented and finished project. The thematic emphasis of the submitted projects rests with the public transport. Many young participants dealt with youth-oriented public transport concepts (e.g. Night and Disco buses, event or sport lines, improvement of the bus stops) and new means of public transportation. There, the emotional qualities of the Public transport – especially important for young people - were picked up and the contestants tried to combine the factors “Fun and Entertainment” with the Public Transport via suitable events. Several projects have youth-orientated suggestions concerning design and tickets for the public transport, others suggested improvements in the information about the accessibility of youth-relevant places or about events in the form of leisure, sport or eventguides.

A series of projects refer to bicycle traffic on the way to/from school or in the leisure time, and to modes of transport typical for youth such as inline skates or kickboards. The topic road safety met with high response: many proposals concerning the improvement of road safety on the way to/from school and or projects with vehicle attendants were handed in.

Only few projects were submitted by single persons or by small groups of youth. Mostly, the project groups were from “institutions”. A large proportion of the projects were developed by school classes or courses, which had dealt with the topics youth-mobility-environment-safety during their curriculum. Further project initiators were youth parliaments, youth sport groups, and transportation companies which have developed mobility concepts for and together with young people.

Out of these 72 assessable contributions, the Wuppertal Institute made a first choice of 28 award-worthy projects. For this, all contributions to the contest were evaluated on the basis of a set of 10 criteria, specifically developed for this purpose (table 1). These were collected from an initial set of 45 individual criteria.

Out of the 28 award-worthy projects, the contest jury in consensus selected 19 “winners” and presented them valuable awards (table 2). Many other projects were given consolation prizes (e.g. trophies, bags, T-Shirts, Bike Accessories, games) by the campaign direction as appreciation for the commitment. The jury consisted of 10 representatives of the state politics as well as of transportation companies and non-governmental organisations which were members of the steering committee of the campaign.

Tab. 1: Set of criteria as a basis of valuation for the contributions to the contest of the “YOU-move.nrw”-campaign

No.	Criteria	Explanation
1	Originality, Innovation, Creativity	
2	Complexity of the Project, Presentation competence	
3	State of realisation	
4	Usage of the environmentally friendly modes of transport, integration of youth-specific means of transport in the public transport	
5	Meeting the needs of the youth	Attractivity of the apparens, modern means of transport, emotional valuation, physical activity, “fun factor”; self-awareness / risk, increase of acceptance for the environmentally friendly modes of transports, improvement of the youth’s customers’ bond
6	Environmental Compatibility - Energy consumption	Resource consumption, emissions of CO <sub>2</sub> , air quality, land utilization, noise prevention
7	Road Safety	
8	Designing competence, participation	New co-operations or networks, co-operation with professionals, acceptance for the realisation of the projects
9	Social contacts, social behaviour/integration	Contribution for an improvement of the social life
10	Economic efficiency	Profitability, cost effectiveness, feasibility

The main awards were ceremonially handed over to the winners during the closing event on November 22<sup>nd</sup>, 2002, in the State capital Düsseldorf (in the Max-Weber-College). All laureates received in addition to their prize a statue in the design of the YOU-move Logo. More than 200 youths active in the campaign from anywhere in North Rhine-Westphalia, the members of the steering committee and the campaign direction as well as a high-ranked representative of the Ministry of transport took part in the closing event – all in all there were about 250 guests.

### *Award winning projects*

The following first prizes were awarded:

The first prize in the category “Individual Prizes” was given to the project of Karl Ansgar Seng „Improvement of the local transport Wermelskirchen“. The 13-year-old student evaluated on his own initiative the local transport supply of his home town and developed suggestions of improvement for discovered problems (Remodelling of the central bus station, renewal of a train line to Remscheid, improved service in the local busses).

The first prize in the category Group Prizes went to the youth parliament from Kalletal with their “event bus”. The members of the youth parliament developed a concept for a night bus which was extended to an “event bus line”. In addition, they saw to it that a new skate facility was built.

The first prize in the category Class Prizes went to the project „Karolingerplatz Stop“ of the Max-Weber-College in Düsseldorf. The students generated three alternatives for a the remodelling of this stop, which was too small and unsafe. After these concepts had been discussed with the neighbourhood and the local trade, they agreed on the erection of a traffic lights. This practicable proposal was then submitted to the local administration.

Tab.2: Winners of the Contest „YOU-move.nrw“

Prize Category	Winning Project
<b>Individual Prizes</b>	
1. Prize: Laptop (1.200 Euro)	Improvement Public Transport Wermelskirchen
2. Prize: Top-Mobile Phone with MP3 (450 Euro)	Survey among young customers
3. Prize: Digital Camera	Mobile Angels
<b>Group Prizes</b>	
1. Prize: Trip to Nice (2.750 Euro)	Event bus Kalletal
2. Prize: Adventure Tour Alpes (600 Euro)	Sport-line Herne
3. Prize: 5 bags from Ortlieb	Night Express Bus NE 14
<b>Special Prize Road Safety</b>	
Trip to Hamburg to „The Lion Kid“ plus backpacks	Safeguarding Sports facilities Sinsen
<b>Class Prizes</b>	
1. Prize: Trip to London (2.300 Euro) of the RGUVV	Station Karolingerplatz
2. Prize: 750 Euro	Rolling Dream-Bus Revue
3. Prize: Trip with the tram line incl. big meal (750 Euro) KVB	Safeguarding and improvement of the ways to school Hennef
Special Prize Road Safety of the RGUVV: Musical „Miami Nights“	Safeguarding and improvement of the ways to school Hochdahl
5. Prize: Excursion and Visiting packets (Schalke Arena/Dom Sports)	Eco-Audit Student Mobility
5. Prize: Excursion and Visiting packets (Schalke Arena/Dom Sports)	Marler Day of Road Safety 2002
5. Prize: Excursion and Visiting packets (Schalke Arena/Dom Sports)	School Excursion by regular buses
<b>Special Prizes for dedicated transport companies (prizes for the participating youths)</b>	
Stadtwerke Dortmund (The cool bus- and railway show)	The transport companies sponsor a day-trip for the participating youths. The location is not yet chosen. The trip shall take place for all groups together.
Rheinbahn (vehicle attendant project)	
Stadtwerke Remscheid (vehicle attendant project)	
EVAG	
PESAG	

## Media Response

The media did not report too widely to the campaign „YOU-move-nrw“, but still regarded it with favour. The campaign referred to the Federal State of North Rhine Westphalia, thus it only appeared in the media of NRW – basically in the daily newspapers. In contrast to the predecessor campaign “Change the mind – Change the mode! New Mobility in North Rhine-Westphalia” in 1998<sup>2</sup>, this time the media response in NRW was distinctively lower. During the seven months before the opening event (April 22<sup>nd</sup> 2002) until shortly after the closing event (November 22<sup>nd</sup> 2002), 44 different pieces of writing relating to the campaign were published in the newspapers, thereof 32 articles and nine short notices, additionally 2 reports at ddp nrw and one report in a weekly journal. The 32 articles appeared 67times, the 9 notices were seen 85times in different daily newspapers.

For the local newspapers, it was of importance to refer in their articles to local projects. This was rather difficult during the time of the campaign, as many projects were not yet in the state of realisation. Another reason for the rather low response of the press may be seen in the combination of the issues youth and transportation, as the latter is not considered very interesting by the youth public.

The design of the campaign as a project contest affected the tenor in the coverage of the local media rather positively. Many articles were about concrete projects in the near surroundings of the reporters; these occasions were usually picked up positively and supportive and often proudly presented. The intensive media work of associations and companies forming the steering committee which also could use the campaign as their own promotional platform surely has positively influenced the number of media reports and their resonance.

### **Effect of the campaign on the participating youth**

The effect of the campaign on the participating youth was determined in form of panel interviews (before-after-comparison) with typical contest participants. 84 youths from eight representative project groups were interviewed. The interview concentrated on the mobility behaviour, the attitude towards mobility and the involvement in and the assessment of the campaign.

Due to the age structure (81% of the interviewees were under 18 years by the time of the interviews), local transport and bike are the modes of transport mostly used by the youngsters. More than half of the interviewed youths use buses and trains almost every day (51.9%). Two thirds use the bike almost everyday (43.0%) or at least several times a week (21.5%).

Nonetheless, the car plays an important role as mode of transport for these youths. Almost three quarters point out to use the car several times a week (50.6%) or almost daily (22.8%). They usually drive with someone else as most of them do not hold a driver's license yet. Only 5 percent of the interviewees do not use a car at all. Most of the youths (79.7%, with 13.9% who did not answer this question) assured that they want to make their driver's license.

In the before-after-comparison, there is no crucial change in the mobility behaviour of the young interviewees, as a consequence of the participation in the contest. On the other hand, there are evident changes in attitude towards mobility of the youths.

The public transport is assessed more positively in the after-interviews, especially with regard to how environmentally friendly it is. The positive image of the car has lost in the after-interviews in some aspects (e.g. concerning costs, stress or life quality). The campaign obviously reached a certain point of sensitivity in the youths for a traffic policy orientated at the environmentally friendly modes of transport. Admittedly, the image loss of the car is far less than the image gain of the public transport.

In the after-interviews, the considerable importance of networks, contacts and co-operation partners – who acted as contact persons for the youths during the contest and supported them with the realisation of their projects - were articulated. The erection of such networks needs an intensive mediation between the professional actors and the youths. The interviews made clear, that during the campaign only those project groups had contact or co-operations with political institutions or transportation companies, that were already part of such structures anyway.

The most popular expectations with which the interviewed youth took part in the contest were the realisation of their project idea and the increased perception of their generation as important consumer group of the environmentally friendly modes of transport. But for a large proportion of the interviewees, these expectations were only partly fulfilled.

More than 50 percent of the youths ascertained their intention to take again part in an comparable campaign. Most of them enjoyed the participation and found it interesting. Over half of the youths stated that it was of great importance to them to be able to bring their abilities into the contest. For another 36 percent, this was partly of importance.

All in all we can say that a majority of the interviewed youths could be sensitised for political decision processes in general and for questions concerning traffic, transportation and environment in particular by their participation in the contest.

## Final assessment

As a whole the campaign “YOU-move.nrw” is seen as a great success: across North Rhine-Westphalia over 70 innovative projects have been developed and partly realised in this program for a youth-oriented and environmentally friendly mobility and the issue of environmentally sound mobility for the youth has been successfully communicated in the state of North Rhine-Westphalia. This success was managed by a uniquely broad coalition of professional experts and honorary activists of many non-governmental organisations working together in the steering committee, that has developed and carried out the campaign.

The campaign was mentioned in many local and regional newspapers of North Rhine-Westphalia and was judged mainly positively in the media. The majority of the youths who took part in the project was sensitised for an environmental-orientated transport policy and their perception and assessment of the public transport has improved. The campaign motivated the participating youth for a multi-modality instead of a mere car-orientated attitude. But their real mobility behaviour did not significantly changed in the short period of the campaign.

The awareness of decision makers in politics, community administration, transportation companies and in public about the importance of the target group „youth“ for a environmentally sound transport policy was improved. With many successful examples, the campaign has demonstrated how youths can effectively get involved in concept and product development for a youth orientated and environmentally sound mobility. It remains to be seen to what extend the successful projects might act as role models such that the campaign achieves sustainable positive radiation effects.

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<sup>1</sup> Reutter, Oscar; Dalkmann, Holger; Bernhardt, Petra: Die Kampagne YOU-Move.nrw – Ergebnisse der Begleitforschung. Wuppertal März 2003. Unveröffentlichter Endbericht, deutsch; mit ausführlichen Literaturangaben.

<sup>2</sup> Reutter, Oscar; Beik Ute: Kampagne „Umdenken, Umsteigen - Neue Mobilität in NRW“. In: Stadt Münster/Europäische Kommission (Hrsg.): Schnittstelle im Mobilitätsmanagement - Neue Kooperationen, Techniken, Lösungen. Dortmunder Vertrieb für Bau- und Planungsliteratur. Dortmund 2000, S. 180 – 183, deutsch

*Workshop***New Partnerships (2b) – The need for new structures, partnerships and interaction for implementation****Vi MÖTs i Kalmar**

**– A forum for new partnerships and a joint force between the City of Kalmar and the Swedish National Road Association, South-Eastern Region, in the implementation of mobility management.**

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**The mobility management project *Vi MÖTs i Kalmar* is an example of a new way of finding links and cooperation between people and organisations involved with issues of environment and traffic safety. For the success of achieving good results, the project in Kalmar is to be seen as a lever for implementation of mobility management in regular activity. The work is based on the engagement and cooperation of other organisations and people in order to create sustainable results.**

*Focus on environment and road safety*

*Vi MÖTs i Kalmar* is a joint force in environment and traffic safety between the City of Kalmar and the Swedish National Road Administration, South-eastern Region. The time of the project is set to five years – 2001-2005. It's a rather long time for this kind of projects. Though in the previous work with mobility management we have learnt that projects like this take time and to measure the effects take even longer time.

The perhaps most important purpose of a project like *Vi MÖTs i Kalmar* is to create conditions whereby a focus on environmental and road safety issues would ultimately become a natural part of all work that involves travel, transport and infrastructure.

The main aim is to develop and test methods in working with mobility management. The project is meant to lead to local and regional development and there is to be a broad alignment of cooperation and efforts. It's also important to involve the inhabitants of Kalmar.

Sustainable development contains environmental issues, and also gender equality, health, security, economy and social aspects. Therefore the project's activities will take those aspects into consideration in the daily work.

### *Cooperation and communication*

The project *Vi MöTs i Kalmar* is built on the principle of cooperation. With only one person employed full-time a good result is based on other's engagement. It is agreed that the different administrations of the city of Kalmar will work together with each other and the Police, University, County council, business world etc.

To support the sometimes-new ways of cooperation, the project management has attached great importance to the development of tools and means to improve communication and increase knowledge of mobility management. Therefore work has been done concerning:

- Communication policy and plans to facilitate interaction and understanding between professions and organisations.
- A checklist to go through before a new activity starts, in order to be sure that all aspects are taken into consideration (not only environment and traffic safety, but also security, gender equality, a child- and youth-perspective and health)
- Discussions about a common ground of values and approach in acting around certain questions
- A conduction of different types of evaluation, both ordinary situation surveys, and a survey connected to behaviour and feelings. A process evaluation has been conducted to ascertain that the initiation process of the project has functioned satisfactory.
- An active work to develop forums and meeting places for the different groups. To be a part of the *Vi MöTs* project should be seen more valuable for the partners than working by themselves.

One of the keys of cooperation is making everyone feel that they themselves are gaining to join the partnership. People have various focus of interest. The common values and aspects are equal for everyone, and common newsletters, and an annual hearing tie the overall picture together. But the arenas where they practice mobility management have been different.

### *Number of involvement so far*

A municipality consist of different people with different needs. It is important that all these differences are taken into consideration in city planning.

Only the first two-year, over 70 people have been involved in *Vi MöTs i Kalmar*. 30 different organisations, both NGO: s, government administrations, companies and, within the city organisation, 8 out of 12 administrations and associations have taken part in the work with mobility management. There has been an attempt to involve those who "traditionally" don't work with traffic, but who actually are concerned.

### *Key Activities*

The arenas has been elected regarding to the main purpose of the overall project and also to the national goals in transport policy, the national environmental goals and the "Vision Zero" program. They constitute the starting point for activities and approach.

There is a focus on five key activities were organisations and people meet to work together. These projects are:

- Traffic Safety for children going to school
- An overall bicycle strategy including physical investments and mobility management to increase the status of the bicycle as a mode of transportation
- A forum regarding problems with alcohol/drugs and driving
- Working with Transport Quality
- Spatial planning and a strategy for working with mobility management in city planning.

Within these key activities the work is based on three scenarios; to implement mobility management in work that already is planned to be carried out, to support activities that someone wants to do but can not manage on his own (i e by finding co-partners or economic help), and to connect research to the issues.

### *Examples of new partnerships – Spatial planning*

In the work with spatial planning, a couple of areas in the city have been chosen for a more practical work as places for demonstration and developing new methods and ideas. The so called " Kalmar Trail" consists of E22, Erik Dahlbergs Väg - one of the main streets into Kalmar, Norrgårdsgärdet - a residential area built in the fifties, the City centre of Kvarnholmen and the Öland Bridge. One activity connected to this trail is a competition to find new ways of using Information Technology for increasing traffic safety and environment.



A walk in the residential area of Norrgårdsgärdet near the street Norra Vägen, with representatives from a variety of organisations and local government administrations.

For the work with the streets Erik Dahlbergs Väg and Norra Vägen, a programme for a common vision and goals between the participants with interest in the area is developed. To get successful results it's important to consider as many different thoughts and interests as possible before physical investments are done. The technical administration was brought together with the administrations for city planning and companies with property in the area to discuss these interests. The

next step is, with the help of citizen panels, to involve other people with other interests in how the streets are built. The panels will consist of youths, elderly, people living in the area, people working in the area and disabled, to get their experience of the street.

### *Examples of new partnerships – Bicycle strategy*

In Kalmar the work with developing a strategy for cycling has started. The political majority has been setting comprehensive goals.



A break at the "Cycle day" in Kalmar in June 2002

Together with the City of Kalmar Health service, the employees leisure association, the County council and the company organisation named Kalmar Arbetsgivarring started cooperation with a common cycle day for the employees. We gathered under the themes of health, enjoyment and environment and the aim to learn how to work together for a common goal and raise the status of the bicycle as a mode of transportation. During the day even other organisations took part i e the Swedish bicycle promoting organisation, a local bicycle shop and Korpen-member of the Swedish National Sport Alliance. Everybody took part with their own time and commitment and the cost was divided among the main organizers.

The activity not only came out positively among the participated employees, but also was a foundation for continued activities together. For example the City of Kalmar and the County council have together come up with a concept for bicycles for loan at the workplaces for their 6000 employees.

### *Expected outcome and factors for success*

To tie Mobility Management to physical investments and win good results in the form of a decreasing number of killed and hurt and less pollution due to traffic take time. A five year-project like *Vi MÖTs i Kalmar* gives the conditions to start the process, but it takes continued work and cooperation also when the project is ended. That is why already today discussions are held about how to the different forums will live after the closing of the project. The expectation is that every key activity finds its manager to keep up the work in the same spirit.

The factors for success are to involve a number of people and organisations, cooperate with trust and respect, have a constant dialogue, focus on results and quality and be sure that it's a win-win situation for both the persons and organisations involved directly in the activities and the people living in Kalmar. Hence it's for them *Vi MÖTs i Kalmar* was created. This somewhat new way of thinking is to be so superior that the contributory will continue to cooperate for a safe and secure traffic environment in Kalmar.

[www.kalmar.se/miljo/vimots](http://www.kalmar.se/miljo/vimots)

## **Alternative Implementation Strategies For Radical Transport Schemes**

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### **Introduction**

At the beginning of the 21<sup>st</sup> Century it is widely acknowledged within the European Union that transport systems within many of its member states are stretched, and in some cases reaching breaking point. While many plans and solutions have been debated, none has yet succeeded in significantly improving the transport situation within Europe. For instance in the UK, road user charging has been consistently touted by academics and transport planners as the ideal policy mechanism for traffic reduction since the 1960s, but is only now being implemented for the first time, and its success is by no means guaranteed. It is suggested within this paper that the majority of problems, when trying to introduce ‘radical’ transport schemes, exist at the project implementation stage.

The term ‘implementation’ can be defined in many ways, for the purposes of this paper we have defined ‘implementation’ as: ‘policies, actions or decisions relevant to the target population that can be put into effect at “street level”’, and ‘implementers’ as those responsible for doing that. As the definitions imply, the policy process does not end once agreement has been reached on a legislative proposal. The agreement still has to be implemented before the policy has any real existence. Bardach (1977) has described the implementation process as a game (see also Mendrinou, 1996: pp13-16). Assuming rational behaviour, the policy-making actors will devise strategies for the implementation process, which will result in maximising their own benefits: as such there will both be winners and losers and/or successful and unsuccessful implementation. However, when a situation arises where implementation failure becomes so evident that a process of ‘re-steering’ (Lundquist, 1972: 33) has to take place, policy makers must take action to encourage or force implementers to behave in ways more likely to achieve the set policy objectives (Richardson, 1996).

The paper sets out to explain some of the common problems faced by those responsible for implementing transport projects. It goes on to examine some existing schemes from across the world and will explain how the transport practitioners overcame adverse public reaction. For example, the paper will note how the ‘Ring of Steel’ in London was introduced as a security measure, how Electronic Road Pricing was sold to the public in Singapore, and how motorists pay to enter Manhattan and San Francisco via bridge and tunnel charges. It then offers some lessons for European policy makers, showing how ‘alternative’ implementation strategies could be shaped and adopted within Europe.

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‘DRIVING FORCES AND INCENTIVES FOR IMPLEMENTATION’.

Accordingly, the following notes are more practical reflections on how existing examples of radical transport schemes might be classified according to a very simple implementation strategy framework than an academically rigorous exercise (although this might come later).

## **Background**

Since the early 1950s all developed countries have witnessed a ‘mobility explosion’. Indeed, across the fifteen countries in the European Union (EU-15), overall passenger transport use (in cars, buses, coaches, trams, trains and aeroplanes) rose by 121% between 1970 and 1996. This translates to an increase in the average distance travelled by each EU citizen per day from 16.5km to 35km over the same period. Transport demand across the EU was calculated at being 4700 billion passenger kilometres in 1996 (EC, 1999).

The majority of this increase is almost entirely due to a rise in car use, although air transport is experiencing the fastest increase of all, albeit from a lower level than for cars. Over the 1970-1996 period, car use increased by 136%, with the modal share increasing from 74% of passenger kilometres in 1970 to 79% in 1996. This has been facilitated by increased road capacity, with income and population growth viewed as the major drivers behind increasing vehicle ownership and use (Marshall et al, 1997; Marshall and Banister, 2000). In the EU-15, there was a 34% increase in the number of vehicles owned between 1985 and 1995, with the number of cars on EU-15 roads growing from 60.77 million to 165.54 million, an average growth rate of just less than 4% a year. Thus, by 1996, there were 444 cars per 1000 EU-15 inhabitants (EC, 1999). OECD (1995a) predicted that this would increase by a further 50% between 1995 and 2020, bringing vehicle ownership levels to more than 600 per 1000 people in many EU-15 countries.

Such growth is frightening enough, but at the moment 80% of the 550 million vehicles (including 400 million cars) registered worldwide are owned by the richest 15% of people living in the ‘mainly developed’ and industrialised OECD countries. Unsurprisingly therefore, the number of vehicles and traffic levels are growing much faster in developing countries than in the developed world. Two-thirds of the rise in vehicles is forecast to occur in non-OECD nations particularly in Eastern Europe and Asia. If historic rates are maintained, the global vehicle population will exceed one billion by 2020 (Potter, 2000).

## **The need for radical solutions**

Such a depressing prognosis requires radical treatment, but political factors have generally precluded such actions. And so the transport crisis continues to worsen... However, there are towns and cities that have managed to adopt radical car restraint policies without dramatic consequences. Using data from some of these schemes, this paper develops a number of potential implementation strategies that may be adopted by transport policy makers in the future. In short, eight strategies are suggested, four of which focus on ‘sweetening the pill’ of potentially unpopular measures, and three that aim to convince the motorist that the new policy is actually quite a reasonable response to the traffic problem. The final strategy suggests that transport policy goals need to be met through the sympathetic introduction of other ostensibly unrelated policies – surely the purest manifestation of joined up thinking.

### **Compensating losers<sup>1</sup>**

The introduction of road user charging in Singapore in 1975 has long been seen as a ‘one off’ event, which was only possible because of unique circumstances in that the citizens are generally law abiding, and there are no similar alternative cities for businesses to relocate to. But, while this certainly played a large part in the introduction of the original very simple and low-tech Area Licensing Scheme, which used paper windshield stickers enforced through visual inspection by traffic inspectors within a single cordon, it was less important when it was decided to adopt an Electronic Road Pricing (ERP) system in 1998.

Instead, what is less well publicised is that the Singapore Government made a policy decision to ensure that the majority of people benefited as a result of the change, and that as few people as possible lost out, at least in the short term. This was achieved by granting rebates to certain user groups. For example, taxis were given road tax rebates for the first three years after implementation, while businesses were given four years of rebates. In addition, a \$60 (€1.3) a month levy imposed on owners of non-residential parking spaces was replaced by a nominal \$1 (€0.52) per space per month licence fee in the same year. In other words, the Government ‘bribed’ the public to give the scheme a chance of working in the first year, and gambled on the scheme being accepted by the time the rebates were withdrawn.

Such an approach was possible because the main objective of the scheme is to manage traffic levels rather than raise revenue. The costs of the ‘subsidies’ were written off as a necessary implementation cost.

### **Bribing the motorist not to drive<sup>2</sup>**

Certainly the most overt way of ‘incentivising’ drivers out of their cars is by paying to them not to use their cars for certain trips - i.e. effectively bribing motorists to use an alternative mode. One application of this principal – the parking cash out – is becoming increasingly common in the UK. Annual schemes operate at Southampton General Hospital and at Orange’s new Bristol office, while a monthly pass system operates at the Vodafone offices in Newbury, Berkshire.

Still more radical, the pharmaceutical giant Pfizer began operating a parking cash out scheme that rewards non-car commuters on a daily basis among staff at its research and production facilities at Sandwich in Kent in June 2001 and at Walton Oaks near Reigate in Surrey in December 2001. This works by using staff personalised security pass ‘proximity card’ technology. An employee’s card is credited with enough points to ‘pay’ for one month’s parking. The card opens the parking barriers and records how many points are used. If not used for parking, staff then cash in these parking points at the end of each month, which are paid through the payroll. Staff at the Sandwich site receive £2 (€2.9) per day for leaving their car at home, while at Walton Oaks the incentive is £5 (€7.2) a day – a reflection of the far tighter parking standards set by the local planning authority at the Reigate site. Overall, it is estimated that the value of cash outs given to staff will amount to around £0.5m (€0.72m) a year, and currently around a third of staff travel to work by modes other than the car.

It is not only parking spaces that motorists are paid to give up – in some cases they are paid to give up their cars. For example, during Green Transport Week in June 1999, public transport operator ‘First Glasgow’ introduced the ‘Swap a banger for a bus’ scheme, which led to more

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<sup>1</sup> This section is based on Chan et al (2002).

<sup>2</sup> This section is based on information reported in Enoch (2002).

‘DRIVING FORCES AND INCENTIVES FOR IMPLEMENTATION’.

than 500 residents of Glasgow swapping their car for an annual bus pass worth £560 (€10). In the USA too, a car cash out project is being tested by the State of Washington and public transport operator King County Metro in Seattle, through funding from the Federal Highway Administration value pricing programme.

**Highlighting the benefits<sup>3</sup>**

By contrast in Oslo, Norway, road tolls were introduced in the city to raise money to pay for new transport infrastructure, and not to reduce traffic congestion. This meant that the ‘rebate route’ might exempt too many people for the required amount of money to be raised. Indeed, the charges introduced were relatively low and were spread across the ‘population’ as far as possible so that they could maintain traffic levels and maximise revenue.

In the Norwegian case therefore, the important objective was to convince the public that the money they were being charged was being used to directly benefit them as motorists. Accordingly, much effort was spent on a well targeted and publicised information campaign, which was certainly helped by the charge being implemented only 14 days after the Oslo Tunnel (later renamed *Festningstunnelen* - the Castle Tunnel) was opened to traffic.

**Offering more choice to the road user<sup>4</sup>**

The key reason for drivers accepting the High Occupancy Toll (HOT) lane facility on Interstate 15 to the north of San Diego, is that drivers are offered a genuine and informed choice. Motorists can use the general purpose lanes for free with the likelihood of being delayed, or else they can pay but enjoy a hassle free and predictable journey time. This is a major factor missing from area charging schemes.

The HOT facility originally opened in 1988 as a High Occupancy Vehicle lane to buses, vanpools and two-person carpools. In 1991, it was suggested that the lanes could be opened to single occupancy vehicles (SOV) as only 50% of the two lanes’ capacity was being used while adjacent general-purpose lanes were experiencing severe congestion during peak periods. It was not until December 1996 that the HOT lane became a reality.

As drivers approach the HOT lane, variable message signs advise them of the toll to use the lanes. The level of this toll depends on how much spare capacity is available in the HOV lane, and varies from \$US0.50 (€0.56) to \$US4 (€4.5) in normal circumstances, with drivers paying more the busier the lanes. Around \$US430,000 (€481,000) of the annual \$US1.6m (€1.8m) toll revenue covers operating costs, and \$US60,000 (€67,000) pays the California Highway Patrol to enforce the lanes. State law requires the remaining money to be spent on developing the express lanes and improving the public transport service along the corridor, specifically, the express bus service known as the Inland Breeze, which began operating in November 1997. While initially there were concerns that the lanes would become ‘Lexus Lanes’ - i.e. only used by the rich - this has not been borne out in practice.

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<sup>3</sup> This section is based on Waerstad (2002).

<sup>4</sup> This section is based on Enoch (2001).

### **The lesser of two evils<sup>5</sup>**

Vaguely related to this, is the idea that the public are provided with two choices, one of which is even more politically unpalatable – yet just as logical or reasonable – as the favoured one. A recent example of this approach occurred in the City of Durham before the introduction of the congestion charge near the Cathedral in October 2002.

In summary, the problem was that traffic was causing problems for the World Heritage Site of the city’s cathedral and castle, as well as for pedestrian shoppers in the city centre. Accordingly, a transport study demonstrated that action needed to be taken – a position appreciated by almost everyone – either car drivers were to be charged for driving in the congestion area or else banned altogether. Given the alternative, it became the less controversial route for the council to adopt the access charge.

### **It might have been worse...**

A similar tactic was used to herald the introduction of London’s Congestion Charge in February 2003. Hostile newspaper reporting prior to the introduction of the charge and predictions of traffic chaos by the London Mayor, combined with a lessening in traffic due to a half term school holiday, meant that for the first week the charge performed far better than expected. Consequently, after the first week of congestion charging the scheme was seen as a policy success. Further research is obviously required before labels such as ‘success’ or ‘failure’ can be assigned to this scheme.

### **Adapting tried, tested and accepted methods**

Despite the recent media frenzy surrounding the launch of the London Congestion Charging Scheme in February 2003, two of the largest cities in the United States (San Francisco and New York City) have been charging vehicles to enter or exit downtown areas for many years. The two cities were able to introduce such a measure with virtually no adverse political problems. Drivers are required to pay tolls to cross eight ‘Caltrans’ bridges in the Bay Area of California, including the four bridges to enter San Francisco (Caltrans, 2000). Similarly in New York City, drivers crossing into Manhattan must pay to use seven of the city’s bridges and two tunnels (MTA, 2003). This apparent public acceptance indicates that drivers are happy to pay to use a facility such as a bridge or a tunnel, whereas the idea of paying to enter the downtown area of a city would be extremely controversial. The lesson here would therefore seem to be that ‘traditional’ charges that have been in place and accepted for many years might still do just as effective a job as something seen as new, radical and threatening, but with rather less opposition.

### **The Trojan Horse**

Perhaps the classic case of a transport policy being introduced by a ‘trigger mechanism’ – i.e. on the back of a totally unrelated policy – is that of the so-called ‘Ring of Steel’ imposed on the City of London in 1993. This policy was executed almost overnight in response to a terrorist bomb attack in Bishopsgate, and involved restricting access to the central core of the city to a small number of roads. In addition to the closure of 17 minor streets and the conversion of 13 roads to one way, traffic signals were altered at 23 junctions and public transport and pedestrians were given greater priority (Cairns et al, 1998). Overall, as a result of what was a security policy – in the eyes of the public at least - traffic entering the restricted

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<sup>5</sup> This section is based on Ieromonachou et al (2003).

‘DRIVING FORCES AND INCENTIVES FOR IMPLEMENTATION’.

area fell by a quarter from 160,000 vehicles a day, and pollution levels were 15% lower. However, there was a slight increase in traffic levels on the zone boundary.

Interestingly, the bomb exploded only a month before a traffic scheme known as “The Key to the Future” was due to be implemented that was also designed to restrict traffic for environmental reasons, and so significant elements of this proposal were incorporated into the security operation. It is probably fair to say that resistance to such a radical policy would have been far greater had the bomb not gone off, simply because the public is far more accepting of policies ‘forced’ on policy makers due to ‘circumstances beyond anybody’s control’ or by ‘safety concerns’. Therefore, similar conditions could perhaps be created by taking advantage of particularly bad weather or some other ‘Act of God’, or more predictably by maintenance problems closing roads, bridges (e.g. Hammersmith Bridge, see Rees & Williams, 1998) or car parks. Essentially, it may be worth transport planners becoming more involved with Emergency Planning sections at local councils.

### **Lessons to be learnt**

Overall, there are important lessons to be learnt from the successes and failures of radical demand management schemes to date. These are not about the technology of road pricing, which has attracted much attention, but about how schemes are designed, the effective inclusion of user concerns and political sensitivity. As implementation theory suggests, one of the most favourable conditions for successful implementation is where policy makers and implementers develop a co-operative relationship (Richardson, 1996: 290). Indeed, Cram suggests ‘if policies are formulated in the absence of active and enthusiastic participation by those whose co-operation is essential at the implementation stage, then implementation failure is more likely’ (1997:84). According to Pressman and Wildavsky (1984), correct implementation usually involves several semi-independent organisations or agencies, each of which can, to a large extent, block or change the direction of implementation.

Based on the findings from the case studies within this paper, the major factors that appear to be associated with successful implementation are:

- ? Being supported by politicians of all persuasions;
- ? Those responsible for implementation participate in the decision making process;
- ? Having clearly defined and complementary objectives;
- ? Gaining the support of the public;
- ? Being understood by the public;
- ? Achieving at least some of the benefits promised as quickly as possible;
- ? Being seen to work properly and reliably;
- ? Having flexibility to develop as circumstances, public attitudes, objectives and technology change requires, and of being tweaked to react to ‘unexpected’ events;
- ? Offering realistic alternatives to travellers who wish to switch from driving into the cordon;
- ? Paying attention to details;
- ? Not trying to achieve too much in the early stages.

However, it is also clear that in many of the more radical schemes adopted around the world there are additional strategies that have been employed, either deliberately or as an act of circumstance. Firstly, the public is often willing to wait and see if a scheme will work provided that:

- ? They can perceive there is a problem and the policy seems a reasonable way of solving it;

‘DRIVING FORCES AND INCENTIVES FOR IMPLEMENTATION’.

- ? They benefit from the scheme, are compensated in some way for any disbenefits, or are provided with a viable and acceptable alternative means of travel;
- ? They feel that other organisations or individuals are convinced the scheme is the right way to go.
- ? They feel they have been properly consulted for their opinions, and these have at least been listened to and ideally acted upon.

Secondly, the public will often accept a scheme if:

- ? They feel there is no alternative (or that it is the least worst alternative);
- ? The scheme is not so different to existing schemes or if they have had experience of similar schemes;
- ? The scheme is implemented as a response to some kind of crisis that is beyond the Government’s control – e.g. an act of terrorism or a national emergency – or that is obviously for the public good – e.g. drink driving, security.
- ? The scheme delivers what it set out to achieve.

Clearly, the strategies suggested are already implemented to varying degrees in most transport projects, but have possibly not been set out quite so bluntly in the past. It is also obvious that the appropriateness of some or all of these strategies is strongly dependent on the particular circumstances of a proposed scheme. Finally, there is scope for combining suitable strategies in order to increase acceptability still further.

In summary, increasingly, many countries experience problems with the implementation of a project – and in particular in convincing the public and/or local, national and European politicians – rather than the planning or even the financing of a project that determine whether it goes ahead or not. It is hoped that this paper might provide a slightly different way of looking at the implementation process so that future schemes may benefit.

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Title	<b>"Can we leave the car at home?"</b>
Workshop	2c - Incentives
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## **Background**

The Mobility Week and the Car Free Day has attracted a good deal of attention from the public authorities in Denmark. In 2001 the City of Copenhagen achieved a lot of press coverage immediately before the Mobility Week from an experimental project dealing with families that should try not to use their cars for a week.

The City of Copenhagen wished to carry out a similar experimental project in 2002 in order to raise public awareness about the Mobility Week 16-22 September 2002. Among the ideas considered was a campaign directed towards businesses and their employees aiming at reducing car use for commuting to work.

The Greater Copenhagen Authority (abbreviated HUR) was at the same time considering various activities for the Mobility Week. Moreover, HUR had shortly before decided to set up a unit dealing with mobility management and travel plans for businesses.

It was found worthwhile by the City of Copenhagen and HUR to join forces with a project aiming at obtaining a change of the travel habits to and from work for the employees at a number of different businesses. The businesses should compete on achieving the biggest reduction in single occupancy car use.

The Greater Copenhagen Authority (HUR) is a politically-governed regional organisation covering the Greater Copenhagen Region set up in July 2000 and dealing with public transport, regional planning, traffic planning, Øresund co-ordination and development, industrial policy, tourism and culture. There are 1,815,000 inhabitants in the region that covers 2,871 sq. km. The City of Copenhagen is in terms of its 501,000 inhabitants the biggest municipality in the region. The area of the municipality is 88 sq. km.

## **Project aim**

The project had two aims:

- ? to test mobility management activities directed towards businesses and their employees
- ? to achieve public attention on the Mobility Week in general and on the possibilities of a shift from car to alternative modes in particular.

The project had to be carried out within a few months and was organised as a campaign.

## Campaign planning

A campaign secretariat was set up between HUR and the City of Copenhagen and a consultant was hired to carry out a significant part of the work involved.

The campaign was entitled "Can we leave the car at home?" and the general outline of the campaign was described in order to find interested businesses to take part.

The general outline of the campaign was as shown in the table:

<i>When</i>	<i>What</i>	<i>Who</i>
Week 33 (12-18 August)	Information of the employees, e.g. at an information meeting.	The campaign secretariat informs about the campaign at a meeting with the employees.
	Registration of usual transport to work and elucidation of the interest in changing habits.	Questionnaire about usual transport, to be filled out by the employees and collected as soon as possible.
Week 34 (19-25 August)	Registration of actual choice of means of transport to work in a normal week.	Questionnaire on means used day for day. To be filled out each day and sent in Monday in the following week..
Week 35 (26-30 August)	Information and advice on alternative means of transport, bringing about concrete aid.	The campaign secretariat develops proposals based on the first questionnaire and informs about the results to the employees. Gimmicks are distributed by the end of the week.
Week 36-37 (1-15 September)	Experimental weeks with registration of transport means used and lottery.	The employees try out alternatives and leave the car at home and fill out questionnaires on the transport each day during the two weeks. Employees are drawn each day and gifts given to those who did not go to work in a single occupancy car. Questionnaires to be sent in by Friday 13.9.
Week 38 (16-22 September)	Mobility Week, final meeting where results and winners are published.	The campaign secretariat plans the meeting, managers and employees of the businesses are invited.
	Thanks sent to all participants.	All the employees get a short description of the results.
Week 39-46 (23 September - 15 November)	Evaluation and elaboration of final report.	Evaluation among contact persons and participants. Final report is written and sent out by the campaign secretariat.

The challenge was two-fold:

1. To find interested employers
2. To carry out activities and obtain a change in travel behaviour among the employees.

## Financing

The campaign was financed by HUR and the City of Copenhagen. Sponsors were successfully asked to contribute rewards to a lottery. Moreover, support to the campaign was obtained from a fund for the Mobility Week at the Ministry of Transport.

## **Looking for employers**

The campaign secretariat wished that 3-5 businesses representing public as well as private employers should take part.

The search for employers was initiated in the end of June, leaving a rather short time for the businesses to decide, especially as only a little is happening in the month of July due to summer holidays.

Round 40 different employers were asked, and just in time three had decided to take part:

- ? Boligselskabet AKB, a cooperative housing society with 340 employees, of which 90 are working in the central administration
- ? The Danish Medicines Agency, an agency under the Ministry of the Interior and Health having 280 employees
- ? Copenhagen University Hospital having 7.000 employees, out of which 35 with a central position in management and the central cooperation body were offered to take part in the campaign.

The minimum of three employers was thus reached. Boligselskabet AKB may not be a typical representative of the private business sector but is on the other hand not - as the other two - a 100% public employer.

A contact person was nominated by each of the employers.

## **Introduction of the campaign to the employees**

In total 655 employees were invited to take part in the campaign.

Meetings where the campaign was introduced and discussed were held at Boligselskabet AKB and Copenhagen University Hospital, while the employees at the Danish Medicines Agency were introduced to the campaign only by e-mail.

## **3 questionnaires**

The employees taking part in the campaign were asked to fill out 3 questionnaires:

1. A questionnaire on usual travel habits to work and interest in alternative modes
2. A questionnaire on transport to work in a normal week
3. A questionnaire on transport to work in the two experimental weeks

In connection with any of the questionnaire-rounds four times three bottles of red wine were staked in a lottery between those that sent in their responses in due time.

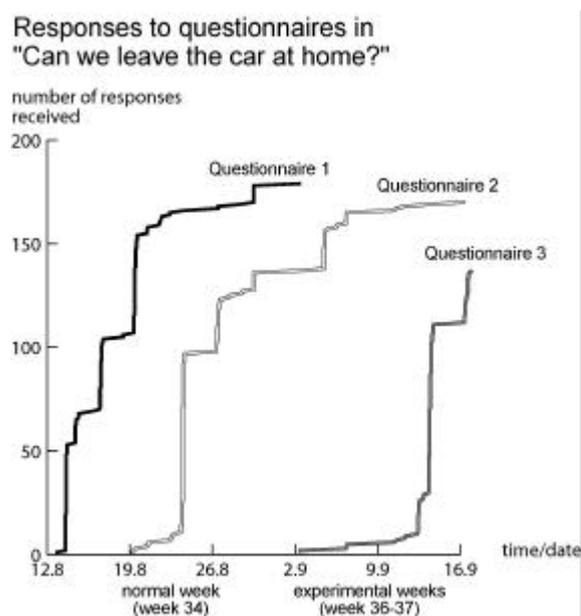
The first questionnaire served in practice as enrolment for the campaign. Those who did not react were not presented to other questionnaires. The number of participants enrolled was as follows:

Employer	Participants	Employees	Share
Danish Medicines Agency	89	280	32%
AKB, central administration	50	90	56%
AKB, departmens	29	250	12%
Copenhagen University Hospital	18	34	53%
Total	186	654	28%

In general there were:

- ? 186 who registered for the campaign
- ? 179 who sent in the first questionnaire (a few enrolled later)
- ? 170 who sent in the second questionnaire for the normal week, of these 125 who sent in the questionnaire on time
- ? 137 who had sent in the third questionnaire for the experimental weeks on Monday the 16th (a few came later but were not included).

Number of responses received versus time is shown on the graph.



### Information on alternatives and offers of aid

Alternative travel plans with public transport and/or bicycle routes were elaborated for 75 of the 186 enrolled. They were, where appropriate, offered:

- ? tickets for the public transport and/or
- ? practical help in form of bicycles and/or
- ? bicycle trailers on loan,
- ? foldable bicycle baskets or
- ? bicycle computers.

59 accepted one or more of these offers.

## **Carpooling**

41 respondents offered a seat in their car for colleagues. In 15 instances matching colleagues were found.

## **Competition during experimental weeks**

In order to create a material incentive to change travel habits a lottery was carried out during the experimental weeks. Each day participants were drawn and contacted until one was found that had not driven to work in a single occupancy car. The rewards won were a mixture of sponsored goods and articles bought on the campaign budget.

## **Analysing the results**

Knowledge about the travel behaviour was achieved by questionnaire 2 and 3. Responses were carefully grouped according to means of transport and weighed according to the number of days at work in each of the periods (the normal week versus the two experimental weeks). Respondents that had not sent in both questionnaires 2 and 3 on Monday the 16th September were ignored.

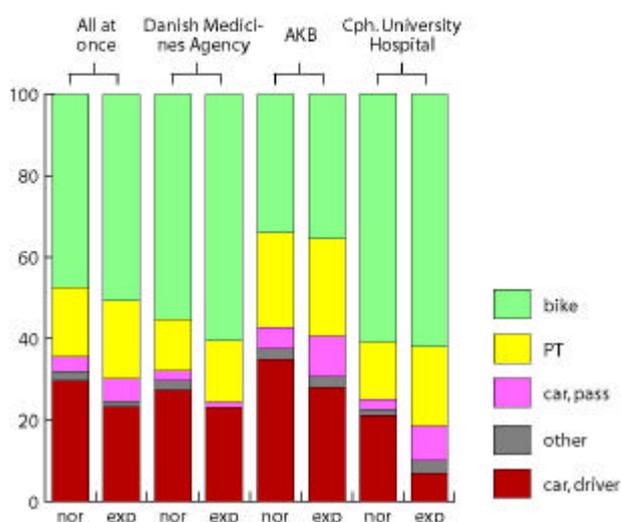
137 of the 186 participants managed to send in both questionnaires. Some were absent in one of the periods leaving 128 to be part of the analysis.

## **22% decrease in car traffic**

The 128 participants in the analysis were distributed as follows when the behaviour in the two experimental weeks was compared with the behaviour during the normal week:

29 (23%) reduced the use of car as a driver  
13 (10%) did not change the amount of car use as a driver  
19 (15%) did increase their use of car as a driver  
67 (52%) did not at all use car as a driver

Choice of transport means in normal and experimental weeks of "Can we leave the car at home?"



Overall there was a decrease of the use of car as a driver from 30 to 23% corresponding to a 22% decrease of the car traffic to the employers involved. In absolute percentages there are 6,4% less using car (and 1% less of the category "other") while carpooling has increased by 2%, use of public transport by 2.2% and use of bicycles by 3.2%.

At any of the employers involved a decrease in car use was obtained.

### Publishing the results

The results were published at a press meeting the 18th September. Two bicycles were handed over to the winning employer. Press releases were sent out afterwards.

### Point of view of participants

The project got a lot of attention among the employees. Many of those, who did not from the first place take part, took notice of the activities and the transport discussion. Many comments, positive as well as critical towards the transport possibilities, were received.

40 days after the end of the campaign the contact persons and the employees were asked about their experiences and points of view on a number of issues.

Two of the contact persons stated they used 2-3 days work for the campaign, the last one considerably less. The time expenditure is found acceptable.

136 - of them 29 non-participants - responded to a questionnaire about the campaign.

Support for the purpose of the campaign was given as the main reason to take part, with the chance of winning in the lottery as the second most important reason.

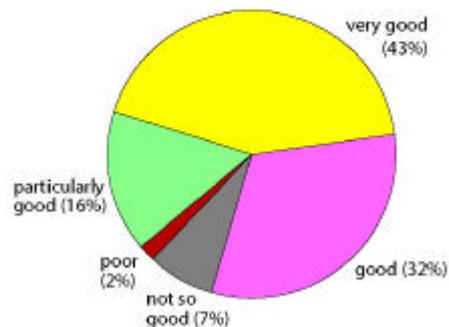
A majority of those who changed their travel habits found the change more or less troublesome. As many however also found that positive experiences were associated with the change.

The participants were very satisfied with the rewards.

More than half of the participants found that the aid had some or a big influence for the new travel habits.

In general the participants were very happy with the campaign - 91% found it "good", "very good" or "particularly good".

Participants' evaluation of the campaign



### **Medium term effects**

About half of those, who changed their travel habits during the campaign, said they sustained part of the changes also after the campaign.

The medium term effect of the campaign on the participants will be investigated during spring 2003.

### **Press coverage**

One press release was sent out at the start of the campaign and one when the result was found. 11 articles in newspapers or features in radio and TV were identified. The press coverage must be said to be moderate and less than expected.

### **Lessons learned**

The campaign demonstrates that it is possible to achieve a notable reduction of single occupancy car use over a short timescale.

The reduction was achieved by a shift to cycling, carpooling and public transport. Only a few accepted the offer of a commuting bike (to reduce the time and effort to get to and from the public transport terminal) and nobody wished to loan a bicycle trailer or make use of other technical solutions to children carriage on bicycles. It seems that longer time and/or more effective communication of the benefits of such solutions is needed to obtain that they are tested out.

The major part of the responses to the questionnaires was communicated by e-mail. Some technical problems were associated and a more easy to use solution should be employed another time.

From the number of participants at the different employers it seems that it has a better impact to meet the target group in person than only to communicate by e-mail.

More attention on getting messages to the press should be paid. At an earlier campaign in 2001 a very good connection from the City of Copenhagen to the national radio (DR) brought about a very efficient and powerful communication. In 2002 the DR-journalists, however, were on strike, and alternative channels to the press were not built up in due time.

It would probably make the task of finding employers willing to take part in the campaign considerably easier if some more months were provided prior to the campaign.

### **Overall results**

The campaign was a success in terms of obtaining a change in travel behaviour and getting experiences on how to bring about such changes. The participants were moreover very happy with the campaign. The press coverage was however less than expected.

## **ECOMM 2003**

### **Road User Charging – Creating a Supportive Environment for Mobility Management**

#### **Workshop 2C: Driving forces and incentives for implementation**

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#### **Introduction**

Mobility Management measures offer excellent mechanisms to support the shift towards more sustainable travel choices. EPOMM and other initiatives have provided European cities with a wide range of inspiration and have led to implementation of numerous successful schemes.

Overall, however, the majority of European cities and regions still experience an ongoing rise in car usage resulting in the twin problems of the environmental impacts of congestion and the physical impacts of new highway construction.

Outside the EC, the problems in the NAS and elsewhere are even more extreme, with potential for considerable increases in car usage if radical measures are not in place to encourage modal shift.

This paper reviews the way in which fair and efficient road user charges can create an economic environment in which Mobility Management measures will represent a more attractive option to existing car users. The paper will consider the rationale behind road user charging, with a particular emphasis on its ability to improve local economic efficiency by ensuring that road space is available to essential users. It will also review the International and European State of the Art and the lessons to be learnt from schemes which have been implemented to date in Singapore, Norway, Rome and the UK. It will also address some of the concerns about the societal implications of Road User Charging and the ways in which Mobility Management solutions can help to redress such concerns.

The paper also considers the way in which the availability of Mobility Management measures can contribute to the success of Road User Charging schemes, and consider the more general need for complementary packages of transport planning measures which are able to combine “push” and “pull” mechanisms to achieve collective global objectives.

## Identification of the Problem

In very broad terms, both Mobility Management and Road Pricing are intended to reduce car usage. Mobility Management measures, however, depend on attracting or “pulling” drivers from the car, whereas Road Pricing directly encourage or “push” drivers towards modal shift. The distinction can perhaps be illustrated by reference to recent market research undertaken in the UK.

Transport Direct<sup>1</sup> is a Department for Transport (DfT) initiative to exploit the opportunities created by new technologies, notably the internet, to achieve a radical integration and enhancement of the information available to people wishing to plan a journey.

The Transport Direct concept embraces three fundamental aspects of mobility:

- ? Travel Planning – considering all alternatives for making a journey, including all modes (i.e. walking, cycling, car, bus, coach, train, ferry and air) and combinations of modes.
- ? Travel Booking – the ability to book, pay and obtain tickets for a journey at the same time as making the enquiry.
- ? Real-time Information – on how travel options are performing in real time, before and during the enquirer’s journey?

Transport & Travel Research Ltd<sup>2</sup> was commissioned to carry out some qualitative research into the role of Transport Direct in providing a source of such information for the public who wish to travel by car. This comprised market research with seven groups who were fairly typical of the public at large in as much as they consisted mainly of individuals who exhibited a high degree of car dependency: where there was a willingness to consider using public transport, this mainly related to the use of trains for longer journeys.

In terms of whether the Transport Direct service might encourage modal shift away from the private car, there was a feeling that increased use of public transport in the future would be more dependent on the quality and reliability of the services themselves, than on the quality of information provided. The results of the group discussions therefore suggested that Transport Direct, when considered in isolation, might have only a limited impact on encouraging the use of public transport for local travel. This was particularly true for participants who described themselves as being fairly time-constrained (especially families with young children).

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<sup>1</sup> <http://www.dft.gov.uk/itwp/transdirect>

<sup>2</sup> *Transport Direct – Travelling by Car*, Bewick, Fereday and Barham (TTR), INFORM CONFERENCE, Merseyside, 2002

There were, however, some clear indications as to why the private car was preferred as a means of transport, suggesting ways in which Transport Direct might be designed and marketed with these issues in mind, in order to both maximise use of the service, and provide users with information that will enable them to make informed choices as to which modes of transport to use. For example, the speed and convenience of the private car emerged as being major disincentives for people to use public transport. Cost was also given as a factor that discourages some people from using public transport, especially families or single parents with children.

It can be inferred from this outcome that, however well planned even the most comprehensive and widely available mobility management service such as Transport Direct may be, such measures may not fully convince existing drivers towards modal shift. This is not a failing of the mobility management measure, but a reflection of the current imbalance of the costs of motoring and public transport. Complementary measures to narrow the perceived difference between the benefits of the car and alternative modes are essential if mobility management is to achieve its true potential. Specifically, mobility management measures to enhance the quality of the public transport service offer are undermined by issues of cost and speed, the latter itself being a key element in the overall generalised cost of a trip.

A major driver in the continuing increases in car usage is that motoring remains a relatively cost-competitive mode, offering a high perceived level of comfort and security. If this perception is to be challenged, there is a need for Mobility Management to be underpinned by an economic incentive to behavioural change which reflects the high societal costs of motoring. Otherwise many of those drivers who enjoy the convenience of their car are unlikely to take up alternatives that are on offer.

To take a simplistic example, the AA<sup>3</sup> estimates in the UK that a typical driver with a 1600cc petrol car driving 16,000 km annually pays an average of €0.12 per km on fuel against €0.8 per km overall on motoring. Given that public transport for an equivalent trip may be of the order of €0.2 per person per km<sup>4</sup>, it is clear that the perceived marginal cost of motoring is substantially less than that for public transport for a single traveller, let alone a small group. Indeed, given that most motoring costs are fixed, and that many people regard a car as a necessity, the marginal cost of motoring for someone who already owns a car is generally very low. For this reason motorists are quite unresponsive to changes in the costs of alternative modes and only likely to respond to a change in the perceived marginal cost of motoring.

### **Rational Charging for Transport – A Possible Solution**

The case for the introduction of a fair and efficient means of ensuring that travellers meet the costs which their travel choices impose on society has been set out in successive EC policy documents:

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<sup>3</sup> [www.theaa.com/allaboutcars/advice/advice\\_rcosts\\_petrol\\_table.jsp](http://www.theaa.com/allaboutcars/advice/advice_rcosts_petrol_table.jsp)

<sup>4</sup> Public transport costs vary greatly, but this figure quoted is not atypical for a one-way suburban commuting trip in the UK

- ? 1995: Towards fair and efficient pricing in transport <sup>5</sup>
- ? 1998: Fair payment for infrastructure use <sup>6</sup>
- ? 2001: European Transport Policy for 2010: time to decide <sup>7</sup>

The evolution of thinking in these areas is also reflected in the work of the High Level Group on Transport Infrastructure Charging<sup>8</sup>.

The general rationale which guides this work is an understanding of the economic impacts of congestion relating to increases in travel time, as well as the environmental impacts of congestion, both of which can be attributed to high and increasing levels of road traffic. These impacts are considered to represent the core of what is termed the marginal social cost of a trip. Reducing these impacts can address a wide range of urban objectives, including environmental impacts upon health and quality of life, as well as providing better access to economic opportunity and minimising the use of valuable land by transportation systems.

Road transport, in general, benefits from an implicit subsidy, through the provision of road space. Vehicle and fuel taxation are intended to recoup this subsidy, but cannot effectively reflect the varying marginal social costs of transport especially in urban areas at peak times. Public transport is often required to be self-financing, operating in some cases in the free market or in a franchised environment. In such instances, pricing may be entirely based upon market forces, or modified by externalities such as public subsidy.

Specifically, the marginal social cost of road transport is generally greatest in congested areas<sup>9</sup>, often the peak hour urban core, where the cumulative impact on congestion, and environmental impacts, especially air pollution, are maximised.

In reality, of course, cities are unlikely to introduce road user charging in order to achieve economic objectives, and are likely to be seeking to achieve one or more of the following:

- ? Raise revenues
- ? Reduce congestion
- ? Reduce environmental impacts

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<sup>5</sup> European Commission, Towards fair and efficient pricing in transport, Policy options for internalising the external costs of transport in the European Union, Brussels, 1995

<sup>6</sup> European Commission, Fair payment for infrastructure use: A phased approach to a common transport infrastructure charging framework in the EU, Brussels, July 1998.

<sup>7</sup> European Commission White Paper "European Transport Policy for 2010: time to decide" 2001

<sup>8</sup> High Level Group On Transport Infrastructure Charging: Final Report On Options For Charging Users Directly For Transport Infrastructure Operating Costs, EC 1999

<sup>9</sup> Surface Access Transport Costs & Charges, Sansom et al, ITS 2001

Although there is some overlap between these objectives, the desired balance will affect scheme design and the degree to which they complement mobility management although any such scheme will be broadly supportive of modal shift away from the car.

### **State of the Art**

Although the rationale for road user charging has been set out in EC policy as outlined above, and endorsed in a number of Member States, notably the UK and Italy, the implementation of road user charging has been a slower process for a number of reasons. The EUROPRICE Consortium of cities identified the following issues as being of particular importance in its 2<sup>nd</sup> Priority Policy Issues Report<sup>10</sup>:

- ? social political acceptance,
- ? financing,
- ? specific technological problems,
- ? legislative and
- ? operational issues

Of these social political acceptance has been perceived to be the most significant barrier and has been widely discussed elsewhere<sup>11</sup>.

Since 2000, the PRoGRESS project, comprising the cities of Bristol, Copenhagen, Edinburgh, Genoa, Gothenburg, Helsinki, Rome and Trondheim, have been working together to develop urban road user charging plans, but only in Trondheim, where a cordon pricing scheme was already in place, and Rome, where an access control scheme incorporates some elements of road user charging, have measures been implemented.

In the immediate future, however, the policy focus in Europe, and also in the UK, is likely to revolve around pricing mechanisms for the inter-urban road freight sector although the technologies being developed will be highly transferable to the urban sector<sup>12</sup>.

Nevertheless, the PRoGRESS project, and the accompanying thematic network CUPID are gathering considerable knowledge on the realities of road user charging<sup>13</sup>.

Experience of real-life road pricing is, however, limited, but from the case studies which are available, we can conclude that it will achieve a significant modal shift away from the private car. The main example is the Electronic Road Pricing (ERP) scheme in Singapore whereby varying prices are automatically imposed at 28 entry points to a restricted zone as well as 14 other congested sections of road<sup>14</sup>. Prices are regularly updated to ensure

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<sup>10</sup> Technical Paper 2 “Priority Policy Issues Report” Europrice Consortium, [www.europrice-network.org](http://www.europrice-network.org)

<sup>11</sup> CUPID Deliverable 3, [www.transport-pricing.net](http://www.transport-pricing.net) provides links to a range of research

<sup>12</sup> DIRECTS

<sup>13</sup> [www.transport-pricing.net](http://www.transport-pricing.net)

<sup>14</sup> CUPID Rome Workshop: Scheme Implementation - The Singapore Experience, A P Gopinath Menon, 2002. [www.transport-pricing.net](http://www.transport-pricing.net)

efficient operations by increasing or decreasing the toll for each section of road, in each time period, as a direct response to congestion levels.

Ideally, such a scheme could be extended to enable charges to be related directly to the use of any section of road. The technology to enable such an approach has been developed, and trialled in the cities of Gothenburg and Copenhagen as part of the PROGRESS project, but these trials have currently been conducted on a purely experimental basis.

The original area licensing scheme introduced in Singapore in 1975 achieved a 50% reduction in AM peak flows with 83% increase in bus patronage whilst the Electronic Road Pricing introduced in 1998 enabled a further 15% reduction in traffic. In Norway, the toll cordons in Bergen, Oslo, Trondheim achieved a reduction in traffic of only 5-7%, but the main purpose of these was to raise revenues through modest tolls rather than to achieve modal shift (indeed some revenues were used for highway construction).

The recent experience of new schemes in the UK show a reduction ranging from 90% in Durham where a comparatively small section of the historic urban core is subject to a charge, to 20% in London where the first major congestion charge in the EC has been implemented<sup>15</sup>. It must be noted, however, that these results reflect the early months of implementation, and in London, in particular, the figures will need to be reviewed once the scheme has become longer established.

### **Impacts on Society**

By definition, any scheme that involves the imposition of charges on car, or other, drivers, will be particularly socially sensitive. A revenue-neutral scheme may help to overcome resistance, but will fail to achieve marginal social cost pricing, will not raise revenues, and may not provide an adequate deterrent to car usage. A number of guidelines to successful implementation can, however, be suggested, on the basis of previous research<sup>16</sup>.

- ? Pricing strategies have to be perceived as very effective solutions, if not as the only effective solution for the perceived traffic problems. People are used to regard public roads as being freely available, therefore there will be strong emotional resistance to any attempt to charge for them. To encourage people to accept charging for road use or parking there must be very good and convincing reasons based on an awareness of existing problems. Implementation in London achieved political support because of the high degree of congestion in the city and its impact on the local economy and quality of life
- ? Revenues must be hypothecated and alternatives have to be provided. People want to get something for their money. Thus, there must be a package solution, combining

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<sup>15</sup> CUPID Deliverable 5, [www.transport-pricing.net](http://www.transport-pricing.net)

<sup>16</sup> A more detailed paper on this topic, offering a wide range of references to available research can be found in CUPID Deliverable 3 "Frequently Asked Questions" [www.transport-pricing.net](http://www.transport-pricing.net)

traffic restraints and road charging with a set of transport and environmental improvements

- ? Fairness issues have to be considered very carefully. The system must be very carefully designed to ensure that no particular group feels that it has been discriminated against. Exemptions may be needed to overcome particular problems which could otherwise undermine acceptability
- ? Charging only new facilities can be a rather easy way to introduce road pricing. Using road pricing only for new infrastructure has a better chance of acceptance, as there is a net benefit from the new investment.
- ? Public acceptability can only be expected if people have confidence in the effectiveness of the measure, the use of the revenues, the fairness and anonymity of the system.
- ? Successful implementation needs an intelligent communication strategy.

Acceptability remains the most obvious, and perhaps most intractable barrier to implementation but, as discussed, it may not be an insurmountable barrier. The use of complementary Mobility Management measures to offset any disbenefits resulting from a road user charging scheme can help to ensure that the impact on society is broadly positive.

### **Mobility Management and Road User Charging – Complementary Solutions**

The motivations of Mobility Management and many Road User Charging schemes are based around the need to reduce the negative impacts of car usage whilst improving accessibility by cleaner modes of transport.

Road User Charging introduces an economic disbenefit to car usage which may help to discourage drivers who are relatively insensitive to the benefits brought about by improved public transport. On the other hand, the systems provided by Mobility Management will help to ensure that the former driver is presented with the information and services needed to achieve modal shift. Other complementary drivers are the development of more sustainable patterns of land-use planning, and the improvement of the quality of service of public transport, and enhanced facilities for non-motorised transport.

Where road user charging schemes are designed to achieve a significant revenue stream, this provides additional support which may be hypothecated to help subsidise either public transport or supporting services, potentially including dedicated mobility management services. In general ring-fencing of pricing revenues in this way is considered to be a critical element in gaining public acceptance for pricing.

On the other hand, Mobility Management measures in cities where road pricing is to be introduced, should be carefully planned to meet the needs and expectations of habitual drivers. Car owners are a more affluent group, in general, and more likely to value on-line, real-time facilities based around the internet and emerging GSM technologies. Market research can help to establish the gaps in existing information provision which

will be needed to facilitate a modal shift or a change in behaviour. Often confirmed car users have a poor appreciation of the level of service offered by public transport and so dissemination of information through mobility management is more critical than service enhancement. Sophisticated and comprehensive Mobility Management services such as those which Transport Direct will offer should help to meet these needs.

The provision of car clubs will help to reduce the fixed element of the cost of motoring but increase the marginal cost of a single trip, thereby reducing the perceived difference between the cost of public transport and motoring. Such schemes, as they become more widely available, may provide particular help in overcoming the economic disparity between the marginal costs of public and private transport, and therefore provide particular reinforcement to road user charging.

Formalised Car Pooling will enable drivers from rural locations to meet at a fixed node and travel into the urban area in a single vehicle.

Measures to improve cycling not only encourage cycling as a mode of transport for travel to work, but also encourage people to cycle within cities, reducing the need for a car for business travel.

## **Conclusions**

The main issues raised in this paper can be summarised as follows:

- ? Both road user charging and Mobility Management share broadly common objectives in that both tend to encourage a shift from car dependency towards more sustainable transport choices.
- ? Road user charging creates an environment which complements Mobility Management by providing a “push” mechanism to actively discourage car usage by drivers who appear relatively unresponsive to mobility management measures
- ? Road user charging can help to maximise the benefits achieved from new Mobility Management initiatives such as Transport Direct
- ? The economic rationale for road user charging is proven and, despite awareness of a range of barriers to implementation, the limited examples of such schemes demonstrate a strongly positive contribution to modal shift
- ? Road user charges can be hypothecated to fund Mobility Management measures as well as public transport services, thereby providing further reinforcement of Mobility Management

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## **Swedish Car Pooling Service**

### **Carpooling and car-sharing**

#### **2d, Flexible work, flexible travel and the new technology**

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### **Background**

*In many cities, people don't get about any quicker by car than they did in the days of the horse-drawn carriage.*

*Things are not quite that bad yet in Sweden; although it's true that it can be slow going at rush-hour, in the major cities at least. However, here it is the exhaust fumes that are the problem. Every year there are just as many deaths as a result of exhaust fumes as there are from traffic accidents. Nevertheless, the car is a tremendous asset, but it is poorly utilised. In Sweden, we drive around to and from work with an average of 1.2 people per car, and that figure is decreasing.*

*If you compare that figure with the capacity of a washing machine, it would be equivalent to washing a load of just 6 hg of dirty washing instead of 3 kg. Or at lunchtime – taking 5 portions but eating just one.*

*Every generation leaves its mark on the earth. Anyone who has seen an archaeologist beaming with happiness over some traces left in the earth by our ancestors will know that not all the rubbish we leave is a bad thing. Every generation and culture leaves traces behind. What sort of traces will we leave?*

### **Problem description**

Cars affect the environment to a great extent and leave traces, including scrap vehicles. In addition, car travel also has an effect: salt spread on the roads, asphalt wear, noise and encroachments into the countryside. Car traffic in Sweden is increasing by approximately 1.5 percent per year and there is no sign of this trend ceasing. This results in more noise, more congestion and increased emissions.

### **Car pooling one of many solutions**

A car pool can be the solution for many transport problems. People who live too far from public means of transportation, like buses and trains, can contribute to society by using a car pool.

*If several people can car-pool, it gets rid of some of the cars, and those that are left can get about quicker in the city centre.*

Car-pooling offers more benefits than just the environmental, obvious economic and timesaving ones. The only "problem" is getting the message across amidst the hustle and bustle around us.

But how do you convince the employees who are used to travel alone in their car, to be interested in a car pool? What are the benefits of car-pooling? As an individual, you save money, of course, and what else? What is the society's profit? What are the benefits for the employer?

### **The Swedish Car Pooling Service - Svensk Samåkningstjänst**

The Swedish Car Pooling Service is an Internet service that connects car poolers with each other. We are currently beginning in Sweden; the service has been in use since November 2001.

#### **Swedish National Road Administration:**

*We have been appointed by the Swedish Parliament as a sector authority with clear responsibility for environmental adaptation of the road transport system. This means, in practice, that we must work actively, in cooperation with other important players, towards an environmentally-sustainable road transport system. It was therefore natural for us to support the Swedish Car Pooling Service when the system was to be tested in Jönköping municipality.*

*In general, the degree of coverage has fallen during the last 30 years. Currently, around 1.2 people travel in each commuting car. Any initiative that may break this trend is important. The most vital reason for us helping with the start-up in Jönköping was that the Swedish Car Pooling Service was aimed at working with commuters by approaching the companies at which they work. As the system is linked to the companies that participate, one extremely important detail, which has been an obstacle to previous car-pooling projects, has been solved, namely safety.*

#### **The process for starting**

How have we worked? We have approached municipalities around the country, municipalities that in one way or another are working actively on traffic assignments. The municipalities have joined the service at a discounted price and then each municipality has worked on car-pooling as part of their traffic services. It is naturally in the municipality's interest to reduce car use. We are available as a consultancy service where required.

Södertälje was the second municipality - started up in October 2002. More municipalities are working to be able to offer the service to their employees. Private employers are out ahead; there are private company members in more municipalities than there are municipalities that are members.

#### **Results and process, so far**

How successful has it been? It is too short a time to tell whether it will work in the long term. Most journeys where motorists would look to car-pool are journeys between home and work. Followed by leisure journeys, and, finally, business travel. Rather odd considering that employers will have money to spare if car-pooling is utilised for business.

## Results and process, so far – SAAB Training Systems

The best result is at the small company SAAB Training Systems, a hi-tech computer company with 350 employees and more than 1 000 computers. 7 % of the staff are looking for someone to car-pool with. We have confirmed that the employer is an important model. SAAB Training Systems has a young workforce; the average age is 30 and when any environmental initiatives have been taken the staff have been very keen. When the Swedish Car Pooling Service started in Jönköping, the newspapers wrote about it. The company management at SAAB Training Systems had not really had time for the administrative side of things, but the staff got to read in the papers that their company would be joining. As a result, they started asking, "When can we join in?" Four months later, the company said: Now we are members, we think this is an excellent idea and look forward to car-pooling. Whoosh – in percentage terms, little SAAB Training Systems has the most users!

This supports the experience that employees generally also favourably receive anything an employer thinks is good.

"For us, there was nothing to consider with regard to whether the company should join the Car Pooling Service. It involves an acceptable cost. We want to be an attractive employer, we want to be in the forefront and create an image. Young engineers are attracted by this and we see it as part of the range of benefits, and part of ISO 14000, comments Börje Persson, SAAB Training Systems, Director Human Resources.

"The younger work force is very open when it comes to looking after the environment. It is almost the case that staff have got there first any time we have made environmental improvements," explains Börje Persson.

## Results and process, so far - AstraZeneca

For many companies having employees car-pooling means that you do not need a large car park and thanks to that it will be possible to use expensive industrial area for something else than just parking.

That is the case for AstraZeneca in Södertälje. The need for more parking space increased this last year and it seems to continually increase, even with extensive expansion of the parking area. The cost for creating a parking space for one car can be anything between 15,000 to 150,000 Swedish crowns (SEK).

When AstraZeneca was in the prospect of increasing their staff by over 1,000 persons, they looked at the problem and came up with several solutions of which car-pooling was one.

All AstraZeneca employees who has been presented with the idea have had positive reactions; e.g. Human Resources, the union and SHE representatives (Security, Health and Environment).

The car pool idea is not new at AstraZeneca. Many of AstraZeneca's employees already car-pool and at the company's intranet site they had advertise for participants. With the the Swedish Car Pooling Service, AstraZeneca hope to attract customers, especially those unfamiliar to the idea and hopefully find a car pool buddy or two.

"We view the whole thing very optimistically simply because everyone gains from car-pooling: the employees, the employer and the municipality," comments Birgitta Thorsin, environmental advisor at AstraZeneca, Södertälje.

"AstraZeneca is working towards improving people's health and this, of course includes the well-being of its own staff. Car-pooling, as opposed to commuting alone, contributes both to the well-being of our staff and to the well-being of society as a whole." Tomas Stafors, AstraZeneca, SHE Manager R&D Mölndal.

## Requirement for success

We believe that turning a single driver into a car pool driver is difficult. We aim to get the future car pool driver thinking in the terms of "how many times this week can I use the car pool? Will I be able to car pool once a week? Am I able to car pool for business travel?"

Surveys show that people who tried car pooling are much more positive to the service than those who have never tried at all.

What are the critical success factors? Two years ago we had a number of ideas about how the whole thing should work and what was required. One example is "sufficiently large volume", we reckoned on 15,000 employees. In Mölndal at present there are no more than 3000 prospective users, *but* everyone works for two companies located in the same industrial district and consequently travels to the same destination, so there you already have a good proposition for car-pool colleagues, with 50 active users.

We have been lucky in finding companies at the forefront when it comes to the environment. Companies that are out in front in terms of environmental legislation, but that is not enough. The employers must let the employees know that the service exists, that the company is a member and also encourage staff to car-pool. We have one employer who is happy to offer car-poolers staff parking places closest to the entrance, simply because they are so attractive. We are following this with intense interest. *(Perhaps there will be more to report at the end of May?)*

In Stockholm, traffic jams have become so bad that the city administration is discussing introducing congestion charges. During sports and Easter holidays, car traffic drops by 7 %, as many people take time off work to be at home with their children or travel to the mountains. 7 % fewer cars means that the queues disappear. If we could increase the average from 1.2 to 1.5 people, car traffic would be reduced by 20 %.

## Implement & information

The vital thing is to get the message across:

"Car-pool to work, car-pool in your free time or on business journeys."

Just as if it were a power saw, vacuum cleaner or ice cream being sold. It is incredibly important to make companies understand. Very few employees are interested in car-pooling on their own initiative; you need to be there the whole time, reminding them.

But I have certainly been surprised. Such as before Christmas when AZ in Södertälje devoted two days to staff information; I was there to help anyone who needed help with registration. I also handed out information folders. A woman appeared and gladly accepted the folder. When she saw what it was about, she said:

"There are already seven of us car-pooling in two to three cars, depending on how we work. We work different shifts," explained the woman.

"Cool," I thought, "what resourceful individuals, but we probably can't accommodate anyone from our system there."

"But we have space if more people are interested," the woman said, interrupting my thoughts.

## Who are the users?

Which motorists have jumped at car-pooling in the first instance? The economically minded, the environmentally aware or those who enjoy having company in the car?

The first users are those who car-pool for the environment.

One notable thing is that those pushing this issue are largely private companies. The service in itself is a private company's initiative. The best users are within the private sector, not the public sector.

## The tool

Safety is important for car-poolers, according to surveys: car-poolers want to know who they are travelling with. The Swedish Car Pooling Service can only be used by staff at the company who are members of the service, thus, you are always travelling with people you know. If the car pooler would like to travel only with persons from their own company, they can choose to do so in the system. Every traveller specifies his or her requirements and car poolers with the same requirements are matched

**How do you pay?** Our system does not divide costs but simply matches up car commuters. We have received a number of questions regarding payment and have therefore issued tips on how others do it. One woman lives outside Jönköping without a car, but by public transport it takes 2 hours to work, as she must change transport twice and there is waiting time. She doesn't have a driving licence and can save 1½ hours each way by car-pooling. An elderly man in the same area was looking for car poolers, and they found each other. He did not want to be paid; he actually wanted somebody to share the driving with. He rang me to ask what he should do, as the woman was going on about paying. At the same time, the woman rang – pleased to have found somebody but worried that the man would not accept her money. She, young and brought up with the idea of paying, and he, older and not used to being paid, clashed. After a little discussion, the woman decided that winter tyres would be suitable, so when the time came, she bought some winter tyres. She was pleased to be able to pay, and he was pleased to have avoided the persistent issue of payment

## Not only for car pool to work

Through our contacts with various employers, we found that it is common to have one person in each car during a business trip when it would have been a perfect opportunity to car pool. For example, hospital staff travel from one hospital to another to go to a lecture and it is not until the coffebreak that they meet their colleges. This way, 5-6 persons drive – one in each car! The same problem is found at Scania with offices in Sibbhult and Oskarshamn, among others. The company hopes that, with help from the Swedish Car Pooling Service, it should be possible for the employees to ride together.

You do not need to be a large company with thousands of employees; Swedish National Road Administration 's office in Jönköping is sufficient with 120 people; they are not familiar with each other's journeys but travel to the same conference, each in their own car.

Certainly, it would be possible to save money for the company if staff were to car-pool for business, but it is the environment that most people regard as an argument for car-pooling.

That the environment comes before the economic argument goes without saying for both companies and the public. Of course it is good for the company's environmental image to offer their employees the ability to search for co-riders with the vision to reduce the pollution from our cars.

## Join the pool

What have we done to get more car-poolers? Among other things, a campaign last spring together with employers in Jönköping: information was spread about the Swedish Car Pooling Service via internal media and we raffled off some bits and pieces among all those who reviewed their journeys over a certain period. In connection with the raffle, we reported again in internal media. Last autumn we ran a recruitment campaign aimed at those who had already found the service. The message was – help us grow. Everyone, recruiters, newcomers and others who reviewed their journeys, took part in the lottery

What can employers do then to facilitate and encourage staff to car-pool? AstraZeneca's effort is straight from the PR manual, with internal information via Intranet, personnel magazine, folders and direct demonstrations. The idea of pins on a map showing where employees live proved to be an excellent idea, a very good object of conversation. Everyone is curious about where work colleagues are: cyclists, bus users and motorists. The map idea has been used both in Södertälje and Mölndal. Do so many people live in Uppsala? Wow, several people live in Ulricehamn. Do nine people commute

between Gothenburg and Södertälje? etc., etc. Once a person is on the map, it is easy to make contact.

### **Spin off**

In February, there were cycle ambassadors, representatives of local public transport and myself on the spot at AstraZeneca in Mölndal. The duty was to offer better travel alternatives than those currently in use. It "spilt over" to other offices within the group, e.g. AZ in Södertälje gained as many new users at this event as Mölndal. Even at Ryhov County Hospital, a motorist registered for car-pooling – there is a connection between AstraZeneca and health care!

### **Swedish National Road Administration – The most ambitious effort:**

*The system is cheap for the companies to use and requires active participation in selling car-pooling to their employees, and we view this as a success factor. It's a question of getting the participating companies to understand this. The Swedish Car Pooling Service does not just sell a computer system, but also helps companies with information so that employees gain increased understanding of what car-pooling involves and what advantages it brings, so we believe we have the prerequisites for success.*

*Car-pooling is one of many tools we must work with to achieve an environmentally-sustainable road transport system. The Swedish Car Pooling Service is currently the most ambitious effort in Sweden.*

### **The future**

What is needed in order to be more successful?

Legislation that encourages car-pooling. Currently, two people can sit in their own cars and travel the same stretch and both receive a car allowance in their tax return. If they start car-pooling, only one receives the allowance. So, the tax legislation encourages people to travel alone. Now we are hearing what many people are doing – they are car pooling and both are receiving the allowance – people have done this for many, many years, so the state would not actually lose that much money, but instead would earn green points by showing whole heartedly "we think this is excellent".

Title: ***Can you make a businessman take a green car on a business trip?  
SunFleet – a green car when you need one.***

***Highlight Summary and presentation:***

SunFleet is an environmentally sound car sharing system for companies and organizations that wish to provide their members with access to green cars with minimum administration and great flexibility in combination with the possibility for the companies to present a positive environmental image.

What is needed to make people change, both in their mind and behaviour regarding incentives, new technology and marketing?

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**Contact:**

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***Objectives:***

People take the car to work because they might need to use it during the day. But most days the vehicle just stays idle, spending 22 hours total in a parking lot. Furthermore, it's often an old, dirty car because new, green cars cost too much. It's often major traffic jam into the city and expensive to park the car.

SunFleet is founded on a vision that if people could share a car through the company, they could take a fresh car when they need to, and use public transport every day. Sharing makes a green car affordable and saves parking space. However, it is also an administrative burden to own and run.

### ***Incentives ?***

People need to feel and understand what the benefit is for them.

It 's very personal. It can be the cost, or easy access or the enviroment

### ***Technique making it easy?***

? Our telematics system enables users to access the car with just a mobile phone. By connecting a communication box to the vehicle on-board computer, the authorized user can unlock the booked car with just an SMS message. By eliminating the need for managing access cards, keys etc., we could save our customers ten euros per booking compared to a manual system! The system also becomes more robust and less costly since you don't need a person to manage the keys.

? Our lean and innovative reservation system enables users and the company to do all the business through a web browser.

### ***How do we market it?***

People need to feel that this is the new intelligent, modern way to travel. The telematic system shows the future and it 's exciting to be a member in carsharing. To be in the front of technique. The business segment need a full service concept with maintenace of the cars, reservatone system, customer & road support.

**Targeted Groups/ Beneficiaries:**

SunFleet serves all kinds of organizations in the city, providing employees and members with access to a green, new car:

- ? We work with companies whose employees make business trips by car.
- ? We also aim to serve those who cannot afford a car of their own, by working with housing companies to set up a residential car pools for tenants. Thus people in less favored areas can have access to new, green, safe cars with the landlord as guarantor. The Gothenburg student housing company will even offer our cars to students.
- ? We will also serve residential non-profit car sharing clubs who currently find the administration too laborious.

**Verifiable indicators:**

- ? Our 200 users can now commute by public transport every day. With a typical commute of 20 km a day, we can save the city over 80 000 private car trips per year with a total of some 1.5 million gasoline-powered person-kilometers.
- ? Our customers can save 1 500 sq.m. of parking space.
- ? Cars are used about seven hours per day, substantially more than most private cars, thus making more use of bound capital and natural resources.

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**The future :**

We will grow and establish sites in other cities in Sweden and abroad. Meanwhile, we will develop our telematics concept with services such as mobile positioning to further refine user-friendly and efficient time-keeping and reporting, access and security. Furthermore, we will expand the business to meet the needs of residential car pools where our customers are housing companies and car-sharing clubs. In the end we will also offer the private segment access to our system.

**Potential for replicability :**

The SunFleet concept is built from start up to be replicable to other sites. The reservation and administration system is entirely Internet based, whereas each car is assigned to one customer and remains with the local site. Setting up a new site takes minimum effort because service and car wash is mobile, whereas administration is centrally managed. Customer organizations always administer their own users, so all you really need is a parking space and access to a GSM network.

**Michael Glotz-Richter**  
Free Hanseatic City of Bremen  
Department for Building and Environment

**ECOMM 2003**  
**Workshop 2 d 'Flexible work, flexible travel and the new technology'**

**About the "egg-laying wool-milk-sow " of Car-Sharing**  
**- new concepts of integration, partnerships and awareness raising**



This presentation is not about genetically modified food, this is about transport – and awareness raising.  
So – what is an “egg-laying wool-milk-pig”?  
The German term “eierlegende Wollmilchsau” describes a thing, that can do much more than you will ever expect from its nature. It has a very positive connotation – and the egg-laying wool-milk-pig is the “hero” of an awareness campaign for integrated mobility services...

Mobility Management measures have a common problem: the role of car-ownership. There is a linked problem for urban life quality all over Europe: too many cars on the streets! This is not only a problem of congestion but also the lack of space for other functions of public space, like space for pedestrians and children, for cyclists, for greening etc. As parking is a very sensitive political issue, innovative solutions are necessary. So alternatives to the ownership of a car become a key element of mobility management – these measures as part of decoupling economic growth from transport growth.



Too many cars – the same problem in Bologna....



...as in Bremen

## **Car-Sharing - a modern mobility service – how does it work?**

Car-Sharing is a service that gives access to a fleet of cars whenever it is required – with easy and unbureaucratic procedures, using the latest technology.

Clients of Car-Sharing operator have usually got a smart-card and a PIN code for access to the vehicles. The customer can book the car either via the call-centre (with a 24 hrs service) or the Internet or also via WAP /mobile phone. The pay-as-you-drive system gives incentives to be more rational with the modal choice-

## **Impacts of Car-Sharing**

The experience of a bit than more than ten years of Car-Sharing shows, that Car-Sharing

- reduces the number of cars – as each Car-Sharing vehicle replaces 4 - 10 private cars
- reduces the mileage driven by car – as the pay-as-you drive system is an incentive to drive less by car
- increases the use of Public Transport and other modes of environmentally friendly transport
- improves the environmentally quality of cities
- uses less polluting cars.

Car-Sharing is as already existing in Germany, Switzerland, Austria, the Netherlands and in small-scale operation in some other European countries. More than 100.000 people already use that modern service in Europe! But the potential is much larger.

To exploit the potential of Car-Sharing some more intensive measures are required. These measures belong to:

- improvements of Car-Sharing services (e.g. density, cross-site usership)
- integration with other mobility services (esp. Public Transport)
- integration into urban development (regeneration and new developments)
- reinforced awareness measures

## **What is new about Car-Sharing**

Car-Sharing has made progress not only in terms of spread-out over Europe (and the US), but also in technologies and services. The use of smart-card access is the main standard, which allows also good combinations with electronic payment and ticketing applications for Public Transport.

Unfortunately there is no common Car-Sharing standard over Europe. Switzerland and Italy have (different) national standards. With the development of cambio in Germany, Belgium and soon also Romania (!), there is a first trans-national smart-card and booking standard.

The main Car-Sharing operators have developed to system providers (e.g. cambio).

Interested partners (e.g. Public Transport operators) may become franchise partner or apply certain elements of the Car-Sharing system.

The co-operation of Public Transport and Car-Sharing has made much progress. Several studies show that Car-Sharing is also an element of a good customer relationship management. Car-Sharer spend more for Public Transport.

## Car-Sharing and Public Transport

In 1998, a common offer of the Bremen Public Transport company BSAG (Bremer Strassenbahn AG) and the Car-Sharing provider has started– containing the annual season ticket for Public Transport (Bremer Karte) and the electronic car-key for Car-Sharing (AutoCard) for a special tariff.



The user of Public Transport are quite often more rational in the modal choice, Therefore there are the right clients for Car-Sharing at the stops and in the vehicles. Stickers outside and inside PT vehicles, posters and stops and further information did inform about the new service.

A new campaign has started in December 2002 in Bremen – linked to the UITP workshop “Public Transport and Car-Sharing – together for the better”. Within the moses project the UITP “Bremen paper” was developed, which indicates the win-win situation of Public Transport and Car-Sharing

Within the Vivaldi project (CIVITAS), Bremen has started the new Bremer Karte PLUS, which includes on one smart card the electronic ticket for PT, the electronic access to Car-Sharing and as well the electronic purse – all together for attractive tariffs.

*Bremer Karte PLUS – one card for chippen, shopping, Car-Sharing*



electronic ticketing



electronic access Car-Sharing



electronic purse for shopping

This new card was launched with a campaign using the well-known German term “*eierlegende Wollmilchsau*” (egg-laying wool-milk-sow) -see also Internet animation: [www.eierlegendewollmilchsau.com](http://www.eierlegendewollmilchsau.com).

**WWW.EIERLEGENDEWOLLMILCHSAU.COM**



**CHIPPEN, SHOPPEN & CARSHARING  
DIE NEUE BREMER KARTE PLUS**

Mit der neuen Bremer Karte PLUS können Sie jetzt immer ganz flexibel entscheiden, wie mobil Sie sein wollen: Für die Fahrt in die Stadt chippen Sie in Bus und Bahn, ein StadtAuto leihen Sie sich nach Lust und Laune mit dem integrierten, elektronischen Autoschlüssel und kleinere Einkäufe bezahlen Sie ganz bequem mit dem GeldKarten-Chip. Die Bremer Karte PLUS bekommen Sie exklusiv bei der BSAG, im neuen BSAG-Kundencenter Domsheide.  
**Info-Telefon 0421 - 55 96 681**



**BSAG** Alles o.k.

**CIVITAS**

**vivaldi**

**EUROPEAN UNION**

**cambio** carsharing

**BRASILHAUSE**

The campaign with the nice “hero” shall raise awareness for an unusual multifunctional product – letters were delivered with a newspaper, postcards were disseminated in pubs etc. The objective is to finally increase the user rate for the benefit of the city. The “eierlegende Wollmilchsau” is a core element of Bremen’s contribution within the CIVITAS Vivaldi project (see [www.vivaldi-project.org](http://www.vivaldi-project.org)).

### Car-Sharing in urban development

Car-Sharing should also be used to reduce the provision of parking in new developments – or reduce the problems in the existing neighbourhoods. For new developments which have good access to Public Transport, cycling facilities etc, Car-Sharing allows to save a lot of investment costs which are otherwise spent for a high level of parking provision.

The Bremer Beginenhof is such a model, where the (underground) parking has been reduced as there is a Car-Sharing station (for the benefit of the entire neighbourhood) on the ground.



life-quality instead of parked cars...



...Car-Sharing at the 'Beginenhof' Bremen

The integration of Car-Sharing into urban development is a key function to increase the efficiency of the urban infrastructure, to supplement Public Transport and to improve life quality in the streets.

Car-Sharing is an important element for urban regeneration. The lack of space is a common problem of all European cities. Car-Sharing reduces the demand for parking and allows a reallocation of street space from parking e.g. for bike-racks, for greening,...

The German traffic regulations do not (yet) allow a reservation for on-street Car-Sharing stations. Therefore Bremen has created intermodal 'Public Mobility Stations' – called "mobil.punkt" – with a link of bike-racks, adjacent taxi rank, PT stop, Car-Sharing station and an internet based information terminal (opened 2 April 03).



Bike racks replace parked cars



intermodal Car-Sharing station "Mobil.punkt"  
see [www.mobilpunkt.de](http://www.mobilpunkt.de)

### The European MOSES project



The European research and demonstration project MOSES – *Mobility Services for Urban Sustainability* - has started in May 2001. The cities of Bremen, Bucharest, Genoa, London, Palermo, Prague, Stockholm, Turin and the region of Wallonia work together to further develop and integrate Car-Sharing. The international association of public transport UITP is also project partner in MOSES – as interface to the community of PT operators.

The hypothesis is: about 10% of the cars of the city area could be replaced within one decade by improved and fully integrated Car-Sharing. The target is to show the growth factors and the positive impacts for the 'City of Tomorrow' – which is the key action of the funding 5. Framework programme.

Bremen is the reference case with technological improvements, new services and developing multi-lingual service background.



The moses-partner Wallonia has started successfully transferring the cambio system from Bremen – where a pilot scheme has started in May 2002 in the city of Namur. The first user was the Walloon Minister for Transport, Mobility and Energy José Daras.

Meanwhile more than 120 users have subscribed in the Walloon capital (100.000 inhabitants), which is quite a good success. Meanwhile the system expanded to Louvain-la-neuve and since March 03 also to Brussels. Further stations are envisaged in Liege and also Flemish cities like Gent and Antwerp. For cambio clients, there are cars available for instance along the Thalys-train line from Brussels to Cologne in Brussels, Liege, Aachen and Cologne – all accessible through the same cambio booking portal and the same smart-card.

London has put a focus on the integration into new developments (to replace parking) which is a supplement to the strong measures to be taken in transport policy.

As the term Car-Sharing may cause some misunderstanding in British English, AVIS has created the name *Urbigo* for its Car-Sharing service in the UK.



The moses partner RATB Bucharest (PT operator of the Romanian capital) will start Car-Sharing in summer 2003 as supplementary service to busses, trams etc. The new service shall help to break the ongoing tendency of increasing car-dependence (and loosing customers of PT). Bucharest will be the first show-case of modern Car-Sharing service in East Europe. Also in Bucharest, the Bremen Car-Sharing operator cambio works as system provider. Technical elements, the booking procedures, the workflow management etc. will be multilingually transferred. The combination of the experience of more than one decade of Car-Sharing in Bremen and the role of the PT operator in Bucharest is a good show-case how to co-operate for more sustainable development in the transition countries of Central and East Europe.

## Conclusion

Car-Sharing is an example for integrating innovative mobility service modules into strategies of sustainability. The experience of the reference case Bremen (and other cases) has shown how much Car-Sharing does contribute to a more rational use of the car and to more sustainability in transport and urban development. To develop the system towards its potential, much more work is required:

- improvements of Car-Sharing services (esp. density, professional offer)
- integration into intermodal offers (esp. public transport, taxi, delivery...)
- integration into urban development (CS instead of conventional car-parking; part of housing developments and regeneration)
- awareness raising (promoting the choice and convenience aspects).

It became obvious in moses, that a high level of professional approach is a key factor of success (as the Belgian cambio examples successfully demonstrates). Also it needs a longer period of continuous awareness measures and of patience to achieve an adequate growth rate.

The key messages for (potential) clients are convenience and cost-efficiency. The environmental impacts are also important, but at the end side-effects. The availability of various car-types is another selling point.



posters of the exhibition "Car-Sharing – intelligent mobility for the 21<sup>st</sup> century"

For the political discussion, the main argument is the option to win back street space and to improve the efficiency of the city. Whereas technical improvement may help to reduce the level of pollution, there is almost no alternative for winning back road space. This will be the key point why also in future, there is a need to support Car-Sharing in order to accelerate the growth of that environmentally friendly service.

A description of minimum standards for environmentally friendly Car-Sharing (as done with the German eco-label Blauer Engel / Umweltzeichen 100) may help to sort out systems which use the term but may not have similar impacts.



Poster and inauguration of the exhibition "Car-Sharing – intelligent mobility for the 21<sup>st</sup> century" in the European Parliament (29.01.03)

### **The Author:**

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further information:

[www.vivaldiproject.org](http://www.vivaldiproject.org) (about the CIVITAS Vivaldi project)

[www.moses-europe.org](http://www.moses-europe.org) (about the mooses project)

[www.cambiocar.com](http://www.cambiocar.com) (cambio Car-Sharing system provider)

[www.eierlegendewollmilchsau.com](http://www.eierlegendewollmilchsau.com) (about Bremer Karte PLUS)

[www.eu-target](http://www.eu-target) (about the Interreg project TARGET)

**Breaking the habitualisation in choice of transport-mode:  
traff/Q<sup>®</sup> as a new brand for mobility-information/counselling  
- using the right moments and be present at the right place**

(presented at ECOMM 2003, Karlstad, Sweden, 21-23 may 2003)

? Workshop 2:

Implementation of mobility management in the spatial planning process

? Marketing:

Key factors in achieving sustainable change in attitudes and behaviour

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**Abstract**

The choice of transport mode is an every-day operation with strong habitualisation, which explains that a lot of "classic" marketing strategies have failed, when they were used in public transport.

Traff/Q, the local public transport organisation Frankfurt has been starting and carrying through a lot of measures and projects with several partners from traffic sciences, service agencies and public administration, aiming at increasing the share of number of all covered distances by public transport.

The results show that all communication efforts (information, mobility counselling, advertising) not only lead to the aimed direction but also achieve an efficient cost-benefit calculation.

All evaluated concepts (mobility centre, individual mobility counselling, dynamic individual customers dialog, additional mobility services as carsharing, shopping-/delivery services, ...) which are accompanied by introducing advertising campaigns and important simplifications in sales

and distribution (electronic-ticketing) now are offered permanent under the innovative new brand traff/Q<sup>®</sup>.

## I. Introduction and objectives

Although parts of traffic sciences are traditionally regarded as cross-section discipline, questions and problems concerning traffic have been treated with methods and concepts of other scientific disciplines even stronger during the last years. In addition to the well-known economic-scientific approach one can find more often social-scientific as well as social-psychological approaches (see f. e. Bamberg&Bien, 1995) in these days.

Out of that interdisciplinary coaction a lot of traffic-scientific research results have been developed showing that using a mean of transport really is not the result of a well considered choice process but that this everyday procedure is a highly habitualised pattern of behaviour.

Regarding public transport (PT) one must consider that a lot of the (potential) customers have to struggle with the collection of information (offer of busses and trains) concerning costs of time and costs of comfort.

Therefore, changes in personal attitudes, changes in basic conditions of traffic (f.e. increase of gas costs, more traffic jams and more problems with parking places, improved offer of public transport) as well as influences on the social environment affect individual traffic behaviour hardly or only with great delay.

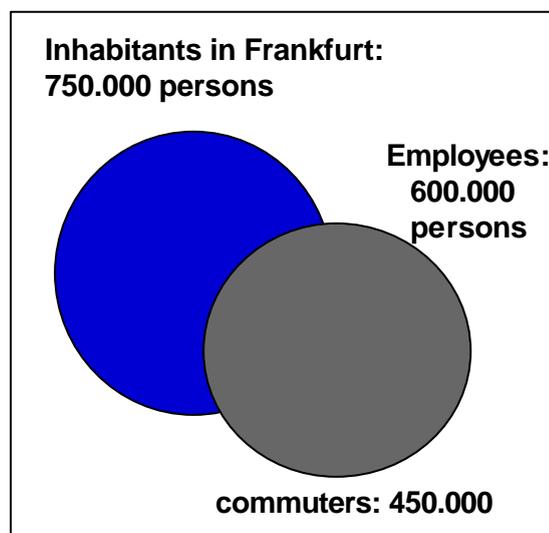


Figure 1: Some facts about Frankfurt

At the same time a more sustainable, i.e. a more environment-friendly choice of transport mode of the individual (gained through an extensive information- and advertising effort) can only be assured if the new behaviour can be practised very often and for a long time – that means in a “trained” way.

This implies already main reasons for the failure resp. a very small success of a lot of classic marketing measures of public transport in Germany (and see EU-countries) subtending nothing to the “victory” of the private car since the end of the 40s of the 20<sup>th</sup> century.

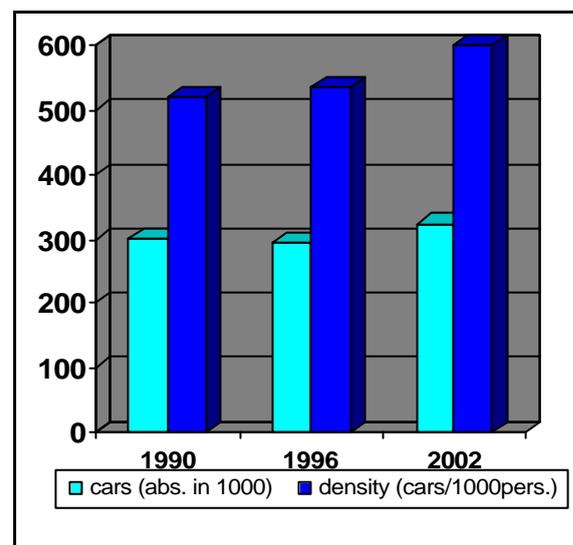


Figure 2: number of cars in Frankfurt

Aim of some partly scientifically supported resp. attended cooperation projects in the high density area Frankfurt / Rhein-Main was to develop and evaluate new effective marketing instruments for public transport. Especially communication measures were and are developed to break through the mentioned habitualisation in favour of MIV and reduce effectively main usage barriers of public transport as for example insufficient information on offer and usage.

Second aim of these projects was an exact estimation of economical aspects of all measures developed and tested and a durable financial basis of these projects, anchoring them in the traffic policy of the communities and regions.

The third aim is to implement some more information / counselling offers in addition to the multimodal acting Frankfurt Mobility Centre TRAFFIC ISLAND (established end of 1997) including the introduction of Customer Relationship Management (CRM) in the sector of public transport & mobility services.

These three aims result in one main aim to assure mobility of people in Frankfurt which means to implement an all-in-all sustainable traffic system, in which the absolute number of private car drives doesn't exceed today's estate.

Regarding an increasing number of inhabitants, tourists, jobs, fairgoers etc. it is obviously that the number of pedestrians, bikers and users of public transport should increase accordingly.



Figure 3: traffiQ® -- the new mobility-brand

This is one of the principal tasks of traffiQ in its function as a company as well as in its function as being the new innovative brand which offers all kinds of mobility services (busses, trains, car-sharing, shopping services, biking tips, freetime activities including arrival and departure etc.).

## I. Description

Directed by traffiQ i. e. its preceding organisation (public transport organisation Frankfurt, VGF) since 1998 several projects and measures have been applicated / were started in order to achieve the above mentioned aims:

- ? **Questioning of TRAFFIC-ISLAND customers**, 1998 and 1999, face-to-face interviews with customers and passer-bys, totally about 1.000 questioned people, subjects: knowledge, satisfaction and influence of the information/counselling concerning individual transport choice,
- ? **COLUMBUS-1** (2/1999 – 1/2001), development and evaluation of individual mobility-counselling for singles, households, schools, companies, ...), education and training of 5 mobility-counsellors, counselling and three-times questioning – after 6 weeks i. e. after 6 months, with about 230 persons from about 140 households representative questioning (600 questioned people) concerning their interest in carsharing offers
- ? **CARSHARING-cooperation** (since 01/2000) between CS-organisation Stadtmobil Rhein-Main and the local public transport organisation traffiQ, pt-association RMV as well as VGF
- ? **COLUMBUS-2** (2/2001 – 1/2003), development and evaluation of papers giving impulses for a sustainable choice of transport mode and according information regarding the individual initial position, test of different information packages, 3-wave-panel with about 1.300, 950 and 750 questioned participants in the three waves,
- ? **DYNALOG** (12/99 – 6/2000), active offer of individual customer information, including information wishes by telephone and by letter, direct contact with about 11.000 (taken from 15.000) households in peripher regions of Frankfurt, reason: introduction of a new concept for bus lines, collecting dates about

choice of transport mode for all participating households, first step for the introduction of customer relationship management (CRM) for pt in Frankfurt,

- ? **traffiQ**® (4/2002 – 12/2003), introduction of a new brand for innovative public transport in Frankfurt, extended advertising and information campaign for a more extensive use of busses and trains in Frankfurt, classical media-mix: announcements, posters, radio-spots, advertising spots in cinemas, combining today and tomorrow in both motives: „mobility counselling“ and „electronic ticketing“

All projects have in common that they always work with (potential) customers i. e. the customers have been involved into development and evaluation.

### Cooperations and partners

**traffiQ** has cooperated in all projects and measures with several project- / cooperation partners whose knowhow and skills have been as important for success and results as the close connection of the projects / subjects among each other.

The conception of the Mobility Centre has been developed within an EU-research project ENTERPRICE together with Hessen, the city Frankfurt and the Rhein-Main-traffic-association (RMV). TRAFFIC-ISLAND is furthermore supported by the city Frankfurt. Scientific project partners of the COLUMBUS projects have been ZUMA Mannheim resp. the University of Giessen. FGM-AMOR from Graz in Austria has been involved in the first COLUMBUS project who are leading the now starting tapestry project. **traffiQ** is going to participate in this project with a part called “sustainable mobility in Frankfurt schools”.

An optimum development of the CARSHARING cooperation, including as partners the local provider Stadtmobil Rhein-Main, the RMV as well as the local traffic company VGF and as consultative partners the two most

successful CS-providers from South-West Germany (Rhein-Neckar, Karlsruhe) has been furthered by an empirical investigation within COLUMBUS-1. Concerning DYNALOG, which has been carried through by **traffiQ** together with *omniphon* (an agency specialised on direct marketing and marketing research in public transport) knowledge and skills gained from COLUMBUS-1 (individual mobility counselling) could already be included and the first steps for introducing customer relationship management systems (CRM) could be tested.

It is evident that activities are urgent to be brought through if one considers the extremely low share of regular customers with subscription for public transport in Frankfurt, comprising only 8 % of all adults. The image and brand campaign for **traffiQ** is an important contribution for strengthening customers’ loyalty of 30 per cent unknown and “unbound” customers. The Frankfurt advertising agency *fwerb* is supporting the brand leading and the campaigns.

Neuer Nahverkehr für Frankfurt >>>

Ich habe geträumt, ich rufe meinen Mobilitätsberater an, frage ihn, was heute in Frankfurt los ist und lasse mir die optimale U-Bahn-Verbindung durchgeben.

Individuelle Mobilitätsberatung für Privatpersonen, Schüler, Elternhäuser und Mieten. Stadtnach, ein Internet oder persönlich in der Mobilitätszentrale am Flughafen. Dies ist nur eine von vielen verschiedenen Kombinationen und deren mögliche Erweiterungen. Weitere Infos unter [www.traffiQ.de](http://www.traffiQ.de)

Manches gibt's schon >>> manches kommt noch >>>

**traffiQ**  
Frankfurt am Main

Figure 4: **traffiQ**® means „mobility-counselling“



### III. Results and Conclusions

#### a) TRAFFIC ISLAND



*Figure 5: mobility-center „TRAFFIC-Island“*

Nearly everybody in Frankfurt knows TRAFFIC ISLAND – without special advertising efforts - because it is situated extremely striking in the centre of the Frankfurt pedestrian area.

Running over 5 years by now more than 250.000 customer contacts have been established, and they have been evaluated as “highly satisfying” by the customers. However, more than 90 % were ticket selling contacts for public transport. Unfortunately, only one of four Frankfurt citizens knows that TRAFFIC ISLAND offers more than public transport subjects. Therefore, only very few “real” mobility counsellings are carried through, introducing the alternative of different transport modes. Two out of three of these counsellings lead to a decision for public transport.

In order to exhaust this potential of changes in future times much better the multimodal offer of TRAFFIC ISLAND must be focussed much stronger through advertising and information.

Being tied into the tasks of the municipal organisation, traffIQ financing of TRAFFIC ISLAND is assured.

## b) COLUMBUS-1

With its new service “Individual mobility counselling” traffIQ actively addresses potential customers in order to analyse their mobility needs and to look for alternative possibilities, especially possibilities beside the “private car”.

Individuell mobility needs and desires of the potential customer are focussed. For these specific needs (f.e. way to job, way to shops, ways within freetime) optimum individuell must be listed which the customers like to test.

The according counselling takes place at home or in the rooms of traffIQ.

The competency of the counsellors is a very important requirement for the efficiency of the new service “individuell mobility counselling.

An excellent knowledge of all mobility offers existing in Frankfurt are as important as social competency, resp. the ability to recognise and to satisfy desires and needs of potential customers.

Within COLUMBUS-1, supported by FGM-AMOR from Graz, a trainee program for mobility counsellors has been developed especially styled for the conditions in Frankfurt and 5 persons have accordingly been trained.

The extensive scientific accompanying study aimed at verifying the effectivity of the active individual mobility counselling and to increase it if necessary.

Besides an evaluation of the developed trainee programme it was intended to measure the effectivity of behaviour as exactly as possible. Main question is the average number of public transport rides caused by individual mobility counselling.

130 Frankfurt households took part in the extensive experimental field study including 225 persons, who were divided by chance into an experimental group (they got counselling) and a control group (no counselling)

Before the counsellings and 6 weeks after the counsellings as well as 6 months after the counsellings in both groups participants draw up the minutes (recorded) of all ways and rides taken (which mode of transport) within 7 days.

This extensive collection of data has made it possible to measure changes in the choice of transport mode very exactly and when comparing the control group one can verify if behavioural changes within the experimental group have been caused by the mobility counselling. The measurement 6 months later was carried through to test a long-term efficiency of the action.

**Taking busses and trains had been increasing within 6 weeks from 12.9 to 18.2 % of all ways** regarding those participants who had individually and in detail been informed by the mobility counsellors.

Half a year after the measure counselling still had some strong effect: 16.2 % of all ways were taken by public transport. The choice of transport mode of the control group had not changed in favour of busses and trains.

TraffIQ is now implementing and offering individual mobility counselling with privat persons, privat households, schools, companies and other organisations.

These results do not only show the successful individual mobility counselling, convincing potential customers of the quality of public transport but for the first time we have reliable statements on the strength of this effect. A positive estimation of the rentability of this concept can definitely be made now.

## c) CARSHARING-Cooperation

Within central Frankfurt a network of carsharing stations has been established, including more than 50 cars which are used by more than 1000 customers. One third of these CS-customers has got a public transport subscription, more

than 75 % use public transport regularly with their season tickets.



Figure 6: CARSHARING-stations in Frankfurt

#### d) COLUMBUS-2

Written information only reaches people who are already customers, it can make it easier to use public transport and ties up customers closer; however, no recruitment of new customers is achieved. This means: change in attitude is achieved but not change in behaviour.

Individual reorganisations in life (for example change of residential area, change of job) must be exploited in order to achieve durable changes of behaviour as far as the choice of traffic mode is concerned.

And because of the present results of this empirical project individual "welcome packages" for new Frankfurt citizens will be offered.

In order to realize these initial steps with more than 40000 new citizens every year cooperations with the local energy service (who is actually building up a very communicative internet portal with a lot of offers for different life situations) and the municipal registration office are planned.

#### e) DYNALOG

Besides the "classic" main issues as strengthening of customers' loyalty, an increase in customers' satisfaction and in using public transport and the corresponding income of fares, the collection of data for establishing a Customer Relationship Management (CRM) was focussed as one important aim.

Under the keyword Database-Marketing traffiQ wants to bring into action the new "one-to-one to the customer" idea, an individual and direct conversation and information concept using extensive and specific dates of the customers.

When introducing new midi busses within a new bus conception in Northern Frankfurt traffiQ has developed and realized a multimedial marketing concept, i.e. the Dynamic Customers Dialog (DYNALOG) together with the consulting company omniphon (Leipzig), who are specialists in marketing research and dialog marketing.

Changing between written and oral communication potential passengers have been informed on mobility offers and have been motivated to use public transport more intensive. At the same time individual customer- resp. mobility behaviour criterions as for example frequency of usage, ticket usage, danger of drift aways, chances of using public transport more frequently, special need for counselling have been collected and electronically prepared. In the next step the so received data were combined with data of the corresponding persons.

When combining these criterions target groups could be defined who received special marketing offers (for example test tickets, individual counselling concerning season-tickets, car-sharing). An electronic customers data base was established managing the target groups (individuals and households) including all information gained from the service actions. This data base contains data of ordered information sheets, possibility of using internet, interest in

car sharing, demands and impulses (almost 7000 original quotations) and much more.

All questioned households reacted in a rather positive way. In the seven northern urban districts of Frankfurt more than 26600 persons (71%) (out of 37400 citizens) took part in the service actions.

omniphon had at least one individual phone call with 92% of all households (10758 out of 15055 households) (numbers were known).

All other household were contacted by letter. The mobility counsellors carried through nearly 300 visits at home, giving people a test ticket (free season tickets), a questionnaire and a mobility diary and offering an individual counselling. The recipients of the test tickets were customers who took busses and trains rather seldom and who had passed through a special selection procedure (scheme).

A first utilisation of the built up electronic database took place together with the changing schedule by the end of May 2000. 5160 households were contacted by letters and received an actual schedule of their region.

The database made it possible that especially those households could be contacted, who had requested for a continuing information.

The evaluation of the questionnaires and mobility diaries showed a **significant increase of the public transport share from 14% to 26% which means an increase of 12% points resp. a duplication of the starting point.**



Figure 7: mobility-counselling

#### IV. Perspectives

Following the slogan „tools require promotion“ the evaluated concepts named mobility centre, individual mobility counselling, dynamic customers dialog and additional mobility services (car sharing, shopping-/delivery service, ...) now will durable be offered under the innovative brand traffiQ®.

The brand traffiQ® is a synonym for the combination of intelligent solutions with offers in public transportation.

The introducing advertising campaign deals with the main service, mobility-information and – counselling on the one hand and with decisive sale simplifications (electronic ticketing) on the other hand.



Figure 8: traffiQ® means „electronic-ticketing“

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# TARGETING MOBILITY MANAGEMENT POLICY USING MARKET SEGMENTATION

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This paper asserts that in order to achieve sustainable change in travel attitudes and behaviour, mobility management needs to adopt principles from both attitude and marketing theory. The merit of using psychological theory, psychometric questioning techniques and statistical segmentation to understand mode-choice is assessed. In particular, statistical segmentation is used to identify the motivations and characteristics of groups of potential 'mode switchers' to assist the design of mobility management policy at the organisational level - in this case a major UK countryside leisure provider (The National Trust).

A detailed self-completion mail-back questionnaire, based on an expanded version of a psychological theory of attitude-behaviour relations, namely the Theory of Planned Behaviour (TPB), was administered following a short intercept survey to around 1000 National Trust visitors. A 69% response rate was achieved. Multi-dimensional attitudinal statements were factor-analysed to identify the structure of underlying psychological constructs and factor scores were used to segment the respondents using cluster analysis in order to identify the characteristics of those most likely to change their travel behaviour.

Six distinct psychographic groups were identified. Their current mode choice behaviour and reactions of each group to marketing messages and specific transport initiatives is discussed. Two groups already exhibit above average use of green modes, but are distinguishable by the extent to which their behaviour is discretionary. Two further groups exhibit potential for at least partial conversion to alternatives to the car for leisure day trips, but the preferences, perceived difficulties and environmental values of the two groups differ. The importance attached to journey attributes and their association with each mode was found to differ among the segments. Socio-demographic factors were found to have little bearing on the travel profiles of the segments demonstrating that attitudes largely cut uniformly across personal characteristics. Most significantly, the differences in mode choice behaviour and intention between the groups are interpretable with respect to the theory used. However, the research indicates that travel mode choice requires a unique, expanded version of the TPB incorporating notions of moral norm and psychological attachment to the car to improve its explanatory utility. The results are used to recommend how targeted transport solutions and marketing principles can be designed to best influence behavioural change at the organisational level.

## 1 INTRODUCTION

It is widely recognised that Mobility Management involves a detailed understanding of travel behaviour and the reasons for individual journeys within specific contexts and organisational settings. However, there is a move towards demand management policies without a full understanding of car dependent attitudes and the ability and willingness of people to change behaviour. The research outlined in this paper utilised psychological theory and a synthesis of data collection and multivariate analysis techniques to move away from statistics purely measuring behaviour to those which facilitate an understanding of the attitudes, belief systems and characteristics of those most likely to change behaviour.

Although the principles and methods explored in this paper are equally applicable to all sectors of travel demand, this study focuses on day trip travel to leisure attractions, specifically National Trust properties. The National Trust is an obvious case study of mobility management in this particular travel context. A major conservation heritage organisation attracting around 12 million visitors a year, the National Trust has been attempting to confront the dual dilemma of promoting public access whilst preserving landscapes and buildings. However, it is increasingly realising that access does not necessarily mean by car. In 1995, the organisation passed a resolution stating that the proportion of visitors arriving at properties by car should be cut from 90% (a conservative estimate) to 60% by the year 2020. However, the National Trust falls victim to the more general lack of understanding of car dependent attitudes and the specific need to have a detailed grasp of the motivations, constraints and attitudes of its own visitors. Their attempts so far to manage the problems without a clear understanding of the trends have led to the implementation of solutions on an ad hoc and often temporary trial basis. As a result, some of the 'green transport' initiatives it has introduced have not reached their potential. The danger is that the intense competition for limited resources will mean that justification for the earmarking of funds for such projects will rapidly lose foundation.

In this light, it is clear that this organisation is one of many that requires more than a tool which merely provides baseline figures highlighting current and future trends. Instead it needs a method by which realistic solutions can be designed and targeted with the benefit of data collection to identify the most effective solutions in a variety of situations. This research set out to achieve that goal.

## 2 THE USE OF ATTITUDINAL THEORY

To understand how we might be able to promote alternatives to car use, it is important to identify the salient factors that increase the likelihood that an individual will choose such actions. The requirement for such

approaches is to identify not only the socio-economic and demographic variables that could affect preferences and choices, but also an individual's willingness and ability to change, including any resource constraints and external structural factors. Hence, methodologies used to identify not only how and what but *why* individuals behave as they do have to encompass a number of interrelated factors.

However, economic modelling frameworks based on simplified assumptions of travel choice behaviour generated a mathematical approach at the expense of consideration of the human element and true behavioural processes. At most, behaviour is explained with reference to theoretical underpinnings from micro-economic theories of (rational) behavioural choice, almost exclusively relating to mode and route decisions. These methods are predominantly based on the desire to ascribe utility to various pre-defined travel attributes in order to allow some prediction of how preferences would change if existing products were altered. Things that cannot be ranked or rated are, however, often not measured. Furthermore, the attributes included for measurement are not generally derived from any empirical or theoretical foundation (Gärling et al 1998).

Attitude research has been unable to compete with these approaches providing numerical and modelling dimensions. Emphasis on attitudes has recently reappeared on the agenda in the broad context of travel awareness campaigns and the need to broadly inform people of the consequences of their actions in the hope this will encourage them to alter their travel choices (TSG 1998). In addition, significant interest has been generated by individual approaches to altering perceptions and attitudes to travel through techniques such as 'travel blending' (Ampt 1999). Once again, however, research on attitudes to travel and modal choice is generally not conducted within any theoretical framework. This is despite the fact that outside the domain of travel behaviour research, the prediction of behaviours from knowledge of people's attitudes has been under investigation for some time. In particular, a growing interest in the behavioural components of environmental problems has meant that the relationship between environmental attitudes and ecological behaviour has been well explored (see for example Grob 1995; Stern and Dietz 1994; De Young 1996). Essentially, despite being commonly held in travel behaviour research that knowledge and awareness will automatically lead to attitudinal and hence behavioural change, socio-psychological research evidence to date suggests that the antecedent conditions associated with behaviour are both complex and elusive. That is to say that elements of the decision making process beyond just attitudes need to be changed before car use will be reduced.

Travel behaviour research could benefit from the incorporation of new concepts and frameworks from this wider body of attitudinal research. This research draws upon behavioural/ attitudinal theory in order to develop a conceptual model of mode choice decisions made in the context of travel to countryside recreation destinations. In particular, one of the most influential of these theories on the causal link between attitudes and behaviour, the Theory of Planned Behaviour (TPB) (Ajzen 1991) has been adopted as the core of a conceptual model tested by qualitative and quantitative research.

According to the TPB, human behaviour is guided by three kinds of considerations:

- ✧ *Behavioural Beliefs*: beliefs about the likely outcomes of the behaviour and the evaluations of these outcomes. These produce a favourable or unfavourable **attitude** toward the behaviour
- ✧ *Normative Beliefs*: beliefs about the normative expectations of others and motivation to comply with these expectations. These result in perceived social pressure or **subjective norm**.
- ✧ *Control Beliefs*: beliefs about the presence of factors that may facilitate or impede performance. These give rise to **perceived behavioural control (PBC)**.

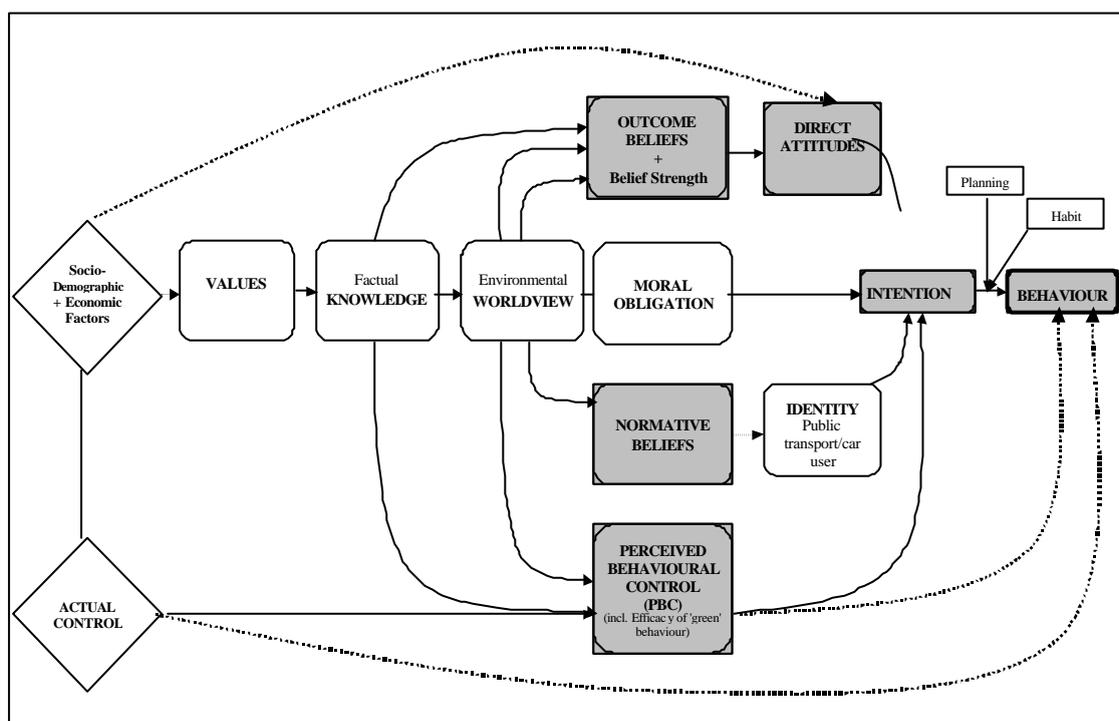
Hence a person's behaviour is explained in terms of his or her beliefs regarding the consequences of performing a behaviour and ones evaluation of those outcomes. In combination, these components lead to the formation of behavioural **intention**. As a general rule, the more favourable the attitude, subjective norm and the greater the perceived control, the stronger should be the person's intention to perform the behaviour. Finally, given sufficient **actual control**, people are expected to carry out the behaviour. Therefore, this theory purports that *intention* mediates between attitude and behaviour. However, PBC should be considered in addition to intention. For example, even if individuals have strong intentions to carry out an activity due to positive attitudes and social norms, those who are confident they can carry it out with few obstacles are more likely to persevere than those who don't. Moreover, PBC can serve as a proxy for actual control which is difficult to measure empirically.

A conceptual model of day trip travel mode choice was developed using this theory as its core together with additional factors identified from the literature and focus group research. The model is illustrated in Fig.1. Additional factors added to the TPB are summarised as follows:

- ✎ **Moral norm:** a feeling of personal obligation or commitment to contribute to the preservation of the environment. It supports those who claim that concern for the environment is related to moral thinking (Stern and Dietz 1994) and has been proven to contribute extra explanatory power over and above the TPB constructs (Harland et al 1999).
- ✎ **Environmental attitudes and knowledge:** it can be expected that moral norms develop from environmental concern and knowledge (ibid).
- ✎ **Efficacy:** perceived belief about what can be achieved, for example, with respect to ecological behaviour. This is an element of perceived control (Axelrod and Lehman 1993).
- ✎ **Identity (behavioural norm):** several authors have shown that behavioural norm – a construct that refers to perceptions of other’s behaviour – provides a more adequate account than subjective norm of the social pressures impacting on behaviour (Forward 1994).
- ✎ **Habit:** when behaviour is habitual, behavioural responses are activated automatically and actions can be instigated without the mediation of attitudes or intentions (Verplanken et al 1994). According to the TPB, past behaviour does relate to intentions for future use but the effect is indirect and is mediated by attitudes and subjective norms. However, a number of studies have found that habits correlate more strongly with intention and behaviour than with other variables in the TPB (Aarts and Dijksterhuis 2000, Gärling et al 1998, Forward 1994 and 1998).

These factors are all represented in the model (below), validated and built upon by focus group research with National Trust visitors. The components of the TPB are shaded in grey. Not all of the model components are included in the discussion that follows due to space constraints.

**Fig.1: Conceptual Model of modal choice based on the TPB (shaded components)**



### 3 THE USE OF MARKET SEGMENTATION

Segmentation is a key concept in market research. The basic proposition of market segmentation is that in any given population and whatever the organisational setting, there exists a variety of sub-groups that are relatively homogenous in terms of certain essential characteristics who are likely to respond in different ways to different promotional messages. An essential component of segmentation analysis is the achievement of ‘customer focus’ and the definition of products and services to satisfy the needs of the market. Marketing strategies can then be related to the needs of these individual market segments.

There are essentially two different approaches to market segmentation (Pas and Huber 1992). In ‘a-priori’ approaches, the groups are specified from the outset and the needs, preferences and constraints of the members of these pre-specified groups are examined. In a transport context this could be as simple as ‘public transport user vs non-user’ and this is indeed the typical application of any type of segmentation in transport research and planning.

However, in order to understand the complexities of decision making, the analytical procedure needs to simultaneously and systematically deal with the relative role that each factor (ideally identified using a theoretical framework) plays. This involves 'allowing for the data to speak for itself' and generating natural associations of people in the sample. Cluster analysis is a purely empirical method of classification because it makes no prior assumption about important differences in the population (beyond the measurements upon which it is based) and was therefore used in this research.

#### 4 METHODOLOGY

A lengthy self-completion mail-back questionnaire was administered in the summer of 2000 after approaching visitors with a short intercept survey at two National Trust properties to the southeast of Manchester in NW England. Of those that agreed to take the lengthier questionnaire home with them (it took between 20 minutes and 2 hours to complete), 66%<sup>1</sup> returned a usable survey.

One of the properties (Dunham Massey) was chosen due to its exemplary transport links, being both on a National Cycle Route and having its own hourly shuttle bus service to the local railway station, with connecting services to the Manchester metro network. The second property, Quarry Bank Mill, is served by a public bus route and attracts more families with children and 'one -off' visitors than Dunham Massey. The aim was to attract a good diversity in the range of attitudes and behaviours in order to draw conclusions about all the relationships in the conceptual model. This involved ensuring that bus users and cyclists were captured in adequate numbers, even though they may be over represented with respect to the actual visitor population.

The questionnaire was constructed largely using multiple overlapping attitude statements<sup>2</sup> hypothesised to pertain to each of the components in the conceptual model. Behaviour was measured using observed behaviour on the survey day, self-reports of general travel behaviour and the frequency of use of modes for all travel, day trip travel and work travel. Before any multivariate statistical analysis was undertaken, factor analysis was used to reduce the number of variables by identifying the smallest number of sets of highly correlated variables and to create a set of factors to be treated as uncorrelated variables in further analysis. In total, 105 attitudinal statements were subjected to principal components analysis with varimax rotation. 19 factors were generated. It is beyond the scope of this paper to detail these factors. The resulting constructs largely corresponded to the conceptual model components, including moral norms, general attitudes towards the car, environmental beliefs, social (combined with behavioural) norms and perceived behavioural control. Table 1 displays 17 of the factors that were subsequently used in the cluster analysis to find naturally occurring homogenous attitudinal groups of visitors.

**Table 1: Factors used to derived the clusters**

<p style="text-align: center;"><b>Attitudes Towards Car Use</b></p> <p>Factor 1. <i>Moral responsibility to use the car less</i>            Factor 2. <i>Attachment to the car for leisure</i>            Factor 3. <i>General car-dependency</i>            Factor 4. <i>Affects of congestion on travel</i>            Factor 5. <i>Enjoyment of travelling by car</i>            Factor 6. <i>Efficacy of reducing travel behaviour</i></p>
<p style="text-align: center;"><b>Attitudes Towards Alternatives to the Car</b></p> <p>Factor 7. <i>Perceived Behavioural Control</i>            Factor 8. <i>Willingness to sacrifice for the env.</i>            Factor 9. <i>Concern for negative effects of car use</i>            Factor 10. <i>Social + personal normative beliefs</i>            Factor 11. <i>Attitude towards road building</i>            Factor 12. <i>Attitudes towards cycling</i></p>
<p style="text-align: center;"><b>Attitudes Towards the Environment</b></p> <p>Factor 13. <i>'Green' identity</i>            Factor 14. <i>Romantic views of nature</i>            Factor 15. <i>Anthropocentric view of nature</i>  <b>'Green' Behaviour</b>            Factor 16. <i>'Green' purchasing</i>            Factor 17. <i>Political activity</i></p>

The variables produced by the factor analysis were entered into a cluster analysis procedure. The goal of cluster analysis is to identify homogenous groups of clusters of cases. It does this by maximising the

<sup>1</sup> Almost 100% of those approached stopped for the intercept survey (N=1222), and 78% agreed to take the questionnaire home with them. The final total (666) represents an overall response rate from the first point of contact of 55%.

<sup>2</sup> All using 5 point likert scales

distance between groups whilst simultaneously minimising the distance within a group. This involved using a two stage approach utilising an agglomerative procedure (Ward method) to identify structure in the data and generate cluster centres, and using these as a starting point for a more robust non-hierarchical (K-means) cluster procedure. Stopping rules, cross validation procedures and subjective criteria identified as appropriate from the literature were used to choose the correct number of clusters (Hair et al 1998).

## 5 PROFILES OF THE SEGMENTS

The cluster analysis concluded that 6 relatively stable groups could be identified. By virtue of the clustering procedure and its use of latent variables created by the factor analysis, each of these clusters has a unique psychographic profile. After some time was spent on profiling, each segment was given a name to represent its unique set of characteristics. Below is a brief description of the segments based on these factors and Figs.2-7 display cluster scores on a selection of original attitude statements which represent constituent elements of the factor scores.

In summary, the population falls into 6 distinct groups with respect to their scores on various components of the TPB and additional factors such as environmental concern, participation in pro-environmental behaviour and moral obligation. In particular, the four 'car owner' segments<sup>3</sup> display stark differences on the extent to which they feel responsible for their environmental effects of car use and perceptions of behavioural control over using alternatives to the car for day trip travel. The two non-car owning segments are also differentiated by these variables, although it is clear that 'actual control' factors in the form of age and income play a part in the attitudes of these groups (see s.5.2 below). Subjective norm is the component of the TPB, which displays the least significant differences between groups.

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<sup>3</sup> As some attitude statements pertained only to those claiming to have access to a car for the majority of leisure day trips, there was a large amount of missing data on these variables. In order to maximise the use of the variables created by the factor analysis, the sample was split prior to the clustering procedure into car owner and non car owner groups: 4 of the former and 2 of the latter segments emerged

### **(1) DISCONTENTED DRIVERS – 35%**

These individuals exhibit a high moral responsibility to reduce car use, an above average willingness to sacrifice for the environment and a feeling of guilt when the car is used unnecessarily. They claim fairly high participation in pro-environmental behaviours, though less than groups (4) and (5). However, they need more persuasion that reducing their own car use will make much difference, as they believe other people will not reduce theirs (efficacy).

These individuals stand out due to their frustration with congestion. Nevertheless, they enjoy car travel and believe it would be difficult to reduce, more so than group (2) though less than group (3).

Although they express a desire to use alternative modes, they perceive far higher difficulties than all the other groups except group (3), who do not claim to want to reduce car use anyway.

***This suggests that although they could be willing to reduce car use for altruistic motives and to avoid congestion, they are held back by weak perceptions of behavioural control.***

### **(2) COMPLACENT CAR ADDICTS - 26%**

This group do not see many problems with using car use, nor the point of reducing it. They are not attempting to limit its use for environmental or any other reasons and exhibit low participation in green behaviours. Their lower education levels may have a bearing on this lack of concern.

Their rejection of alternative modes is less likely than group (3) to stem from a particular love of car travel (or a strong dislike of alternatives). Instead, this group do not see any reason why they should reduce car use.

Their score on the perceived behavioural control factor sets them apart from groups (1) and (3) as they perceive less constraints in terms of time, information acquisition and carrying luggage. Accordingly, they are less likely to believe that their lifestyle cannot be adjusted to living without the car.

***This suggests the obstacles to using alternatives to the car are less related to PBC than a lack of awareness of the environmental implications of behaviour and a moral imperative to change.***

### **(3) NO HOPERS – 19%**

This group exhibits the lowest desire to reduce car use and the highest psychological car dependency.

Despite claiming to be more concerned about the negative effects of car use, valuing nature more for its own sake and displaying slightly greater rates of participation in green behaviours than (2), they are similar in that they are unwilling to sacrifice for the sake of the environment and feel strongly about an individual's right to use a car.

They differ from (2) in that they particularly enjoy car travel and are much more likely to believe that all their car use is necessary. This group also exhibit statistically significantly weaker normative beliefs than all the other groups.

They perceive the highest number of obstacles preventing the use of alternatives, particularly time constraints.

***This suggests a strong resilience to reducing car use as moral and social norms, attitudes and PBC are not in favour of forming intentions to change.***

### **(4) ASPIRING ENVIRONMENTALISTS - 18%**

Youngest of all the segments, this group feels the most responsible for environmental problems. Pro-environmental behaviour is seen as important and worthwhile. The negative effects of car use clearly enter into the decision making process.

Although just under half still admit they would find it difficult to give up the car altogether, this is significantly less than groups 1-3. They don't enjoy travelling by car. However, they are not overly concerned with congestion as their complaint with the car is broader than this.

Nevertheless, the majority (though less than groups 1-3) still judge public transport to be problematic. Compared to group (5) it is clear that they feel more restricted by time constraints and other obstacles.

***This suggests a practical approach to car use. Both moral norms and attitudes contribute to a high propensity to use alternatives. Perceived constraints limit choice, but these may be less 'perceived' and more 'real' than other groups.***

### **(5) CAR-LESS CRUSADERS – 4%**

Statistically this group match (4) on most measures to do with the environment, although they are slightly less prepared to sacrifice and have more romantic views towards the value of nature.

The most distinguishing feature of this group is the significantly stronger perception of behavioural control than all the other groups. There is some indication that individuals in this group are slightly more influenced by personal and social norms, though the difference is only significant from group (3).

Because of the way the cluster analysis was performed, we already know that the ***behaviour of this group favours alternative modes.*** However, ***this analysis suggests this may be due to a high sense of environmental awareness and concern and fewer perceptions of the difficulties with these modes.***

### **(6) RELUCTANT RIDERS - 3%**

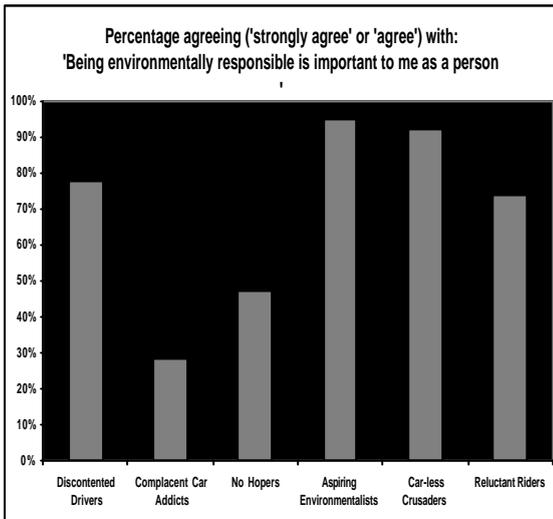
This group does not appear to be particularly motivated by environmental issues. Despite moderately high concern for the negative effects of car use, they are more reluctant to sacrifice for the sake of the environment and participate in fewer 'green' activities than groups (1), (4) and (5).

Of the two non-car owner groups, it is evident that these individuals are less content with the use of alternatives. Although time constraints are not a particular problem, a high number perceive many problems with using public transport. Indeed they are the same as (2), though less than (1) and (4) in this respect.

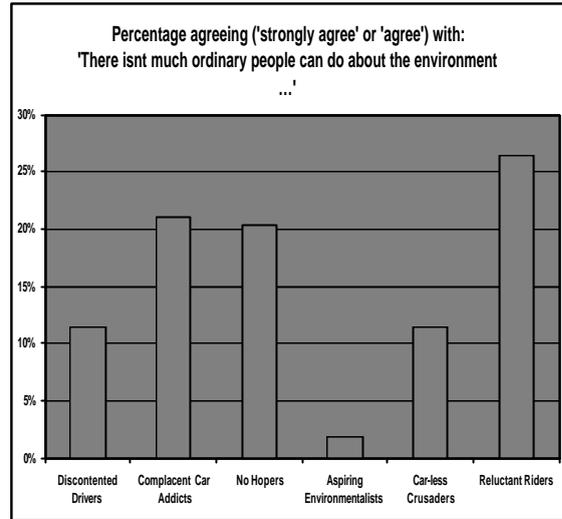
***This suggests that this group use alternatives less voluntarily than (5) as they are not motivated by altruistic motives and perceive many constraints with their use. Their older age profile and lower income point to 'actual' constraints on behaviour.***

**Figs.2 – 7: Cluster scores on individual attitudinal statements constituting factors  
(Note different scales)**

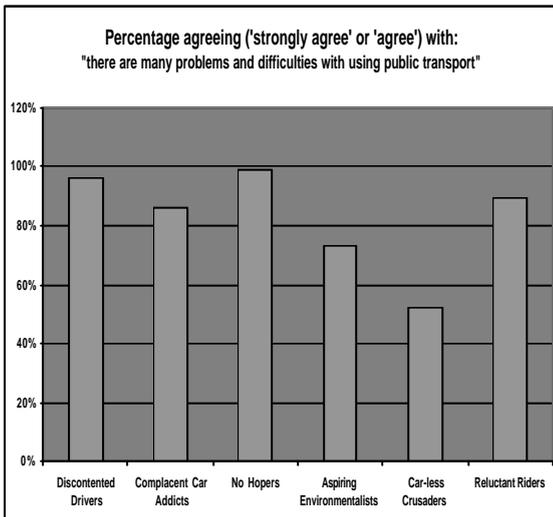
**Fig.2: Moral Norm**



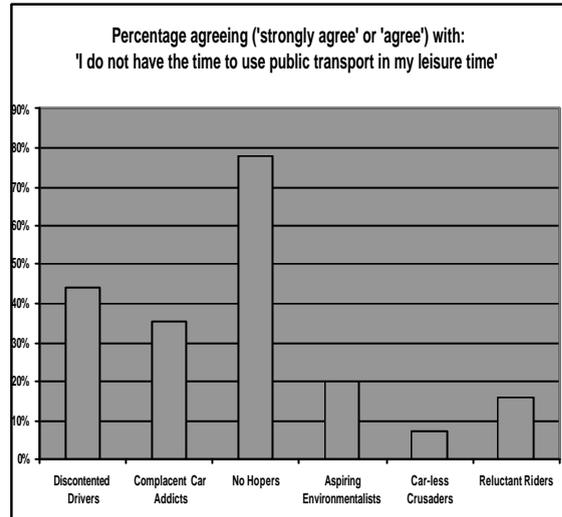
**Fig.3: Efficacy**



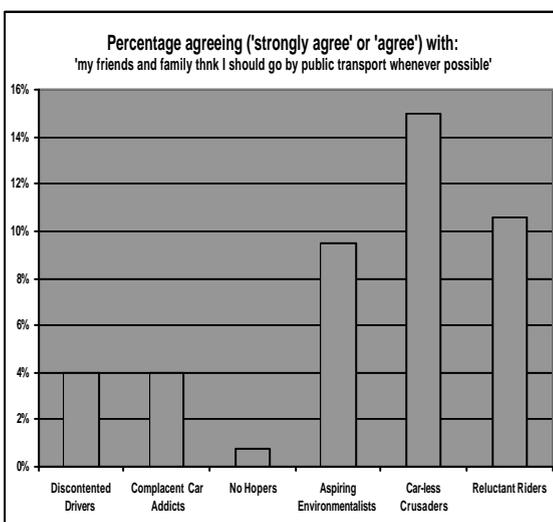
**Fig.4: PBC - general**



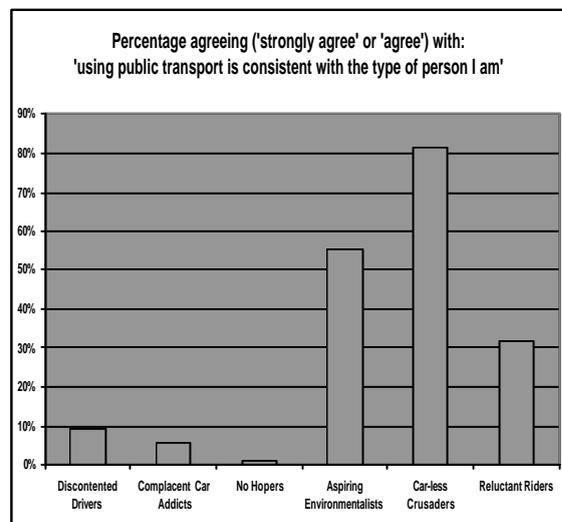
**Fig.5: PBC- time**



**Fig.6: Subjective Norm**



**Fig.7: Behavioural Norm**



## 5.1 Travel Behaviour

The main objective of the segmentation analysis is not only to identify the salient features of each cluster with respect to the variables used to create them, but to assess whether these attitudinal groupings have any predictive value with respect to travel behaviour i.e. can they predict the likely propensity to use alternatives to the car for day trip travel? Attitudinal variables that have been identified as playing a vital role in profiling the segments do not necessarily illuminate our understanding of the modal choice process if the segments cannot be distinguished on this behaviour. The aim is to discover whether the population falls into distinct segments according to their predisposition to use alternatives to the car for general and/ or leisure travel. In addition, if two or more similar behavioural segments are identified, the analysis will determine whether they can be distinguished with respect to their motivations and constraints acting on this behaviour i.e. to determine whether *the same choices are made but for different reasons*.

The outline statistics in Table 2 below illustrate that the attitudinal clusters correspond to distinct behavioural groups with respect to behaviour and intention to use alternatives to the car for both general and day trip travel. Two segments, the *No Hoppers* and the *Complacent Car Addicts* exhibit very high car dependence and low intention to use alternative modes. The two non car-owning segments, as would be expected, show the opposite trends. However, most interesting from the point of view of mobility management and influencing current trends are the *Discontented Drivers* who currently exhibit high car use but also demonstrate a relatively high intention to change. Moreover, as discussed below, these behavioural trends can be explained with respect to the components of the conceptual model used. Coupled with the motivational factors captured by the segmentation, not only does this approach identify target markets but also provided detailed diagnostic information about each segment that is useful in designing services and promotional strategies to induce this mode switching behaviour.

**Table 2: Selected indicators of travel behaviour and intention per cluster**

	1. Discontented Drivers	2. Complacent Car Addicts	3. No Hoppers	4. Aspiring Env'talists	5. Car-less Crusaders	6. Reluctant Riders
<b>RESOURCES</b>						
Drivers Licence	96.5%	93.7%	95.2%	88.0%	40.7%	52.6%
Vehicle Availability <sup>4</sup>	0.87	0.83	0.88	0.77	0.29	0.42
<b>SELF-REPORTED TRAVEL BEHAVIOUR<sup>5</sup></b>						
Ave. % trips by car	65%	66%	74%	42%	8%	25%
Ave miles travelled (drivers only)	8911	9247	10477	6902	2107	5625
% using alternatives for day trips 'always' or 'a lot of the time'	2.0%	4.0%	0.8%	18.8%	85.2%	52.3%
<b>OBSERVED BEHAVIOUR</b>						
% using alternatives on survey day	3.2%	4.8%	0%	12%	100%	46.2%
<b>INTENTION</b>						
% intend to use alternatives for a day trip in next 12 mnths	18.0%	12.0%	7.3%	50.0%	100%	72.2%

## 5.2 Socio-demographic Characteristics

Traditionally in market research and in the investigation of travel behaviour, social characteristics have been relied upon as correlates with behaviour. Similarly, attitudes, preferences and beliefs have been found to be dependent on such characteristics as gender and age (Golob and Hensher 1998). Therefore, it is necessary to investigate the demographic composition of the segments in order to prove or disprove the hypothesis that any changes in attitudes and differences in travel behaviour could simply be attributed to personal characteristics.

Overall, there are very few statistically significant differences between the four regular car access segments demonstrating that attitudes and opinions largely cut uniformly across demographic characteristics. However, the *Car-less Crusaders* and the *Reluctant Riders* are notably different from the other four groups on many characteristics, although not so much from each other (Table 3.). The non-car owning groups tend to be older, particularly the *Reluctant Riders*, and consequently comprise more retired members and fewer children at home. However, education appears to be the demographic variable which distinguishes the

<sup>4</sup> The Vehicle availability measure indicates the degree of car availability per car driver. It is constructed by dividing the number of vehicles per household by the number of adults with a drivers licence in the household.

<sup>5</sup> Although strictly speaking this measure refers to past behaviour, it is known that modal choice is relatively stable over time and reports of past behaviour can therefore serve as indicators of likely future behaviour.

groups most strongly and significantly. The *Aspiring Environmentalists* comprise the most highly educated segment and the *Complacent Car Addicts* are the least educated of the car owner groups, possibly contributing to the differences in environmental concern and moral norm exhibited. It must be noted that age, income and socio-economic status vary less within this sample of respondents than among the general population. As such, it is not wholly surprising that income etc does not vary significantly among the groups. Nevertheless, any differences that do exist within the sample do not appear to be reflected in the cluster solution apart from between the car user and non-car user groups. This suggests that personal characteristics are not an important determinant of attitudes or any differences in behaviour found between segments of equivalent vehicle availability.

**Table 3: Personal Characteristics of each segment**

		1. Discont ent Drivers	2. Complac- ent Car Addicts	3. No Hopers	4. Aspiring Env'talist s	5. Car-less Crusader s	6. Reluctant Riders	Sample Ave.
<b>Gender</b>		F (55%)	M (59%)	F(56%)	M/F	F(59%)	F(84%)	M/F
<b>Age</b>	< 34 yrs	16%	17%	14%	21%	8%	0%	16%
	> 65 yrs	17%	8%	19%	12%	35%	63%	17%
<b>Employment</b>	FT + PT	64%	63%	62%	70%	39%	21%	62%
	Retired	28%	23%	29%	18%	50%	68%	28%
<b>Income</b>	< 10k	8%	3%	6%	7%	20%	47%	8%
	> 40k	35%	40%	27%	37%	24%	6%	33%
<b>Education</b>	NONE	6%	6%	9%	1%	7%	32%	7%
	>	53%	48%	53%	69%	37%	32%	49%
<b>With kids still at home</b>		30%	31%	35%	35%	4%	5%	30%
<b>Single adult household</b>		9%	9%	7%	15%	37%	42%	12%
<b>2<sup>nd</sup> earner in household</b>		53%	48%	58%	44%	17%	11%	48%

### 5.3 Attitudes and the Theory of Planned Behaviour

So far it has been established that the clusters formed on the basis of underlying psychological constructs correspond to groups of people with different mode choice intentions and behaviours. The utility of this approach can be assessed by identifying those constructs, or combinations of constructs, that are important for identifying the propensity to use green modes. Although this approach enables a detailed interpretation of the ways in which each group thinks and processes information about the choice of travel mode, it is beyond the scope of this paper to outline the unique combination of variables which define each segment. What is clear, is that these groups are interpretable in terms of the dimensions of the conceptual model and the TPB. As a general rule, and as predicted by the TPB, the more favourable the attitudes (outcome beliefs and (lack of) attachment to the car), the stronger the moral norms and the greater the perceived control, the stronger are the intentions to use an alternative mode for day trip travel.

Two of the three TPB constructs, **perceived control** and **outcome beliefs** were pivotal in defining the segments. It is clear that perceived behavioural control ultimately dictates intention and behaviour in most cases. For example, the *Discontented Drivers* and the *Complacent Car Addicts* exhibit relatively similar behaviour. However, their attitudes, particularly with respect to environmental concern and moral obligations are very different, as are their intentions. In this case, the *Discontented Drivers* low perceptions of control serve to moderate their behaviour vis a vis their intentions. The *Aspiring Environmentalists* and the *Car-less Crusaders*, on the other hand share many of the same norms and attitudes regarding alternative modes, but their behaviour is markedly different. This illustrates that positive attitudes to the environment do not in themselves bring about favourable intentions/behaviour but require these beliefs to be combined with strong control beliefs in order to translate these convictions into behaviour as is the case with the *Car-less Crusaders*. In addition, the *No Hoppers* display negative attitudes towards alternatives to the car so that even if they possessed strong perceptions of control, intentions would still be low. However, the behaviour of the *Reluctant Riders* appears to be determined more by actual constraints of car ownership than perceptions.

On the face of it, this may appear consistent with other findings which claim that although information about the negative environmental effects of the car raises public awareness, the information is not usually sufficient to change behaviour (Tertoolen *et al* 1998). Nevertheless, in this analysis, environmental concern combined with a sense of **moral obligation** has helped to account for some of the variance in attitudes, intentions and behaviour. This is particularly evident with the *Reluctant Riders*, whose convictions AND intentions are not as favourable as their non car owner counterpart; also with the *Aspiring Environmentalists* whose environmental

concern and sense of responsibility is significantly greater than that of the other car owner groups and whose behaviour reflects this. Although not sufficient on their own, the inclusion of measures of environmental concern and moral norm provide additional beliefs that can be targeted in order to change behaviour. By extending the TPB and measuring explanatory factors within an interrelated framework, understanding is improved about the factors underlying the decision to perform or not perform a given behaviour and a greater probability exists that the behaviour can be modified.

In addition, as outlined below, examination of the specific **outcome beliefs** associated with each of the four transport modes provided a detailed account of the major considerations that feed into favourable or unfavourable dispositions towards a mode and hence influence behaviour. Most importantly, the 'bundles of attributes' that were important and associated with each mode differed among the segments. Most travel research furnishes an abundance of descriptive information about the benefits of alternative modes. Indeed recent research commissioned for the DTLR (2001) indicates that convenience, flexibility and immediacy are among the key factors underlying modal choice. However, this research utilised psychological, affective as well as instrumental factors specifically associated with travel for a leisure day trip, and thus offers new insights. Moreover, instead of a snapshot of public opinion, it examines the psychological processes through which these factors are associated with behaviour.

In summary, the segmentation analysis helps us to identify the factors underlying a decision to perform or not to perform a given behaviour. The evidence clearly shows *that the same behaviour can take place for different reasons* and that the same attitudes (eg positive attitudes to the environment) can lead to different behaviour (eg a reduction or no reduction in car use). However, the more knowledge that exists about the factors underlying a decision to perform or not to perform a given behaviour, the greater the probability that the behaviour can be modified. One of the principal aims of attitude-behaviour models such as the TPB is to inform behavioural interventions. Different components of the model *each reveals a different aspect of behaviour and each can serve as a point of attack to change it*' (Ajzen 1991, p206). Ajzen and Madden (1986) argue that it is reasonable to target a policy intervention on any of the determinants of intention as long as there is room for change. Therefore, even though measures such as environmental concern and abstract knowledge may not have any direct effect on intentions or behaviour, they provide further areas to target as a means of modifying behaviour.

#### 5.4 Outcome Beliefs

Marketing essentially regards products and services as 'bundles' of attributes, of which cost is merely one. A service a mode provides can be described by the series of attributes that the traveller finds important. Attitude research requires identifying salient outcome beliefs. The difficulty lies in identifying the appropriate attributes. Typically, transport studies have utilised simple descriptors for comparison such as journey time, costs and speed. The objective of this study, however, was to break away from conventional thinking and concentrate on psychological constructs describing the 'state of mind' of an individual whilst on a journey to a leisure destination. The final list, by no means comprehensive, comprised 22 potential psychological (e.g fun, control, sense of freedom, flexibility, safety) and instrumental (sociable, scenery, value for money) outcomes of travelling on a day trip for leisure identified through the focus groups and the literature. Using five point scales, respondents were asked:

- (i) **How important** each aspect is for them personally when travelling on a day/ afternoon out for leisure;
- (ii) How **each mode** (car, public transport (train or bus), bicycle and coach) rates on a 5 point scale for each attribute being measured.

The evaluation of each outcome belief and the corresponding evaluation of each mode were scored so that a 5 indicated the most positive evaluation and a 1 indicated a negative evaluation.

It was hypothesised that different groups of people seek different benefits and perceive different outcomes from various modes of transport. The segmentation analysis has identified groups of respondents with similar preferences, dislikes and perceived deficiencies with each mode, representing market segments that have the same unmet needs and the greatest potential for behavioural change. It is beyond the scope of this paper to detail the specific outcome beliefs differentiating the segments. However, to present an overall picture for each segment, Fig.8 displays the mean deficiency score for each cluster for each mode<sup>6</sup>. For each individual in the sample, a calculation was made as to 'performance' of each mode in relation to their rating of the importance of each attribute.

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<sup>6</sup> Deficiency score = (Mode attribute rating – Attribute importance)/ Attribute importance) – all positive scores are set to zero on the basis that where expectations are exceeded by a mode on a particular attribute, the extra utility is not appreciated. For example, if 'environmental friendliness' scores low in importance but the bicycle scores high on this attribute, the bicycle is not appreciated *more* because it exceeds the 'ideal' on this attribute.

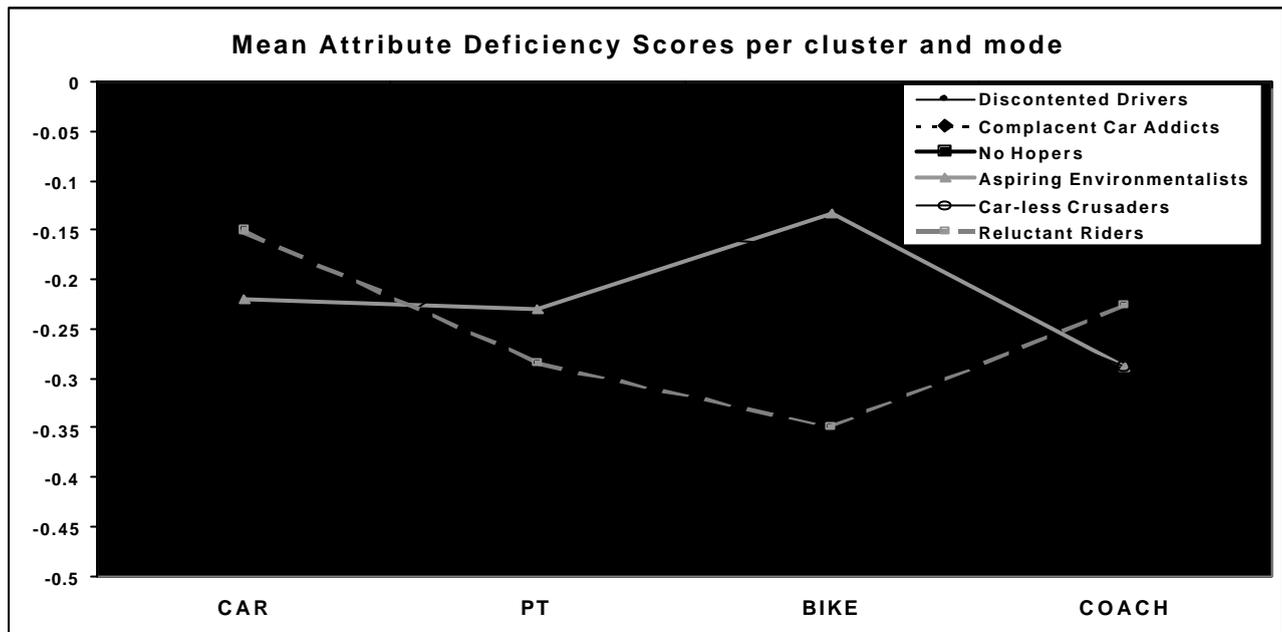


Fig 8: Mean attribute deficiency score per cluster and mode

The interpretation of the clusters in terms of these outcome beliefs indicates that the clusters exhibit distinct differences in the degree to which public transport, cycling and coach travel are perceived as a viable alternative to the car for day trip travel. The main trends are as follows:

- ✘ **ALL of the segments apart from the *Car-less Crusaders* perceive the car to meet their needs more adequately than public transport** (with respect to the attributes included in this analysis). For the *Aspiring Environmentalists* the difference between the two modes is negligible. However, for the other three car owner groups AND the *Reluctant Riders*, public transport falls far short of the car's performance.
- ✘ **ALL of the car owner groups rate the bicycle as meeting their preferences more adequately than public transport.** In the case of the *Aspiring Environmentalists*, the bicycle out-performs all other modes including the car. However, the *Reluctant Riders* rank cycling lower than all other modes and the *Car-less Crusaders* still prefer public transport.
- ✘ **Coach travel out-performs public transport** for all groups except the *Aspiring Environmentalists* and *Car-less Crusaders*. The analysis identified specific attributes such as scenery and 'sociability' offered by this mode and appreciated by certain segments.

The identification of constructs most relevant to change and those most likely to be threatened when people are asked to change behaviour are of great interest to policy makers. The analysis revealed, for example, that the *Complacent Car Addicts* rate value for money higher than any other segments yet assess the car as offering the best cost advantage. Understanding the beliefs about the benefits as opposed to actual benefits is of considerable importance because these beliefs are likely to influence attitudes, intentions and behaviours regardless of their accuracy. The *Reluctant Riders* are looking for a hassle free experience with time constraints, fun and adventure of little concern, but lack of stress and the ability to see the scenery of most concern. The *No Hoppers* will not compromise on privacy, freedom and control and perceive the greatest discrepancies between the car and all other modes on their ability to satisfy these journey requirements. The *Aspiring Environmentalists* are more likely to seek out fun, adventure and benefits in terms of health and fitness as well as being conscious of the environmental effects of their mode choice. The analysis may be viewed as representing potential drives or motivations to use individual modes and this is necessary in order to design tailor made services and promotional campaigns targeted to particular market segments.

## 5.5 Policy Implications

The real value of segmentation lies in its ability to be translated into achievable strategies by using the information to guide decisions. Table 4 consolidates the segmentation evidence in order to illustrate the potential to identify and target the most effective interventions. The table defines each segment in terms of its 'potential switchability', and identifies some factors which may be considered indicative of susceptibility to reduce car use or of the main motivators against change. In addition, it suggests what each segments most likely choices would be if it were to opt to travel on a day trip without the car. Overall, the table comprises a framework that could be used to define promotional campaigns.

**Table 4: Potential interventions to influence each segment's modal split**

	Intention <sup>1</sup> / Behaviour <sup>2</sup>	DRIVERS to use alternatives	CONSTRAINTS	POTENTIAL; POLICY OPTIONS; NEXT BEST MODE
<b>Discontented Drivers</b>	18% / 2%	*Moderate moral obligation *Congestion (negative attitudes towards the car) *Positive qualities of public transport	*Perceived control *Positive attitudes towards the car *Efficacy	<b>MODERATE</b> *Promotional messages reinforcing moral obligation and positive qualities of PT (e.g scenery, novelty) and negative aspects of the car (congestion) <b>Next best mode:</b> Public Transport (PT)
<b>Complacent Car Addicts</b>	12%/4%	*Positive qualities of PT and some indifference to the car	*Psychological attachment to the car *Lack of moral imperative	<b>LOW</b> *Education into negative effects of car use and cost of car use *Promotion of positive qualities of PT (value for money, relaxation) <b>Next best mode:</b> PT and Bike
<b>No Hoppers</b>	7%/1%	None – likely to avoid National Trust properties if constraints imposed on car use.	* Perceived control *lack of moral imperative *strong behavioural and social norms *strong car attachment *unfavourable attitude towards all alternatives	<b>VERY LOW</b> *weaken stereotypical images of PT users *push (draconian) measures – but could react to National Trust if they are seen to 'preach' moral responsibility and restrict behaviour <b>Next best mode:</b> none
<b>Aspiring Env'talists</b>	50%/19%	*High moral norm *Efficacy *Positive attitude towards PT *some negative views of car *slightly favourable norms *wants to set an example to others	* Perceived control * attachment to practical benefits of car use * actual control * procedural knowledge	<b>HIGH</b> *Promote positive aspects of alternatives (fitness, adventure, fun for children and negative environmental consequences of car) *Promote how individual actions make a difference *Information on alternatives will be used <b>Next best mode:</b> PT and bike
<b>Car-less Crusaders</b>	100%/85%	*High moral norm *Efficacy *Positive behavioural and subjective norms *positive attitude towards pt *dislike of the car *High PBC	*Actual Control (lack of alternatives and some age/ fitness problems re. cycling)	<b>VERY HIGH</b> *Provision of alternatives *information will be used *Reinforcement of environmental message *Reinforcement of positive aspects of pt and bike (fun, relaxing etc) <b>Next best mode</b> PT and bike
<b>Reluctant Riders</b>	72%/52%	*Lack of car ownership (Actual Control) *moderate moral obligation some positive views on public transport	* Perceived control *Likes car travel	<b>VERY HIGH</b> *Promote positive attributes of pt and coach travel (scenery, sociability, relaxation) *Information provision <b>Next best mode:</b> Coach & PT

The results imply that efforts to encourage the use of alternatives are best concentrated on those segments with the greatest potential to increase their frequency of use. If the objective is to stimulate behavioural change as opposed to attract more individuals from the non car-access segments, the evidence suggests that, rather than expect those who do not use alternatives at all, or have no intention to use them to start, it may be more productive to (i) encourage those who already use alternative modes a little already to use them a little more (the *Aspiring Environmentalists*), or (ii) to encourage those who express a willingness to reduce car travel to begin to experiment with alternative modes (the *Discontented Drivers*). In the light of the figures for intention and past behaviour included on the table, this amounts to an incremental strategy. However, even small incremental gains can have a significant effect on the total numbers using green modes and may help to sustain a change in beliefs, attitudes and future intentions.

## 6 CONCLUSIONS

This research has indicated the need to increase the sophistication of mobility management initiatives at the organisational level beyond a 'one size fits all' approach. Overall, there is strong empirical evidence in this sample for the existence of subgroups which exhibit varying degrees of mode switching potential, but each with different motivations. In particular, there are a number of potential user segments other than those usually considered with more conventional a-priori approaches. Interpretable in the context of the TPB, the attitudinal segments essentially provide an indication of how hard people are willing to try to leave the car at home for day trip travel and under what circumstances. The identification of a number of groups with a susceptibility to change their travel behaviour (at least incrementally) where opportunities do exist provides a sound research base upon which to design clear objectives and to systematically develop policies that focus on the relevant differences between types of people. In this example, the success of the National Trust's mobility management policy depends on the extent to which it uses this insight to inform promotional literature and design more selective, tailored green transport initiatives. The Trust could also benefit from using this research to win support for the 'cause' from decision makers internally who currently believe that the proportion of potential 'mode switchers' is much smaller than suggested here.

Segmentation provided a way of finding naturally occurring groups and left preconceptions aside. The results demonstrated the importance of attitudinal variables over personal characteristics as cluster membership could not be predicted by any demographic or behavioural variables. This suggests that mode choice is much more complex and that commonly used a-priori classifications may oversimplify the structure of the market. Most significantly, each segment represented a unique combination of each type of belief, proving that different groups need to be served in different ways to optimise the chance of realising changes in behaviour. Had the analysis been carried out on the aggregate sample, many of the findings would have been moderated leading to potentially erroneous conclusions. For instance, the fact that environmental concern is of particular importance to some people but not others may have averaged out to appear insignificant overall. Without the insight gained from the segmentation analysis, one may have concluded that attitudinal factors were poor indicators of mode choice in this context. Instead, comparing these constructs in any given subgroup has shown that there are no universal appeals that will successfully influence a range of individuals to change their travel behaviour. The richness of the profiles provides readily interpretable information to those responsible for designing mobility management policy, providing a means to develop strategies and marketing messages targeted at those most likely to change their behaviour.

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**7<sup>th</sup> EUROPEAN CONFERENCE ON MOBILITY MANAGEMENT**

**Summary of the TAPESTRY Project, Focusing on Three Key Campaigns**

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Workshop 2e: Key factors in achieving sustainable change in attitudes and behaviour change

**Introduction**

When implemented in isolation, transport infrastructure projects often fail to bring about significant behavioural change. As a result the reliance on the use of the private car that has developed over the past 30-40 years is proving difficult to change purely through the provision of alternative transport options. The TAPESTRY hypothesis is that changes to embedded behaviour do not occur unless accompanied / preceded by a change of attitude.

TAPESTRY is a three year EC 5<sup>th</sup> Framework project part funded by DGTREN. Its main objective is to investigate how changes in behaviour in favour of healthier and more sustainable transport options can be influenced by communication programmes or campaigns. TAPESTRY includes 15 case studies split into three broad topic areas:

**INTERMODAL Case Studies – Promoting Alternatives to the Car**

These six campaigns focus on reducing car use through the promotion of alternative forms of transport, such as public transport, walking and cycling, in order to encourage modal shift. The campaigns are being developed in schools, urban households and city centre shopping areas.

**MODE REPOSITIONING Case Studies – Promoting the Image of Public Transport**

These five campaigns aim to promote or change the image of public transport, with a view to encouraging greater use. Examples include marketing campaigns linked to car free days, community involvement programmes and the promotion of new services to tourists.

**HEALTH & ENVIRONMENT Case Studies – Promoting Benefits of Transport Choices on Personal Health and the Environment**

These four campaigns focus on different messages related to the health benefits of walking and cycling or to the positive impacts of reducing car use on air quality and the environment.

**The Case Studies**

The case study campaigns are each individually targeted at different journey types and / or target sub-groups of the overall population (e.g. schoolchildren, parents and teachers addressing journeys to and from school; members of rural communities for all local journeys; visitors to specific cultural or tourist destinations). Each of the TAPESTRY case study campaigns developed, monitored and is now evaluating the use of travel awareness, communication, education and publicity measures in terms of their impacts on the knowledge, attitudes and behaviour of its own target group. The first part of this paper focuses on the activities and initial outputs from three key campaigns within the project which provide both good examples of how the TAPESTRY campaigns have been designed and implemented and show the links between the campaigns which will enable the transfer of experiences between sites. The second part then establishes the research basis for TAPESTRY, in particular a review of International Best Practice and the common assessment framework developed as part of the project.

### ***Example Campaign 1: Travel Awareness in Belgian Schools (Mol & Geel)***

This case study, which has been led by Langzaam Verkeer, comprised two campaigns located in the towns of Geel and Mol. Although both campaigns were centred on producing school travel plans, the individual campaigns had a slightly different focus to each other. The city of Geel aimed to optimise usage of bicycle networks and existing public transport, whereas Mol aimed to work closely with a local mobility centre in the production of its school travel plan.

The campaign objectives were set in the context of the Flanders Mobility Covenant Program. This is an instrument for sustainable local policy planning formed in partnerships between the Flemish government, local authorities, the Flemish PT-company and (in the best cases) mobility users. Integrated planning between these organisations produced a mobility plan containing a package of 18 project opportunities including supporting measures, such as campaigns and green travel plans.

The stated objectives were:

- ? to increase awareness and acceptance in schools of their role / participation in stimulating sustainable travel between home and school, leading to schools becoming partners in local mobility planning;
- ? to increase awareness of the dangers on the road and the negative impacts of cars on the environment;
- ? to increase the proportion of schoolchildren who walk, cycle or catch public transport to school safely with a view to continuing this behaviour into later life.

Both towns have an excellent reputation as centres for education and this leads to significant demand from people travelling to schools in Mol and Geel from surrounding areas. Hence the campaigns in both towns focused heavily on increasing road safety awareness and ensuring that children who are old enough to travel alone to school fully understand the implications of increased car use and are familiar with the available alternatives. Originally the plan was to involve two schools in Geel and two in Mol, but the demand became so great that the campaigns were expanded to include ten schools in Geel and two in Mol. Even this expansion was not sufficient to satisfy the demand as 13 schools in Geel and 12 in Mol had signed the declaration that they were prepared to participate for some parts of the campaign.

#### **Campaign Measures**

- ? 1) Under the policy guidelines of the Flemish Government, schools that are located within 200 metres of a regional road have to ensure that the road environment and multi-modal travel patterns meet given criteria. The schools that fall within this caveat are encouraged to produce a school travel plan. The participating schools have worked with Langzaam Verkeer and the local authority and translated their new plans into a format that is understandable by children within the classroom and have developed appropriate material for use in lessons.
- ? 2) Both municipalities have identified a 'traffic-educating route' (a signposted route for pedestrians and cyclists that engages pupils and parents in situations instructive for the purpose of traffic education). The aim is to ensure that children are independent enough to safely walk or cycle alone along a well known route.
- ? 3) In both towns these actions have been supported through demonstration sessions for teachers on how to work with the new materials and the new educational goals.

- ? 4) In the final week of September 2002 a “TAPESTRY project week” was run which involved a focus on mobility related issues with visits from external speakers and project work amongst other actions.

### **Campaign Assessment**

As for all the TAPESTRY campaigns, assessment has formed an important part of the Geel & Mol campaigns with a view to understanding the impact of the package of activities on the schoolchildren. A standard questionnaire was used in the participating schools prior to the campaigns and then soon after the TAPESTRY project week. Initial results are now available which indicate that there has been a statistically significant change in behaviour and attitude which is largely due to the TAPESTRY campaigns.

The analysis suggests that awareness of the problems caused by high numbers of cars at the school gates and the need for children to take responsibility in encouraging their parents to use the car less for trips to school were high prior to the campaigns, with approximately 65% of the sample agreeing with the questions they were asked about these issues. There was no significant change in agreement over the course of the campaigns. However, the campaigns have had an impact on how the various modes are perceived by the children: the proportion of pupils rating the car above cycling because of its cool character, easiness door-to-door travel and as an enjoyable way to travel has decreased significantly in the after survey! Unfortunately an opposite change is observed in terms of perception of comfort, although the importance of comfort as a deciding factor for choice of mode fell significantly over the course of the campaigns.

Given the stated objectives of the campaign, perhaps the most important and relevant result is the observed change in behaviour, which shows a statistically significant increase in the proportion of children cycling to school (40.6% ? 50.5%) and a corresponding decrease in those travelling by car (47.8% ? 37.3%).

Campaign recall and tests on the accuracy of this recall are positive with ratings between 60 and 100%, with variations according to school group etc. Given that there were no influencing factors recorded for this group external to the structured TAPESTRY campaigns these initial results indicate a very successful campaign.

### ***Example Campaign 2: Understanding the Importance of Public Transport in Rome***

The city of Rome is particularly aware of the problem traffic congestion outside schools with kids jumping out of cars and having to weave their way through parked cars to reach the school gate and is keen to address it. Therefore, with the support of the municipality ATAC SpA, the company that plans and monitors public mobility in Rome, created a structured plan to stimulate and educate young people to a major use of public transport.

The aim of the case study in Rome is to reduce the use of private vehicles by modifying personal travel behaviour, resulting in an increase in the use of public transport modes.

The campaign objectives, set by ATAC’s Marketing and Communication Department, were:

- ? to examine how to influence the attitudes of a target group in the way they view traffic and pollution problems as well as vandalism.
- ? to reduce vandalism
- ? to reduce ticketless travel / fare evasion
- ? to increase respect for passengers on public transport
- ? to enhance the perception of public transport staff

- ? to modify future behaviour towards reducing the use of private vehicles in favour of public transport
- ? to draw attention to the environmental impacts of transport use.

### **Campaign Measures**

The method chosen by ATAC to deal with the problem in Rome was the implementation of an awareness campaign addressing a sample of 1200 pupils representing 30 of the city's schools from right across the city.

The project comprised 3 main phases:

- ? the "ex-ante" phase; involving the analysis of the target group's mobility habits before the TAPESTRY campaign
- ? the campaign itself
- ? the " ex-post" phase ; which evaluates the impact of the TAPESTRY campaign on the children's mobility behaviour and their perception of the pollution and traffic problems.

The campaign message addresses the understanding of the traffic problem and encourages the pupils exposed to switch their mobility habits from using private cars to the use of public transport network. The message is also indirectly addressing the pupil's parents.

The tools used during the campaign included:

- ? the questionnaire, which as well as providing information for the before and after assessments was also designed in partnership with child psychologists to make the children think about their actions and the consequences
- ? a visit to ATAC depots
- ? gifts such as a specially designed cycle helmet, a TAPESTRY T-shirt and a package containing ATAC information material (maps, leaflets etc.)
- ? an interactive game (TRAMMY), which was made available on CD-ROM
- ? ATAC organised an exhibition at the end of the campaign of the best drawings by the participating children, representing the theme: "Why prefer public transport?"
- ? the campaign was closed with a party that raised a lot of interest among the children.

### **Campaign Assessment**

The TAPESTRY survey questionnaires were based on the core questions in the TAPESTRY Common Assessment Framework (CAF) and cover the following issues:

- ? Attitudes towards public transport
- ? Attitudes towards public transport facilities currently available to use
- ? Reasons for travel and the need to travel
- ? Level of awareness of transport & environmental issues
- ? Need for information on travel, transport and facilities
- ? Willingness / ability to change (by target groups)

As for several of the TAPESTRY campaigns, it was necessary to modify this questionnaire into a simpler format because it was to be completed by children. Hence the format actually followed a simplified "children's CAF".

In total 1200 questionnaires were distributed in both the before and after assessment periods. In order to achieve direct comparability the analysis was restricted to completed questionnaires from a school class that was sent the questionnaire both before and after the campaign. (Due to administrative problems distributing the questionnaires some classes only

received the before questionnaire and some classes only received the after questionnaire.) As a result the analysis is based on around 670 questionnaires.

The analysis of this campaign is in its early stages. However it is already known that after the campaign, the proportion of pupils who consider public transport as "boring" dropped by 20% from 85% to 68% and 58% of them said that they would use public transport if they could travel together with their friends. Indeed, after the first month of the campaign, pupils were already changing their habits, with 5% of them transferring to walking and 2% to using the bus, for the journey to and from school.

The pupils also acknowledge that there are safe and cheap ways to avoid traffic problems and to reduce pollution: pupils have accepted as solutions to these problems walking (93%), to reduce the use of the car (89%) and the use of public transport (84%).

### ***Example Campaign 3: Reducing Vandalism to Improve the Image of the Bus (Dublin)***

This case study has investigated approaches that will improve the environment for passengers on bus services in Dublin. Some services in Dublin were identified as suffering from poor passenger behaviour, along with drinking, eating, smoking and vandalism which were shown to be affecting patronage levels – *see parallel paper on benchmarking for evidence of this*. The TAPESTRY campaign was based on the premise that improvement of the on-bus environment would lead to better quality of travel, without fear, leading to an increase in bus usage.

The following objectives were set by the case study management group - Dublin Bus, Adshell, Garda, ISS in association with Interactions Ltd.

- ? to reposition the bus/service in the minds of children so that they respect it, leading to:
  - o reduced damage levels
  - o perception of safer environment
  - o greater use by off-peak travellers
- ? to reposition the bus/service in the minds of bus users and potential users so that they:
  - o will feel safer
  - o perceive the bus as a safe pleasant mode of travel
  - o use the bus as much as their travel wishes dictate and not be inhibited.

### **Campaign Measures**

The campaign was focused on a bus route to the Northwest of Dublin that had received an infrastructure upgrade to Quality Bus Corridors status, but which had not shown the expected increase in route performance. A similar route was used as a control. The objectives show that the campaign has two different target groups. The major campaigning activities were aimed at the schoolchildren and their parents through the use of a competition in four local schools where the children were asked to design a picture on the subject 'How the bus is useful to me'. This was done with the intention of making the children value and respect the bus as an important element of their daily lives without it being an obvious series of alienating lectures. The winning entries were then used to develop material for display along the route. One of the entries delivered the slogan 'The Dublin Bus is here for us' and was displayed on the sides of 14 buses for 2 weeks in September 2002. Another winning entry was used as a poster and was displayed in a number of bus shelters along the route along with information about what Dublin Bus was hoping to achieve. 14 more entries were used in the Dublin Bus corporate calendar for 2003 which was distributed to 5000 households in the area.

The residents of the area were exposed to the same campaign as they travelled on bus. The aim was that the effect on would be an improved perception of the role of the bus as well as a

perceived improvement in safety, cleanliness and comfort as a consequence of the effects of the campaign on the local children.

### **Campaign Assessment**

These two target groups were treated separately. The schoolchildren were not surveyed using the formal TAPESTRY questionnaire. Instead their attitudes were examined in focus group discussions. Results from this survey have provided valuable insight into the attitudes of and acceptance of vandals in the community. This information was used in designing the competition for schoolchildren and the resulting campaign.

The second target audience – the residents who are the travelling public were subjected to a detailed questionnaire based on the TAPESTRY assessment methodology with some additional locally driven questions. Again, interpretation of the results is in its early stages, but headline results include:

- ? 34% recall of the calendar and 46% of these respondents feeling that it improved their opinion of Dublin Bus
- ? 10% said they had started to use route 27 more in recent months
- ? Daytime usage of at least twice a week up from 22% before the campaign to 48% after
- ? Avoidance of the bus has decreased
- ? Feelings of safety on the bus have increased

### **Research Basis**

The campaigns have been designed using knowledge gained from a review of International Best Practice covering a broad spectrum of campaigns related to travel, health and environment awareness, key lessons and recommendations from previous and ongoing EU and non-EU research projects into travel awareness, a brief review of transport policies across EU member states and an assessment of current theories of behavioural change and how these relate to travellers' attitudes and behaviour.

The conclusions of the review were targeted at helping the partners involved in the design and implementation of the TAPESTRY case studies to understand:

- ? the basic theory of behavioural change,
- ? the relationship between the basic theory of behavioural change and travel behaviour (especially in the context of how it relates to the process of changing travel behaviour),
- ? the importance of communication strategies and the different types of campaigns,
- ? the important elements in designing and implementing the right campaign,
- ? the importance of monitoring and evaluating their campaigns, and
- ? the need for integration of programmes and campaigns at different levels.

One of the key messages identified by the best practice review was that monitoring and assessment needs to be built into the project design from its inception and to be carried out to the highest possible scientific standards. In the majority of campaigns reviewed, monitoring and assessment activities were missing, or at best inadequate. The particular benefits of a comprehensive monitoring and assessment campaign have been identified as:

- ? Setting a baseline through assessment of initial behaviour / awareness / acceptance
- ? Identification of target groups
- ? Setting objectives and related targets
- ? Monitoring interim progress (with respect to the effectiveness of specific media or messages)
- ? Measuring changes in behaviour / awareness / acceptance
- ? Assessing level of involvement of key actors

- ? Identifying contextual / external influencing factors
- ? Measuring success vs. the objectives
- ? Assessing campaign cost effectiveness
- ? Identifying future opportunities (new target groups) or dangers (campaign over exposure)
- ? Helping with transferability

In order to achieve these benefits the basic process for the development and application of an assessment programme includes the following stages:

1. Establishing an assessment framework / plan (using the “before” and “after” approach and controls);
2. Defining objectives;
3. Determining indicators;
4. Collecting data and monitoring techniques.

TAPESTRY is assessing each campaign’s performance against a common set of indicators to measure cost effectiveness, socio-economic influence and their contribution to long term sustainable travel patterns. This is termed the TAPESTRY Common Assessment Framework (CAF) and has been designed as an aid to better assess and hence understand the internal structure, impact and success (or otherwise) of the campaigns. It achieves this by setting out core indicators and descriptors to facilitate assessment of the effectiveness and efficiency of campaigns and by providing guidelines on the selection of the most suitable evaluation tools, sampling methods, and data collection options.

The CAF is set against the background of a new model developed as part of the project called the “Seven Stages of Change”. This model builds on earlier research into behavioural change and attempts to set out the stages in the process of changing travel behaviour to assist the campaign initiators in the planning and targeting of their campaign and provide a “barometer” against which any progress that individuals exposed to a campaign make towards the ultimate goal of lasting behavioural change.

The model sets out a seven stage process:

1. Awareness of problem
2. Accepting responsibility
3. Perception of options
4. Evaluation of options
5. Making a choice
6. Experimental behaviour \*
7. Habitual behaviour \*

\*There are some cases where behaviour is a one-off event for a given individual (e.g. making a visit to a particular area as a tourist). Here the notions of ‘experimental’ and ‘habitual’ behaviour are not applicable and they reduce to one-step, assessing whether behaviour was influenced by the campaign.

To assess the TAPESTRY campaigns, the model foresees ten factors to be analysed:

- ? Strategic policy objectives;
- ? Non-campaign measures;
- ? Campaign initiator;
- ? Campaign objectives (operational targets);
- ? Inputs;
- ? Campaign management;
- ? Outputs;
- ? External factors;
- ? Campaign recall;

? Campaign impacts.

and supplies a suggested methodology for each factor to be measured in a standard way within each of the TAPESTRY case study campaigns.

Use of the Common Assessment Framework is helping TAPESTRY translate the lessons learned from the case studies into a series of outputs such as best practice guidelines designed to improve the process of campaign building and implementation in the future. Similarly, application of the CAF to a wide range of campaigns in a controlled environment will allow it to be tested and improved prior to being launched as a proactive tool for the design and assessment of future campaigns.

A full analysis of the management process involved in developing the campaign framework is available to those campaigning organisations that are interested in an assessment of their own internal functioning. A method of assessing the actual campaign material and providing a design guidance checklist is also under development as part of the process of assessing the effectiveness of the individual TAPESTRY campaigns.

When completed at the end of 2003, the output from TAPESTRY will increase the knowledge and understanding of how effective communication programmes or campaigns can be developed to support and encourage sustainable travel behaviour throughout Europe. Hence, the tools and manuals which will be produced at the conclusion of the project in late 2003 will enable the production of more cost effective campaigns, reaching greater numbers of people and bringing about higher levels of behaviour change and so will be of direct interest to transport policy makers, managers and operators across Europe. The project will deliver:

- ? A review of EU funded research identifying best practice in travel awareness campaigns;
- ? Development and implementation of 15 different case studies;
- ? Assessment and cross site comparison of case study results;
- ? Dissemination of the results and recommendations from the case studies.

The outputs from TAPESTRY will be:

- ? Development of best practice guidelines for those who wish to bring about changes in travel behaviour;
- ? Highlighting the contribution of communications initiatives to achieving policy objectives at the local, regional, national and European levels;
- ? Detailed reports on how travel awareness, communication, education and publicity measures were developed within each case study;
- ? Assessment of which communication techniques and campaign types were most successful at supporting behavioural change in the contexts tested within TAPESTRY.

For more information about TAPESTRY see [www.eu-tapestry.org](http://www.eu-tapestry.org)

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# **USING COST EFFECTIVENESS FOR BENCHMARKING: LESSONS FROM MOST AND U.S. EVALUATION EXPERIENCE**

**ECOMM 2003  
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**Session 2f – Benchmarking: Learning to Perform Good Benchmarking**

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## **Abstract**

This paper describes U.S. and European experience with evaluating the impact of Mobility Management (MM) projects and programs. It focuses on measuring the reduction in car use, amount of travel, harmful air pollutants, and petrol use. It concludes by recommending that the cost effectiveness of Mobility Management, in meeting societal mobility objectives, may be the primary measure of success, particularly in the view of policy-makers and those controlling public funding for these projects.

## **Introduction**

How do you measure the success of Mobility Management projects and programs? The proportion of the population aware of MM? The number of people that request the offered services? The extent of political acceptance by local policy-makers? The ability to influence your target market? Or is it the ability to get people to switch to sustainable modes of travel? While all of these project objectives are appropriate, Mobility Management will ultimately be judged on its ability to change people's travel behavior from the automobile to more sustainable modes, such as public transport, bicycling, walking, or sharing rides to work in a carpool or vanpool. It is this change in travel behavior that can be translated into transportation system changes (e.g., reduced traffic congestion) and environmental improvements (e.g., CO<sub>2</sub> reduction). Reduced reliance on the automobile may, in the longer run, also influence urban sprawl and reduce our dependence on oil.

These broader goals and potential influences of Mobility Management can be boiled down into a relatively finite set of performance measures. Reductions in car use (also called vehicle trip reduction) is at the heart of MM effectiveness. Vehicle trip reduction can be translated into vehicle miles of travel (VMT) or vehicle kilometer (VKT) reduction to assess the amount of travel reduced. This, in turn, can be translated into automobile emissions reduced and energy reduction (i.e., petrol use).

Ex-post evaluation of Mobility Management (called Transportation Demand Management or TDM in the U.S.) is an evolving science. However, policy-makers,

especially in the U.S., want answers as to the impact, effectiveness and cost effectiveness of MM projects funded with public monies. They want to know what they are getting, in terms of fulfilling public policy objectives, for the money they approved to be spent on MM or TDM. Therefore, TDM evaluation in the U.S. is often required to assess the effectiveness of TDM projects in terms of the reduction of car use or vehicle trips reduced, VMT reduction, and emissions and/or energy reduction. In order to assess cost effectiveness, TDM evaluators have assessed the cost per trip, or mile, reduced and equivalent cost per pound (kilogram) of pollutants or gallon (liter) of petrol reduced. These cost effectiveness results can be compared to other Mobility Management projects, of a similar nature, implemented elsewhere. However, policy-makers, who have to make decisions between competing transportation interests, sometimes want to know how cost effective TDM is in meeting regional mobility objectives *in comparison to* other solutions, such as infrastructure expansion.

Program evaluation in the U.S. seems to be moving toward comparative cost effectiveness, where the cost effectiveness of MM strategies is compared to other mobility strategies, such as providing more public transport or highway infrastructure. A landmark study of TDM in the U.S. from 1993 estimated that it cost society \$6.75 per one-way trip to accommodate an automobile with new highway capacity and \$4.10 per trip with new public transport service. It also estimated that employer TDM programs can reduce a one-way automobile trip for about \$1.33.<sup>1</sup> Therefore, in this case, MM can take a car off the road for one-fifth of the cost of accommodating it with new roads. *This seems a powerful argument for MM and the ability to decouple transport expansion with economic growth.*

This paper discusses experience with TDM evaluation in California via three illustrative case studies and then compares this experience to the evaluation lessons learned from the E.U.-funded Project MOST (MObility STRategies for the next decades). The paper concludes with some conclusions and recommendations for U.S. and European Mobility Management evaluation practices.

### **Evolution of Cost Effectiveness Evaluation Methodology**

The genesis of the cost effectiveness methodology discussed in this paper can be traced, in part, to evaluations conducted in southern California in the mid – 1990s. Southern California is widely considered to be an innovator in the area of Mobility Management and TDM. This is partially due to the severe traffic congestion and air quality problems facing the region, but also to a spirit among public policy-makers that TDM should be part of the solution to these problems. In the 1990's several regional funding agencies sponsored TDM projects in order to learn which Mobility Management measures might be the most effective in contributing to regional mobility and air quality policy objectives. These programs included:

- ? TDM “Immediate Action Projects” sponsored by the Los Angeles County Metropolitan Transportation Authority (then LACTC) using federal, state and county transportation funds.

- ? “Discretionary Projects” funded by the South Coast Air Quality Management District using AB 2766 funds (derived from motor vehicle registration surcharges) to be used for low cost pilot projects with immediate results.
- ? Projects funded with toll revenue from the San Diego – Coronado Bay Bridge to reduce congestion in the corridor.

The objective of these programs, as illustrated by those of the Los Angeles County program, was to “demonstrate and quantify the cost effectiveness of TDM strategies in reducing congestion by eliminating peak period trips, reducing vehicle miles of traveled on the regional system, and reducing emissions.”<sup>2</sup> The evaluation of each of these funding programs resulted in a consistent set of assessments for some 58 TDM projects, including: new public transport services, financial incentives for using sustainable modes, bicycle projects, alternative fuels, telecommunication substitutes, vanpooling, and others. The basic methodology used to determine cost effectiveness can be summarized as:

1. Determining **the number of NEW users** of a given sustainable mode (e.g., new public transport riders, new vanpool or carpool riders, new bicyclists, etc.) from ridership statistics or counts.
2. Determining the **resulting vehicle trip reduction** by assessing the mode from which NEW users switched (equating trip reduction to switches from driving alone to shared modes or from lower occupancy modes, such as carpooling, to higher occupancy modes, such as public transport) using user surveys.
3. Translating vehicle trip reduction to **vehicle miles of travel (VMT) reduced** by applying an average trip distance (often from regional planning sources) to the number of trips reduced.
4. Applying average automobile emission factors for key pollutants to trip and VMT reduction to derive **emission reductions**.
5. Dividing trip, VMT and emissions reduced by program costs (annual or daily) to derive a normalized **cost per unit of reduction**.

By evaluating 58 projects, a range of findings, in terms of cost per vehicle trip, cost per mile of travel and cost per pound of emissions, could be calculated. This comparison of 58 TDM projects was summarized in a research paper published in 1998 by the Transportation Research Board.<sup>3</sup>

These research results have since been used as a benchmark to evaluate similar TDM projects in California and elsewhere. Since a range of cost effectiveness was derived for trip, VMT and emission reduction, other programs can be compared to this range to assess whether they are “within” the bounds of previous experience or represent more or less cost effectiveness results. This allows policy-makers to make informed decisions whether the TDM projects they are funding are relatively cost effective and which specific TDM measures, among those funded, are the most cost effectiveness.

The following three case studies show how this benchmarking process has been used to evaluate TDM programs in San Diego, Los Angeles and San Luis Obispo,

California. The case studies illustrate three different applications for TDM: a Transportation Management Association (similar to a Mobility Center), a county-wide TDM program, and a corridor TDM program. The Los Angeles study also shows how TDM cost effectiveness can be compared to other mobility solutions, in this case an extension to a light rail (tram) line.

### **Coronado TMA Trip Reduction Program Evaluation – San Diego, California**

A primary recipient of the bridge toll revenue funds in San Diego was the Coronado Transportation Management Association (CTMA). In 1999, the Board of Directors of the CTMA commissioned an evaluation to assess the cost effectiveness of the TDM programs they operated in meeting their objectives of reducing congestion and improving air quality.<sup>4</sup> The evaluation assessed four fundamental program areas: vanpool formation, transit fare subsidy, a bicycle club, and the overall effectiveness of the CTMA in promoting sustainable modes. Using existing surveys of program participants (vanpoolers, bicyclists, and transit riders), the evaluation calculated the number of trips, miles, and emissions reduced by each of these program elements. It then divided these annualized impacts by the annual cost of each program element to establish the cost per trip, mile and pound of emissions reduced. These cost effectiveness findings were then compared to regional statistics (for the entire San Diego regional TDM program) and to the results from the research paper comparing the 58 TDM projects, described above (abbreviated here as “TRR #1641”).<sup>5</sup> The results of this comparison are shown in the table (all costs are in US\$).

#### **Coronado TMA Comparative Cost Effectiveness Assessment**

<b>Program Element</b>	<b>Cost per Vehicle Trip Reduced</b>	<b>Cost per Vehicle Mile Traveled Reduced</b>	<b>Cost per Lb Emissions Reduced</b>
<b>Vanpool</b>			
CTMA	\$1.72	\$0.03	\$1.99
TRR #1641	\$1.33 - \$20.49	\$0.03 - \$0.48	\$1.45 - \$46.67
San Diego Region	\$1.66	\$0.03	n/a
<b>Bicycle</b>			
CTMA	\$0.16	\$0.02	\$0.62
TRR #1641	\$0.43 - \$4.04	\$0.02 - \$0.71	\$0.83 - \$26.00
San Diego Region	\$3.10	\$0.45	n/a
<b>Transit Subsidy</b>			
CTMA	\$1.35	\$0.03	\$1.63
TRR #1641	(\$0.44) - \$7.04	(\$0.01) - \$0.37	\$0.63 - \$19.98
San Diego Region	\$1.45	\$0.10	n/a
<b>Overall Program Cost (including overhead)</b>			
CTMA	\$2.05	\$0.05	\$6.58
TRB #1641	\$2.65 - \$3.48	\$0.18 - \$0.19	\$7.85 - \$9.23

The table reveals that the programs offered by the CTMA in 1999 compare very favorably to the comparative research study of similar programs and to the regional TDM program. As such, it was concluded that the CTMA reduced trips in a very cost-effective manner when compared to peer projects around California. The purpose of the evaluation was to compare the *range* of experiences elsewhere to the costs and impacts of the CTMA's programs -- to benchmark the Coronado program within this experience from southern California. As compared to other vanpool, bicycle and transit subsidy programs, as well as other TMAs, the CTMA reduced trips, miles, and emissions at or below the cost of other programs included in the comparative evaluation. The bicycle club appeared to be the most cost effective program, reducing each daily one-way trip for only US\$0.16. However, the total number of trips reduced via bicycle commuting was far less than for the vanpool or public transport program element.

The CTMA's Board of Directors used these findings to show that their TDM activities were as cost effective as other programs in the region or the state. Unfortunately, the bridge toll revenue disappeared when the toll was removed and along with it the active CTMA TDM programs.

### **LACMTA Rideshare Evaluation Project – Los Angeles, California**

In 2002, the Los Angeles County Metropolitan Transportation Authority (LACMTA), which operates and funds both public transport services and "ridesharing" services (promotion of carpools and vanpools), commissioned an evaluation of their Mobility Management program. Three TDM program elements were evaluated: ridematching (matching prospective carpoolers and vanpoolers together into shared ride arrangements), vanpool subsidies, and financial incentives for new users of sustainable modes. Surveys of ridematching information recipients, incentive recipients, and vanpoolers were used to determine the number of new participants in these programs. Survey respondents were asked about current and prior travel behavior to assess mode shifting from driving alone and lower occupancy modes to higher occupancy modes.

The evaluation then established the cost per new participants (also called rideshare "placement" or person placed into a shared ride mode), cost per trip reduced, cost per mile of travel reduced, and the cost per pound of pollution reduced.<sup>6</sup> These performance measures were then benchmarked against other programs in California and elsewhere in the U.S. For example, the cost per trip reduced was calculated to be US\$2.90 cents for the ridematching service, US\$3.04 for the incentive program, and 54 cents for the vanpool subsidy program. The evaluation concluded that the vanpool program was very cost effective, as compared both to the ridematching and financial incentive program and to other programs around the state. This information has supported plans for an increase in the number of vanpools in the region from 2,000 to 5,000 over the next 25 years.

Perhaps the most interesting comparison within the LACMTA Rideshare Evaluation study compared the cost effectiveness of the rideshare program to that for other programs funded or operated by the agency. The agency is a strong proponent of performance-based planning for all modes. Policy-makers, who served on the oversight committee for the study, wanted to know how the TDM program compared to other mobility options supported by the agency. TDM program cost effectiveness

was compared to that of a new rail line extension being built in the region. The cost per new daily rider of the Eastside LRT line was estimated to be US\$9.60 to US\$10.76 to build and operate the line. The operating cost alone was estimated to be US\$2.66 to US\$2.76. The average daily cost to place a commuter into a ridesharing arrangement was estimated to be US\$0.82 and the cost per vehicle trip reduced was estimated to be US\$2.80 for all three TDM program elements. Thus, even when public transport operating costs alone are considered, the TDM program is as if not more cost effective than the new rail extension.

The evaluation information deemed the Los Angeles County TDM program cost effective, both when compared to peer projects elsewhere and to other mobility options. The evaluation was used by policy-makers in their annual budget deliberation and contributed to a US\$1 million increase in the annual budget for the rideshare program.

### **Cuesta Grade TDM Program Evaluation – San Luis Obispo, California**

In 1999, work began on US 101 through the Cuesta Grade to reconstruct the facility in order to make safety improvements and build truck-only lanes. US 101 is a major north-south highway in California following the route of Spanish missionaries. The Cuesta Grade corridor is located in San Luis Obispo County between Santa Barbara and the Central Valley. The San Luis Obispo Council of Governments (SLOCOG), the regional planning agency for the area, received a grant from the state department of transportation for some US\$3 million to implement TDM programs in order to mitigate congestion during reconstruction. At the end of the reconstruction period, SLOCOG commissioned an evaluation of the TDM programs implemented in the Cuesta Grade to assess which programs should be continued after the highway reconstruction funds were no longer available.

Therefore, a cost effectiveness evaluation was undertaken to compare the three primary TDM program elements: additional peak period transit service, vanpool formation, and a financial incentive for carpools. This was designed to compare the three TDM program elements to one another and to other experience from Southern California (from the 58 project comparative research).

Surveys were undertaken among the riders of the expanded public transport service in the corridor, of vanpool riders, and of recipients of gasoline coupons awarded to regular carpools. The evaluation revealed that the TDM program removed about 300 cars from the highway each day.<sup>7</sup> The comparative cost effectiveness evaluation found that the cost per trip and mile reduced was within the range of experience found in the analysis of the 58 projects. However, the cost per pound of pollutants reduced was higher than other programs in southern California for the vanpool and carpool programs. Since the programs were implemented to reduce congestion, the comparative evaluation concluded that the Cuesta Grade TDM program was relatively cost effective in reducing car use. The most cost effective program was determined to be the carpool gasoline coupons, called the “Fill up Your Carpool” promotion, which reduced a daily vehicle trip for US\$3.36 and a mile of travel for 13 cents. The SLOCOG Board of Directors will use this information to make decisions about future funding levels to maintain transit service improvements, subsidize vanpools and/or provide incentives to carpools.

## **MOST Evaluation Experience**

Perhaps the most comprehensive MM evaluation undertaken to date in Europe is the recently completed Project MOST. MOST involved some 30 partner projects implemented throughout Europe, focusing on MM for new travel markets, such as tourists, schools, hospitals, etc.<sup>8</sup> Based on experience gained during the MOMENTUM/ MOSAIC projects that preceded MOST, and a very comprehensive set of monitoring and evaluation guidelines, Project MOST strived to gather consistent, quantitative findings on the impacts of the TDM programs implemented by partners. This included both levels of awareness, acceptance, and utilization of offered services, but also impacts on the transport system resulting from individual travel behavior changes. Changes in travel behavior could be translated into a reduction on car use or vehicle trip reduction, vehicle kilometer of travel reductions or other reductions, such as pollution, energy or noise. The evaluation process also created a framework for comparative effectiveness and cost effectiveness evaluations and encouraged partners to collect sufficient data to make these comparisons.

However, due to budget, timing, and other factors outside the control of the MOST organizers, measurable impacts (travel behavior changes) were extracted from only about half of the partner MM programs. The primary measure of effectiveness was a reduction in car use among the target population. This reduction in car use ranged from 7-15% for a limited set of MM projects. These results seemed to compare favorably to the other European experience with employer MM programs. Other measures included an increase in public transport use, or in walking or bicycling.<sup>9</sup>

In one case, where before and after survey data was available for commuters to a large employment center in Málaga, Spain, it was possible to calculate the reduction in vehicle trips and kilometers of travel to the site. This MM program, which involved active coordination by a MM office, improved public transport service to the site, and carpool matching services, lowered the average number of vehicle used by every 100 employees from 80 to 72 as a result of the MM services. This equates to a 15% reduction in car use.

Program costs were not available within Project MOST with which to calculate the cost per trip or kilometer reduced. It should be noted that a majority of the partners fulfilled the objectives they set for themselves at the beginning of MOST, but these objectives seldom involved quantitative impacts. MOST was very successful in demonstrating the value of MM as applied to new target markets. It also helped evaluators understand and craft the steps necessary to evaluate MM effectiveness in terms of travel behavior changes and other key indicators of success. Finally, it helped MOST partners and MOST administrators better understand the need for and requirements of evaluation.

## **Conclusions: Comparing U.S. and European Experience**

European Mobility Management experience is maturing at a rapid rate. Many European and national MM initiatives are aimed at demonstrating the benefits of MM so that local efforts can be spawned on a wider basis and local policy-makers will assume responsibility for MM. This is very similar to the experience in the U.S.

where federal, state and regional demonstration projects preceded local efforts to integrate TDM into ongoing transport plans and programs.

However, if U.S. experience is to suggest a lesson for the future of European Mobility Management evaluation, it is that of local accountability. As MM becomes integrated into local affairs, local policy-makers will want to know how effective and cost effective the MM programs are in meeting their mobility and sustainability policy objectives. MM will have to compete with other interests, including telematics, public transport investment, and even road expansion for funding and favor. The ability of MM professionals to present program success in terms of concrete measures of effectiveness may determine ongoing support and funding. It may not be sufficient to report on how many people received information or how satisfied they were. Policy-makers will ultimately want to know, did the program change people's travel behavior and how does this relate to making conditions better on area roads?

While there are many ways to assess and present these results, experience in California with measuring the cost per unit of reduction (trip, mile and pollution) and comparing this to a range of experience has allowed local programs to use benchmarking to assess their cost effectiveness and defend the program to policy-makers and other funders. This has proven to be a very powerful tool for TDM program managers. In the future, European and national TDM support programs might provide the information needed for this type of benchmarking. If U.S. experience is an indication, policy-makers will be asking for this information and successful programs will develop the means to generate comparative cost effectiveness findings.

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<sup>1</sup> COMSIS Corporation, "Implementing Effective TDM Measures: Inventory of Measures and Synthesis of Experience," USDOT Report # DOT-T-94-02, September 1993.

<sup>2</sup> COMSIS Corporation, "LACTC TDM Evaluation Program: Coordination and Evaluation Guidance," prepared for LACTC, January 1993.

<sup>3</sup> Cynthia Pansing, Eric Schreffler, and Mark Sillings, "A Comparison of the Cost Effectiveness of 58 Transportation Control Measure Projects," Transportation Research Record #1641, 1998.

<sup>4</sup> ESTC with Greg Stempson, "Coronado TMA Trip Reduction Program Evaluation," prepared for CTMA, 1999.

<sup>5</sup> See also – Eric Schreffler and John Anderson, "Evaluation of San Diego – Coronado Bridge Toll revenue funded TDM and Transit Projects" paper presented at ECOMM '98, Nottingham, England.

<sup>6</sup> LDA Consulting and ESTC, "LACMTA Rideshare Program Evaluation – Comparative Cost Effectiveness," prepared for LACMTA, April 2002.

<sup>7</sup> ESTC and TMS, "Cuesta Grade TDM Program Evaluation," prepared for SLOCOG, March, 2003.

<sup>8</sup> See also papers presented at ECOMM 2003 by Wilhelm, Finke, and Mueller on Project MOST.

<sup>9</sup> FGM-AMOR, "Report on the MOST Evaluation Results: Report D5", prepared for European Commission, December 2002.

# ECOMM 21-23 May 2003 - 7<sup>th</sup> European Conference on Mobility Management

## Workshop 2f - Learning to Perform Good Benchmarking

### **Title:**

#### **Effective Benchmarking – Growing Public Transport in Sweden and Ireland**

The role of Benchmarking and Quality Tracking in knowing what customers want and informing Transport Managers of service priorities.

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# Effective Benchmarking – Growing Public Transport in Sweden and Ireland

## Introduction

Benchmarking often takes the form of an annual measurement of service level based on Operator or PTA – based criteria. There is a lack of rapid feedback loops to the operations planners and little regard for the needs of the customer. In this paper we will demonstrate two approaches to benchmarking and tracking that are

- ? dynamic
- ? customer-driven and market responsive
- ? include measurement of Company – defined standards
- ? have rapid feedback to the operator
- ? rapid response to customer needs
- ? and involve organisational learning

## The Swedish Experience

### Introduction

From in 1996 to 1999, the PTAs were performing annual market surveys targeting both non-users and frequent users of public transports. The aim of the survey was twofold. Primarily to provide each PTA with information relevant to their respective market, but the survey also aimed to stimulate benchmarking. The number of participating PTAs in the first couple of years was acceptable – almost 2/3 of all Swedish PTAs participated. But in 1999 only half of the PTAs took part in the survey. There were many critical voices raised – information was too late and too aggregated. I.e. the information did not give any insight into the operative and strategic issues facing the PTAs, and the benchmarking activities were minimal at best. The consensus was that it was time for a change.

### The dynamic market

Real-time information systems, giving passengers of public transport services up-to-date information about current timetables etc, is nothing new and has been implemented and developed in the bigger cities around Europe and the world during the past few years.

But from a marketing point of view, the traditional mindset when it comes to customer satisfaction surveys is that they are to be performed annually. In fact, the annual survey prevails as the dominant approach within many other service markets as well. The major drawback of only “talking to the passengers” once a year is that it reinforces our view on the market as static rather than dynamic. In order to understand the fluctuations in the marketplace, i.e. to understand how market interventions affect the market and the customers, those who are responsible for the development of transport services need better and more up-to-date information, preferably in real time. With instant market feedback, it’s possible to create a market reaction learning process that will enable the users to make better decisions that ultimately will improve the public transport services.

### The new Public Transport Barometer

In setting up the new Public Transport Barometer the major change from the previously conducted market surveys was the development of the web based analysis tool. The main objective for the development of the new barometer was to tailor the survey in order to shorten the step from analysis to operative activities and strategic decision making.

The second aim was to increase the accessibility to the information that in turn would trigger a more widespread benchmarking. The web based analysis tool enabled the users to reach these goals. Firstly, the use of the web offered the PTAs the possibility to create numerous reports annually without any extra cost. Secondly, the results could be spread throughout the organisation and always be at hand, as long as you are able to log on to the Internet.

By changing survey the reporting media from paper to web, the following changes were created in the way the PTAs work with market information today:

(1) Non-stop collection of data about the markets attitudes and behaviours. The use of web reporting gave the PTA the opportunity to report information continuously, without the cost increase that traditional reporting would give. The set-up was therefore that each PTA performs the same number of interviews as in the old annual survey, a minimum of 1000 per year, but in a tracking manner resulting in monthly results with good statistic precision.

(2) All the results and analysis are presented on the Web. Each PTA logs onto a secure password protected website to analyse their market. This enables the PTAs to almost get “on-line” with their market and thereby creates a solid foundation for successful decision-making. This gives the management of PTAs greater possibilities to get exactly the information he/she needs in exactly the way they prefer. The tool is interactive and all data are presented in dynamic diagrams and tables. The PTA can customise the analysis by interactively selecting the target groups and the question areas of interest. As an example, the user could compare the own results with other PTAs and of course the average values for the whole population of Sweden. All these comparisons are done in a few seconds using a minimum number of mouse-clicks. It’s an easy to use system, even for those who are not market analysts, with interpretation guides in order to help the PTAs draw the correct conclusions.

(3) The increased speed of reporting has given more actionable results. The interviews are made on a monthly basis with a report just a couple of days after the each month’s fieldwork is completed. This could be compared with the earlier situation where the fieldwork was done annually and the report came three months later. All interviews are conducted via telephone using a representative sample.

(4) The flexibility has increased. This tool gives the users the possibility to be flexible and include new questions every month. Thus, the barometer can be seen as an omnibus survey but with less cost.

(5) By creating an open system emphasis is put on benchmarking. All PTAs should be able to view and compare themselves with all other PTAs. This is done by one-click top lists regarding all quality areas measured. The barometer has caused the PTAs to ask questions such as; which other PTAs are similar to us, i.e. are competing in the same market context as we do? Why are they performing better than us in certain fields, and what can we learn from each other?

(6) The bulk of the analysis work is transferred from the research consultant to the PTA. Who is better to understand and interpret the market fluctuations than the very organisation that has the business- and local market knowledge and know the day-to-day work by heart?

#### Improved analysis capabilities

The changes above have given the PTAs new and improved ways of analysing their customers and their market. Aside from being able to analyse the results descriptively, i.e. comparing results for unique questions over time or compared to other questions or PTAs, we implemented the following pre-cooked analysis features into the webreport (see graphs at end of paper):

- Time series analysis for easy detection of satisfaction changes
- Top list function for easy benchmarking with other PTAs
- Importance/performance matrices based on multivariate analysis for finding the quality areas that have low satisfaction scores but that are important to the overall perception of the PTA

Some examples of the findings based on the analyses made by the PTAs are:

On an overall basis, the most critical satisfaction driver among customers is simplicity and reliability compared to the non-customers where of course simplicity is important but where departure times blocks them from using the public transport system. Of course, these results vary between PTAs and between different segments in the market.

One PTA detected a sharp decrease in the customers’ satisfaction with the drivers and instantly initiated a driver education programme. They have now halted the decline in satisfaction and are making improvements month by month.

Another PTA increased the fares by 10% and instantly saw a sharp decrease in customer satisfaction. After six months the market had accepted the fare change as the satisfaction scores were back to the level upheld before the change.

One PTA implemented a customer guarantee giving the customers the choice to take a taxi, paid for by the PTA, if the public transport was delayed a defined number of minutes. A successful marketing campaign explaining this service to the customers increased the customer satisfaction scores dramatically. Ten months after the campaign the satisfaction level has dropped slow but continuously, emphasising the importance of continuing communication with the market

There are other examples as well, and the market reaction learning process is in effect creating a knowledge bank that all PTAs can draw experiences from. The industry is learning about what effect different types of market interventions have on the customers such as fare changes, changing of time tables and routes etc. They are also starting to learn about how seasonal changes and external events of uncontrollable nature affect the market, for example accidents, bad weather and system failures due to breakdown in structures and vehicles.

### Overall effects of implementing the barometer

The general effect of having implemented the barometer is increased use of market information. The PTAs have received a greater understanding of their customers' and their market and how their actions directly affect the market.

Today, all but one of the PTAs are participating in the new barometer and are, in different extent, using the information generated in their product development and market- and communication strategies. Most PTAs also present the latest results on their reoccurring board meetings. It's fair to say that the barometer has become a great success. In the years 2001 and 2002 almost 30 000 telephone interviews annually have been conducted with the Swedish general public. The concept of the new barometer has also attracted attention from media and the politicians. Through the barometer, the management of the PTAs have gotten a renewed interest in the public transport sector and regard the obstacles ahead as an interesting and exciting challenge. The top management in the different PTAs recognise the barometer as a central tool to increase the organisations involvement in the process to develop a better product.

## The experience in Dublin

### Model for quality benchmarking and tracking

I reported to the ECOMM conference last year some details of the Quality Model developed in Dublin which is also based on QUATTRO. We adopted a longitudinal approach to development, taking the customer from pre-travel decision-making through to arrival at destination. Their needs, fears and requirements were tested at all stages. The emerging model was tested in focus groups and hall tests so that the items are worded in the language of the customer with importance weights measured and a further measurement for 'delight', what will make the customer want to come back.

This quality model is translated into a number of questionnaires that are operated by trained observers who carry out visual assessment of the transport environment according to strictly defined criteria ,who also interview customers on-vehicle and carry out 800 doorstep interviews each year. Measurement takes place throughout the day every weekday except in the months of August and December. Monthly reports are delivered to Depot Managers and full 6 monthly reports to Senior Management. All aspects of the service are covered from the cleanliness of the floor in the Lost Property Office, to politeness of Information Bureau Staff, provision of information on roadside timetables and displays, information bureau hard copy and timetables on the internet. With regard to the journey, all aspects from the waiting environment to bus cleanliness and the driver's uniform, not to mention punctuality and speed of journey are measured.

Company-defined performance criteria were developed as benchmark standards, written into the survey process and incorporated into a Customer Charter that I will describe shortly.

**(Slide 1 \*\*\*)**

Telephone interviewing is not at present a viable option in Ireland. Many of the people who use public transport do not have fixed-line phones. Some have 'pay as you go' phones which are of no value for survey purposes. Nevertheless our manual systems (we do not have the Swedish web-based tool) enable us to produce 3 month rolling reports within 3 weeks of the close of a monthly sample period.

## Development of the model

The previous method for auditing Dublin Bus quality relied on evaluation criteria researched in the market place at least 6 years before. Since then there have been significant changes in the market place in terms of customers' needs, expectations and perceptions of quality. Likewise there has been an equally significant improvement in Dublin Bus services.

Although the methodology addressed the evaluation of Customer Charter items, the changes mentioned above mean that Dublin Bus was not getting up-to-date management and marketing information for generation of the necessary changes that are required for growth and retention of customer base in the medium to long term. Furthermore there was some numerical evidence that dissatisfied customers are dissatisfied for reasons other than those identified by previous research or specified in the charter.

Therefore there was a comprehensive review of the criteria governing satisfaction with *travelling* and *journeys* in a broad context, rather than bus specific areas. In this way we were able to track the opinions, needs, expectations and perceptions of Dublin Bus customers and potential customers.

## Methodology

1. Analysis and review existing audit instruments and procedures
2. Review of previous Dublin Bus research and input from EU project STIMULUS
3. Review of UK Centro and DETR criteria
4. Qualitative research with 4 'user groups':
  - Frequent bus commuters
  - Off peak bus users
  - Car commuters
  - Young bus users
5. Design repertory grid questionnaires
6. Quantitative research with 300 members of the public as follows:
  - Frequent bus commuters
  - Off peak bus users
  - Car commuters n
  - Young bus users
7. Analysis of data
8. Re-draft of audit procedures and instruments ensuring compatibility with current audit overall results delivery format.

## Organisation impacts

### Customer Charter

(Slide \*\*\*)

Measurements of customer perceptions of quality led the quality manager to develop a customer charter, setting benchmark standards and promising to deliver these standards of service. All measures are compared with the standards set out in the charter. In this way, gaps are highlighted and managers know where to invest resources.

### Examples of charter items

- ? No bus will depart ahead of its advertise time
- ? At least 92% of services will run within 5 minutes of advertised time
- ? Staff will consider your safety and comfort when driving

(Slide \*\*\*)

Another issue highlighted by on-going customer measurements was customer perceptions of safety, especially on route 27. Early measurements in 1997 showed low perceptions of safety and the expected increase in passenger carryings after the introduction of a Quality Bus Corridor on the route did not materialise. Further probing found that new customers tended to be car owners who had greater expectations of personal safety while travelling.

(Slide \*\*\*)

Benchmarking route 27 against a different route (25A) highlighted the low scores in 1997.

In 2001 it was benchmarked against 3 other routes showing its position in relation to safety (not the worst) and indicated the scope for improvement to reach the same scores as route 46A (the best route) against which other routes are judged (more about route 46A below).

In late 2002, it was benchmarked against 8 other routes which run on Quality Bus Corridors where it came in joint sixth place on safety.

## Marketing positioning

**Slide \*\*\* – PCA**

Benchmarking also allows for a global positioning of each route relative to each other on the criteria scored by customers. In this slide we can see that route 46A is delivering on all dimensions, while route 27 is moving closer in terms of service delivery issues but still lower on safety issues. Routes 78A and 40 are lowest in this area however.

## TAPESTRY

### Background

The issue of personal safety on-bus was the main target of the Dublin Bus demonstrator in the TAPESTRY project. To back up the benchmarking data gathered on bus, a door-to-door survey of residents in the area found that lack of safety was leading to avoidance of the bus route in favour of other modes of transport. Discussion groups and surveys were held with school children in the worst affected area and following this, a campaign was designed to influence the attitude of young people towards the bus. **(Slide \*\*\*)** It was hoped to indirectly influence residents' perceptions of the bus also. The aim was to improve perceptions of safety and to increase use of the bus, especially off-peak use. The campaign ensured that the children were actively involved and that there were certain outcomes related to their activities.

### The Competition

The campaign took the form of a competition in four schools where the children were asked to design a picture, poem or song with theme of 'How the bus is useful to me'. Entries far surpassed expectations and were judged by a panel including Dublin bus personnel, Viacom, a commercial artist and Interactions Research. Prizes - including cinema tickets (by UCI), CDs and concert tickets (by FM104), a trip to an adventure centre (by Dublin Bus) – were presented at a party held for all the classes involved. This party was supported by Coca-Cola, Tayto and Cadbury. **(Slide \*\*\* Slide \*\*\*)**

### The campaign

The winning entries were then used to develop material for display along the route 27. One of the entries became a strapline 'The Dublin bus is here for us' and was displayed on 14 bus sides for 2 weeks in September 2002. Another was used to develop a poster and this was displayed in a number of bus shelters along the route along with information about TAPESTRY and what Dublin Bus was hoping to achieve. **(Slide \*\*\*)** 12 more entries were used to design the Dublin Bus corporate calendar for 2003. This was distributed to households in the area in December 2002 and to all primary schools in Dublin.

### The outcomes

Following this a further survey of residents was conducted to measure the impact of the campaign.

- ? 34% recollected the calendar and 46% of these felt that it improved their opinion of Dublin Bus **(Slide \*\*\* Slide \*\*\*)**
- ? 10% said they had started to use route 27 more in recent months **(Slide \*\*\*)**
- ? Daytime usage of at least twice a week increased from 22% of respondents in the initial survey to 48% in the post-campaign survey **(Slide \*\*\*)**
- ? Avoidance of the bus has decreased
- ? Feelings of safety on the bus have increased
- ? People are now more aware of vandalism, smoking and bad passenger behaviour indicating that these have become more unacceptable
- ? Cost of vandalism for the October / Halloween period (just after the bus side/shelter campaign in the field) decreased from over €3000 in 2001 to just over €1000 in 2002 **(Slides \*\*\* \*\*\* \*\*\*)**

The project was so successful that the company will repeat it citywide this year with further use of the TAPESTRY measurements as benchmarks.

(Slides \*\*\*)

### Organisation structure

Benchmarking and tracking activities have transformed attitudes within the Company. Ten years ago customer satisfaction and customer preferences were matters for the Marketing Department, not for Operations and Engineering. Now the Operating and Engineering Departments are as enthusiastic about learning from customer data. The benefits are clear to see.

Last year saw the creation of a new department devoted exclusively to 'Quality and Improvement'. The Company gained the award of ISO to its Information and Commercial departments and a whole new orientation towards quality and meeting customer needs has emerged. A comprehensive business plan devoted to quality improvement and meeting customer needs has also been adopted.

### Inter-depot competition

(Slide \*\*\*)

As seen in the slide, the Customer Charter results allow for benchmarking within the company showing the depots with the best performance and highlighting areas for improvement.

As well as customer results, internal procedures were also benchmarked. The winning depot received significant cash prizes for staff (around €400 per driver plus €6000 to the depot social fund) at a presentation involving the whole company.

Economic effects (business use), route profitability and growth of passenger numbers. Since 1992 customer satisfaction with services has risen from low levels of around 30% to around 70% thus putting the Company on a par with the likes of Microsoft for levels of satisfaction.

Slide \*\*\*

The economic effects are obvious when we look at customer numbers - and remember that this growth rate is against the background of a relatively stable population and a doubling of private car ownership every 5 years. (+4.3% over 4 years)

Slide \*\*\*

But the real benefit shows when service is delivered to the highest possible standards from a customer viewpoint. Passenger numbers up 2 ½ times in just over 5 years!

Slide \*\*\*

### Benchmarking applications summary (Slides \*\*\* \*\*\*)

So benchmarking is not just a passive information-seeking exercise. It is an active tool for bringing about organisational and service improvement initiatives.

- ? Speed (Immediacy of results)
- ? Continuous activity
- ? Simplicity and efficiency
- ? Market & customer driven quality models incorporating company specified benchmarks
- ? Results in a format useful to Operators / PTAs (flexible reporting styles)
- ? Sensitivity and flexibility allowing rapid measurement of effects of service changes Open reporting (where possible)
- ? Comparisons between services, business units and companies
- ? Bring the learning into the Company - drive organisation change and development
- ? Increased understanding of customers
- ? Be honest about the findings
- ? Feed results into market intelligence
- ? Disseminate to and involve all personnel
- ? Use it to detect and solve problems
- ? Change the organisation structure and procedures
- ? Take notice of what works!

### Future Plans

The next step must be to take a broader perspective and start thinking of public transport as just one more commodity in a competitive market economy. To this end we propose the formation of a

customer / market driven benchmarking scheme for positioning Transport in the world of competitive retail markets and propose setting up of Quality Improvement Groups comprising Executives and Managers from operating companies and PTEs.

(We offer to act as coordinators for this network and welcome further discussion (meeting \*\*\*\*\* ??))



**Title:** BYPAD (BicYcle Policy AuDit), a European benchmarking and quality management tool for improving local cycling policy

**Workshop:** Benchmarking (2f), learning to perform good benchmarking

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**Relevance to the conference theme:** Within the European BEST project (Benchmarking European Sustainable Transport), BYPAD is recognised as a practical benchmarking system for successful mobility management initiatives, more specific for local cycling policy.

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### **Cycling use stands or falls through the quality of local cycling policy**

The bicycle is a functional means of transport, which is nearly exclusively useful for short distances (< 5 km). Only for recreational use longer distances are acceptable. Towards a sustainable transport policy in cities the bicycle as a functional means of transport is the most important. Because of its main role in local trips it is obvious that the cycling policy should be executed as much as possible on this local level, with support from higher authorities.

#### *Cycle use – cycling policy: the chicken-and-egg-problem*

The quality of the (local) cycling policy and the level of cycling use are inextricably bound up with each other. On short term there is a spiral of cycling use and cycling policy where you can't separate cause and effect. A good cycling policy is also the cause of cycle use, of demands of users where the policy should react on with a co-ordinated cycling policy. When nobody cycles or nobody has a need to cycle, there will not be a cycling policy and cycle use has no chance to take up a position in the transport system.

However on long term the logic of cause-effect is clearly visible. An integrated transport policy, which gives cycling a continuous and vast position, results in a higher cycle use within the years. On a European level it is clearly visible that there are differences in cycling use between countries, regions and cities although this cycle use was almost on a same level at the beginning of the 20<sup>th</sup> century. In cities with a high level of cycling, the bicycle has kept a place on the street, in the policy, in the collective memory, in the culture. In cities where the level of cycling has become low, this continuous place wasn't there. The bicycle disappeared from the scene or the demand for a cycling policy came from a small 'marginal' group. Therefore it is of absolute importance to give cycling a vast position in the transport policy. Mobility management could take an important role in safeguarding this continuous attention for cycling policy. Some Dutch cities always had a relatively high level of cycle use because of this continuous emphasis on cycling. Nevertheless also cities like Copenhagen manage it to become real cycling cities although there wasn't a high cycle use in the 50's and 60's. This means that the emphasis and quality of the local cycling policy is vital for the cycle use (on long term).

### ***BYPAD (BicYcle Policy AuDit)***

The importance of a high quality local cycling policy is recognized in the European project BYPAD (BicYcle Policy AuDit), carried out by Langzaam Verkeer, the European Cyclists' Federation and Austrian Mobility Research. BYPAD developed a self-evaluation tool for the

improvement of local cycling policy. The BYPAD-method is based on the idea of total quality management, which has become standard in the business world for a long time.



Langzaam Verkeer

Through quality management techniques, companies strive to improve products and services, to optimise the production process, to strengthen the relation with the customers, ... this with a view to a higher return and a bigger market share. The improvements are based on benchmarking processes where companies learn from best performances in other companies. Different quality management models exist, for instance the ISO 9000 series, the EFQM-model (European Foundation for Quality Management), etc.

With a view to increased cycle use and improved cyclist safety, this approach of quality management can also be applied for improving local cycling policy. The BYPAD project has developed such a tool, which has been tested in 7 European cities: Gent, Graz, Troisdorf, Birmingham, Zwolle, Ferrara and Grenoble.

*BYPAD approach*

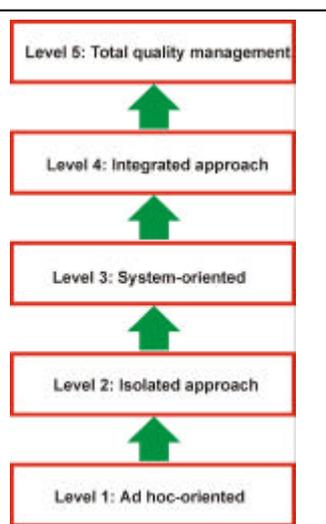
BYPAD regards local cycling policy as a dynamic process. It does not only focus on the results, but also on the way that cycling policy is embedded in the political and administrative structure.

BYPAD is kind of a mirror for the city's cycling policy. An evaluation group looks after the weakest link in the quality chain, and sees where improvements are necessary and possible. This evaluation group consists of the local politicians, officials and the bicycle user groups. The evaluation starts with an individual judgement by each member after which they come together for a consensus meeting where the individual estimations are confronted with each other. An external process supervisor guides this self-evaluation.

*BYPAD-scheme*



*Ladder of development*



BYPAD distinguishes 7 modules for which the quality of the cycling policy is determined. The interrelation between the modules is visualised by putting them on a spiral of development. Each module is put on a ladder of development, which gives the quality level of the city's cycling policy. On basis of this ladder of development the city can set objectives and it will be possible to follow the evolution of the city's cycling policy.

### Results and experiences of BYPAD

The first experiences from the cities are mainly positive. BYPAD requires an investment in time, but it is worth the effort. The consensus negotiations in particular were judged as a great success. The partners entered into a dialog and were confronted with the contrasting assessments of the quality of their local cycling policies. Cities were also enthusiastic of the complete approach of the instrument. This way BYPAD is also an inspiration source of new ideas.

The following statements give an impression of the experiences of the cities in BYPAD:

- ✍ “BYPAD proves that the critical eyes of city and users together form a splendid evaluation team.” *Ilse Bortels, Bicycle Association, Gent*
- ✍ “Sitting around a table to reflect on local cycling affairs here altogether is already a benefit of BYPAD. We should do that more often instead of fighting each other via the media.” *Peter Schmitz, project manager urban development, former secretary general of the pilot project 'Cycle-friendly Troisdorf', City of Troisdorf*
- ✍ “Filling in the BYPAD questionnaire is enlightening: it shows where you are and points the directions you can choose to go.” *Christian Favre, transport department, Grenoble*
- ✍ “BYPAD is the instrument for measuring the professionalism of our cycling policy” *J.C. van Hasselt, alderman traffic and urban planning, Zwolle*
- ✍ “The next steps we have to do in our cycling policy are indicated by BYPAD” *Graham Lennard, Transportation department, Birmingham*
- ✍ “Just having one official meeting with the evaluation group is not sufficient to form a good picture of a local cycling policy. It is advisable to have one or two separate meetings with the members of the evaluation group.” *Jürgen Scholze, ADFC, Troisdorf*
- ✍ „The BYPAD questionnaire is a good document for quality management in cycling policy. We have cycling in our genes.” *Alessandro Bratti, deputy mayor on urban ecology, Ferrara*.

### Benchmarking in cycling policy



BYPAD-cities (1999-2001)

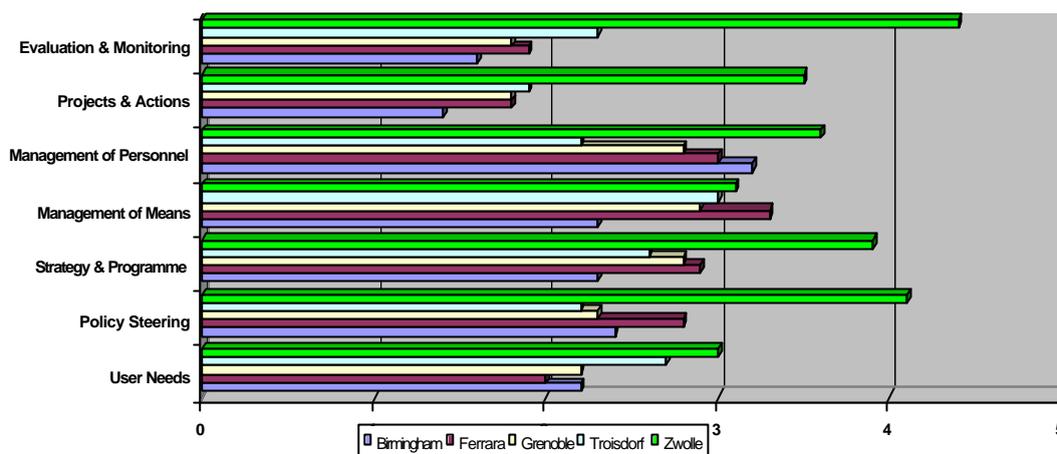
Besides the idea of a self-evaluation, BYPAD also wanted to emphasize the idea of learning from the best practices in other cities. The main idea of benchmarking is that performance can be improved by identifying best practices and by analysing the reasons for performance differences. The exchange of experiences between the different BYPAD-cities was not always successful. It was difficult to work with different political structures and cultural backgrounds, there were the language barriers and the fact that quantitative data are not always comparable with each other. The exchange of experience between the cities themselves needs extra efforts before we can speak about a real benchmarking process.

On the other hand cities are really interested in how other cities are dealing with their cycling policy. The networking between the cities will be a vital element in the future developments of BYPAD.

In BYPAD the exchange of experience and the identification of the best practices was done by exchanging the city reports where a score for each module is given.

The table below shows a summary of the scores of each module for the cities. The results from Gent and Graz are not included, because their results are not comparable with the other

cities. As these two cities were test cities, the questionnaire has been adapted after the audits in Gent and Graz



By comparing these scores with each other it isn't possible to judge if cities are on the right way or not. This judgement will only be possible by following up the evolution of these scores by implementing BYPAD on a regular basis (e.g. once in 2 years).

*Benchmarking is not showing how good you are!*

The competitive character of a lot of benchmarking projects shifts up the main goal of quality improvement to quality showing. That way benchmarking will be used as a promotion instrument. Therefore it is important that cities who are participating in benchmarking projects really want to improve their policy and not only want to show how good they are. On the other hand it will be extra motivating for cities when there is some kind of competitive element. In the follow up project BYPAD+ (see below), cities will receive a quality label indicating the current situation and the advancements in their cycling policy.



### ***BYPAD+: training on and implementation of BicYcle Policy AuDits in European cities***

Because of the success of BYPAD a follow up project BYPAD+ has started in the beginning of 2003. The goal of BYPAD+ is to spread the use of the bicycle audit and benchmarking system BYPAD in European cities. BYPAD+ is a project funded by the European Commission (SAVE Programme); it started in January 2003 and runs until the end of 2004.

BYPAD+ recognises the existence of different evaluation methods for local cycling policies (benchmarking tools in the UK and Switzerland, Cycle Balance in the Netherlands, German approach in Nordrhein-Westfalen and the BYPAD tool). During an expert meeting - organised at the end of January 2003 – both architects of these methods and a few representatives of the pilot cities already involved in the former BYPAD project exchanged their knowledge and experiences. The outcome of this meeting is the basis for the *improvement of the existing BYPAD tool*. This will result in a *BYPAD+ manual* for cities aiming at improving their cycling policy.

BYPAD+ creates a *Europe-wide network of consultants, the national contact points*, who will be trained by the core-consortium. These consultants will guide the cities during the implementation of BYPAD. The national contact points are also the contact for new cities,

which are interested in the application of BYPAD. In BYPAD+ there are national contact points from 15 different European countries.

The main part of the BYPAD+ project is the *implementation of the BYPAD tool in the 42 participating European cities and other cities interested*. The cities will play an active role in evaluating their cycling policy. The national contact point plays the role of external (objective) process supervisor, supported by the core consortium.

Another task in the BYPAD+ project is the *exchange of experiences and dissemination of results*. This will be done through the organisation of regional workshops, the participation at the Velo-city conference (September 2003, Paris) and the realisation of promotional material (leaflet, poster, launch of an interactive website in June 2003).

At this moment *42 cities* are participating in the project (of which 5 cities are still in negociation: Paris (F), Grenoble (F), Nantes (F), Firenze (I) and Kerava (Fi).

- Czech Republic: Pardubice, Olomouc, Ostrava
- Denmark: Odense, Viborg, Nakskov, Hillerod
- Finland: Helsinki, Tampere
- Germany: Ettlingen, Marl, Bünde, Koln, Münster, Lüneburg, Kiel, County Recklinghausen
- Ireland: South Dublin County Council
- Italy: Modena, Bolzano
- Netherlands: Emmen
- Portugal: Beja, Cascais, Seixal
- Slovenia: Ptuj
- Sweden: Lund, Växjö
- Norway: Drammen
- Switzerland: Lausanne, Geneve
- United Kingdom: Liverpool, Southwark, Lancaster
- Belgium: Brussels Capital region, Kortrijk, Gent, Oostende

### ***Conclusion: BYPAD's contribution to mobility management***

The main idea of the BYPAD-approach is to start up a total quality management process for improving the local cycling policy (cycle use, cycle safety). In this process the city focuses on the whole organisation of their cycling policy and defines the improvements which must be done on organisational level and in concrete projects in order to achieve an increasing cycle use and a better cycle safety. The following elements are crucial in the BYPAD-process and in mobility management in general:

- ✍ Need of structural coordination between the politicians, the civil servants and the users (= evaluation group of BYPAD);
- ✍ Focussing on specific target groups (schools, companies, tourists, ...)
- ✍ Setting up permanent partnerships (public transport companies, local cycling actors, schools, tourist offices, ...)
- ✍ Defining best practices
- ✍ Sensibilisation of the end users (the inhabitants of the cities)



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**Title: Results from the MOST practice: schools, tourism, hospitals, site development, events, mobility consulting**

**Workshop 2g: The MOST experience, results, products, recommendations**

**Astrid Wilhelm, Austrian Mobility Research, Graz, Austria ([www.fgm-amor.at](http://www.fgm-amor.at)).**

**[wilhelm@fgm-amor.at](mailto:wilhelm@fgm-amor.at)**

MOST stands for "Mobility Management Strategies for the Next Decades" and was a research and demonstration project funded by the European Commission, DG Energy and Transport (TREN), under the 5th Framework Programme. MOST was operational between January 2000 and December 2002. More than 30 research and demonstration sites in 15 European countries tested Mobility Management and reported about the strategies applied, impacts achieved, effects measured and barriers encountered.

The presentation will summarise findings of three years of research and demonstration activities at some of the most interesting MOST sites. However, in this paper, a summary of the project MOST as such is given to provide broader background information than what is possible in the ECOMM work shop.

### ***MOST – Mobility Management Strategies for the Next Decades***

Unlike previous research and demonstration projects, MOST has advanced beyond looking at traditional thematic fields and target groups for Mobility Management (e.g. education and employees) and has applied Mobility Management strategies to new thematic fields and target groups. E.g. some of the demonstration sites have implemented Mobility Management in new fields such as: tourism, temporary sites and site development. Other sites have applied Mobility Management to new groups, such as: the unemployed, disabled people and local residents. Evidence from the demonstration sites has shown that Mobility Management can help increase the quality of mobility related services on offer, as well as changing attitudes and influencing modal choice towards sustainable alternatives.

Mobility Management can be applied to a wide range of target groups. In MOST, various target groups were considered, grouped into six thematic fields:

- ✍ educational institutions (schools, universities),
- ✍ tourism (rural areas or cities),
- ✍ health institutions (hospitals, centres for outpatients or disabled persons),
- ✍ site development (new or restructured sites like leisure or business parks),
- ✍ temporary sites / events (cultural capital, sports events, tramway reconstruction),
- ✍ mobility centres and mobility consulting (for companies, cities or whole regions).

Mobility Management strategies have been developed, implemented, measured and tested by the over thirty demonstration sites within MOST.



### ***The methodological background: assessing impacts of Mobility Management***

A Monitoring and Evaluation Toolkit, the MOST MET, was developed to ensure comparability of results and to guide the demonstration sites with their monitoring and evaluation strategies. The impact assessment was undertaken using five distinct categories of impacts:

- ✍ changes with respect to **knowledge** of implemented Mobility Management services and instruments,
- ✍ changes with respect to **usage** of these services and instruments,
- ✍ changes with respect to **acceptance** and **satisfaction** with the implemented services and instruments,
- ✍ changes with respect to the **mobility behaviour** of individuals,
- ✍ changes on a broader **systems level** under the condition that many individuals change their behaviour in the long-term (e.g. reduction of congestion, environmental impacts).

This toolkit will be presented in the same ECOMM work shop (by Timo Finke).

### ***Results at the MOST research and demonstration sites***

The objectives which were addressed by the MOST sites by implementing Mobility Management can be categorised into six common objectives, which range from rather soft goals to tangible outcomes:

- ✍ study experiences of others and plan for future projects,
- ✍ increase awareness and knowledge of sustainable modes,
- ✍ develop new Mobility Management services,
- ✍ enhance mobility for new target groups,
- ✍ increase use of sustainable modes,
- ✍ reduce car use,
- ✍ address traffic and air quality problems.

The degree to which they have been reached at the sites becomes visible in measurable changes. The results of each site can be summarised as follows:

**Educational Institutions** : Limburg (BE) and Surrey (UK) showed that promotion of cycling and walking services for school children works well, under the condition, that safety concerns of parents are taken into account (e.g. by organising walking or bike pools). Car free action days or weeks motivate pupils and parents in a playful way to reconsider their mobility behaviour (in Surrey, 30 % changed their travel behaviour) and are very popular among parents (75 % participation). During car free action weeks in Limburg a doubling of the amount of pupils using bicycles could be achieved. Longer-term experiences show a reduction in car usage between 6 and 16 %, but sometimes reach up to 42 %. In Barcelona, 50 % of the university students appreciate the usage of the internet for mobility advice.

**Tourism**: Visitors can be motivated into using modes of transport other than the private car, when good advance information and coordination of modes for the leisure trips is provided (e.g. in Zug (CH), where only 14-23 % of the visitors came by car).



Malaga (Spain) and even the rather remote Sintra (Portugal) demonstrated that new public transport services for tourists work well: dedicated tourist bus lines (with improved facilities for easy intermodal change) attract rising numbers of customers (6000 tourist bus passengers monthly for a new bus line in Malaga, 10% increase in the usage of a shuttle bus in Sintra). Approaching tourists before they arrive in a city or town is extremely difficult, consequently tourists must be provided with information by many different channels which requires the involvement of tourist offices and hotels. Specific smart cards for public transport hold a high potential (increase from 4.000 to 140.000 in usage within a year in Malaga).

**Health Institutions :** A lesson learned from Sandwell (UK), Namur (BE) and Graz (A) is that designing and applying Mobility Management services require qualified and motivated staff, good internal and external coordination (stakeholders). Discounted public transport passes for hospital employees in Sandwell helped to increase the share of public transport by 14 %. There was a huge potential for electric scooter use (after a free test month, 38 % purchased a scooter). A full time mobility co-ordinator works as well as a working group of enthusiastic dedicated individuals. Navarra (Spain) and Sarajevo showed how barriers to transportation for disabled persons can be removed (e.g. adaptation of 35 % of the buses in Navarra), but there is still a lot more to do to make them autonomously mobile.

**Site Development:** New sites which attract visitors can manage to substitute car based trips by PT or even walking and bicycling. At Karlstad university (Sweden) cycle usage increased slightly from 41 to 43 % among and from 5 to 7 % among students. The business park in Malaga could report a reduction in car usage by 15 %, with a heavy increase in the usage of the improved bus services (from 5.000 to 45.000 monthly bus passengers within 4 months). Interest in car pooling is high (48 %) and is expected to lead to a further mode shift from solo car usage. In Weissenburg (D), car-free residential areas benefit from car-sharing offers to the residents: only 9 % of the residents used car sharing before they moved into the new site compared to 30 % afterwards. 19 % of households gave up their car after moving, 90 % of these are families with children.

**Temporary Sites and Events:** Temporary events can act to stimulate the introduction of long-lasting services. In Porto (Portugal), a growing proportion of the tourists seeking information at the tourism office also utilise the mobility advice offered (from 11 to 15 % of those entering the tourism office within 3 months). In Rome, three of the eight new pilgrims bus lines (originally only for the holy year 2000) were so well accepted that they are still in operation to serve regular tourists, inhabitants and commuters. Good promotion and a single ticket led to an increase from 39.000 to 360.000 monthly passengers. In Leipzig, in-advance information and a mobility centre directly on site during construction work on tramlines successfully helps to keep complaints of passengers at a normal level and to cope with information requests 3 times as high as usually. In Rotterdam, good coordination of public transport, shuttles, access restrictions and combined tickets reduced car usage by 38 % on the day of the Rotterdam marathon with an increase in public transport usage of 60% compared to a normal day.

**Mobility Centres and Consulting:** Lund (Sweden) showed that comprehensive city-wide mobility management plans can create a sustainable-mobility-friendly atmosphere. 9% of the inhabitants replaced car trips by more sustainable modes, resulting in a 1 % reduction of car km per year compared to an increase of 1-2 % in former years. The ten exemplary Health Bikers who decided not to use their cars, reduced the distances they travelled by car by 5.600 km within one year, and 56 %



continued biking after 12 months. A fitness test showed an improvement of 10 % in condition. Rome uses synergies to coordinate mobility services for a large number of companies. In Nottingham, mobility services for a new target group, the unemployed, have been explored successfully. The satisfaction with the combined job and mobility consultancy was almost 100 % and 35% of the users indicated that taking PT was the prerequisite for them to get to a job interview on time. Prague conceptualised the first mobility centre in an accession country - based on the experiences of other mobility centres involved in MOST (Bologna, Graz, Münster, Wuppertal). These mobility centres reported an average of 30% for public knowledge of mobility centres and continuously rising customer numbers.

### *Assuring the quality of Mobility Management*

In addition to the impacts of the implemented Mobility Management strategies, the implementation process was investigated. This helped to analyse barriers and success factors and, hence, to explain, why some demonstration sites achieved larger impacts than others. For this purpose, an adapted total quality management tool was developed by MOST. The tool served to investigate: leadership and project coordination, project design and strategy, human resources management, partnerships and financial resources, processes and implementation. The following conclusions base on the results of this investigation:

The **initiation of a Mobility Management project** should start with the formation of an appropriately qualified and staffed working group with clear responsibilities allocated to it. It should be led by one main key actor who has the resources (i.e. time, finance and official support) to take initiatives, to involve all relevant partners and to coordinate the activities on a day-to-day basis. To involve different stakeholders from the beginning and provide for good coordination among them is a key factor for success (PT providers, transport admin, departments of the company or city, external consultants/universities or user groups). The opinions of the stakeholders need to be heard in order to ensure that different viewpoints are represented, thus minimising the risk of objections at a later stage. The involvement of different stakeholders can also be beneficial in terms of providing data, information, technical and financial assistance, political support or manpower for the actual implementation. In addition, users play a special role, as they are the individuals whom the future Mobility Management services should be targeted at: they guide you in terms of which measures exactly to develop. This should guarantee the selection of the most appropriate services. From the beginning, it is important to clearly define the problem that is to be tackled by Mobility Management and to incorporate it into a mission and vision statement. This statement should be built on consensus by all stakeholders and will accompany the promotion of the project and the whole implementation process.

In order to **plan the specific strategy** it is recommended that a base line study is carried out so that current mobility behaviour and future needs can be identified. It also serves to sensitise local politicians or PT providers as to the necessity of implementing Mobility Management. The base line study results (together with the mission and vision statement) further help to define the specific project objectives. These objectives should be quantified and measurable, and can be set for different levels of change: knowledge of a service (e.g. % of citizens knowing of a mobility centre), usage (e.g. no. of students using a university bus service from the city centre), satisfaction (e.g. satisfaction with the city buses among commuters), individual



behaviour (e.g. car usage among employees travelling to work), system impacts (e.g. travel time during peak hour from city centre to airport). These objectives will help to clearly target the project, to define the most effective strategies for tackling them and to set a benchmark against which project results can be measured. Later in the implementation process, it will help to adjust Mobility Management measures and instruments based on the initial progress towards the objectives.

When designing the Mobility Management project, it is essential to specifically regard the target groups, for whom the Mobility Management **services** are implemented. When approaching staff and employees of companies, PT related services and work place travel plans seem to work well. For young pupils, accompanied travelling in groups by bike or on foot can address the fears of the parents with respect to traffic safety and 'stranger danger'. Tourists and visitors can primarily be supported in a more sustainable choice by improving PT services: providing combined tickets or establishing specific services like a tourist bus. Services that proved successful for residents were car sharing or access restrictions for cars combined with improved PT services.

Progressing from the base line study, a **mobility plan** then specifies concrete actions to be taken, responsibilities, schedules etc. It should be used regularly to measure progress and needs to be reasonably flexible, to be revised or adapted when warranted (e.g. by unforeseen developments). It is recommended to have a fixed **site location** as a headquarter, from where Mobility Management is coordinated. It can be open to the targeted user-groups for suggestions or complaints. If using a mobility centre, its main advantage, compared to PT information hotlines, needs to be specifically promoted, e.g. people may be aware of the mobility centre but may not know what services, apart from PT information, are offered. Therefore, the implementation of a mobility centre should stimulate the demand for a one-stop-service for all aspects of mobility.

Continuous **assessment activities** should be taken to measure the progress against the pre-established objectives, to modify and improve the project, to compare forecast impacts to actual results and to assess cost effectiveness of the actions taken. These activities comprise the user needs analysis before the implementation as well as monitoring (compilation of data before and even during implementation), and evaluation data (analysing and interpretation of actual results after Mobility Management is up and running). Success is once again measured by looking at different levels of change: knowledge, usage, satisfaction, individual behaviour or system impacts.

### ***Framework Conditions of Mobility Management***

Since the successful implementation of Mobility Management depends on many circumstances, which shape the framework conditions, MOST has also analysed the **framework conditions for Mobility Management across Europe**. The focus is on factors that influence Mobility Management on the local, national and the European level. they reach from initiation to application, and are beyond the control of anybody implementing Mobility Management. The results and conclusions of this analysis will be the topic of the 3<sup>rd</sup> presentation in this ECOMM work shop (by Guido Mueller and Sarah Wixey).



### *Conclusions*

The evidence from MOST has shown that Mobility Management is a widely applicable concept, which is very flexible and adaptable to local circumstances. It is an effective strategy, as the results on impacts of Mobility Management in MOST clearly show. Comprehensive monitoring and evaluation of the projects' impacts but also of the process of implementation are keys to success, as they provide the basis to spread successful best practices for future mobility managers.

Some of the possible fields for future research could be long term impacts, the quantification of costs and benefits, consideration of the information society technologies, further application of quality management and the Mobility integration of Mobility Management into comprehensive transportation programmes.

For more information: <http://mo.st>

# **Monitoring and Evaluation of Mobility Management**

## **Practical Experience with the MOST Monitoring and Evaluation Toolkit (MOST-MET)**

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This contribution gives an overview on the monitoring and evaluation process and results of the MOST project.

Monitoring and Evaluation of MM Measures was one core work package within MOST. The objectives were to develop a coherent framework for monitoring and evaluation of Mobility Management (MM) Measures that enables a cross-comparison and benchmarking of demonstration projects. To control and evaluate the methodologies and to deliver monitoring and evaluation schemes and standards for future MM projects.

### **Objective of MOST-MET**

In order to meet this goal one consistent framework that should allow a comparable assessment for all demonstration projects was required and the MOST Monitoring and Evaluation Toolkit (MOST-MET) was developed. It was designed in the first year of MOST and given to the partners for self-assessment and also to test the MOST-MET. In the end the partners were asked for the results of the self-assessment of their MM Instruments and Services and for their experience and for feedback so that the MOST-MET could be improved before being publicised as one result of MOST.

This presentation is based on the final version of the MOST-MET with its improvements as proposed by those who tested it during MOST.

The MOST-MET provides a step-by-step guidance through the monitoring and evaluation process. In the following, the individual steps will be shortly described to give an overview. After that the core of the MOST-MET, the Assessment Levels, will be described and results from the individual partners (that were realised based on the first version of the MET) will be shown. Finally some lessons learnt and recommendations will be given.

### **The MOST-MET – An Overview**

#### **Step I Mission Statement and Objective**

In the first step a general Mission Statement for the planned MM approach is set in the beginning. This Mission Statement could be defined as general as "improve sustainable modes".

Based on this general Mission Statement one or several more orientated objectives (that should not counteract with the general ones) should be defined for each MM Service. These should be defined in order to be more specific in the further work progress. They should include a measurable goal and a time-span in which the goal should be reached, such as "reduction of solo car use by 10 % among employees within 1 year".

This goal is set to measure success against it and to allow to adjust the chosen measures if needed. At the end of the time span, a new goal has to be set for a new time span.

**Step II Specification of Target Groups**

In the second step all Target Groups that shall be addressed by the MM approach are defined (e.g. users of the public transport system, citizens addressed by the local Mobility Centre, employees addressed by their company's Mobility Plan). A short description of each Target Group will help to find similarities and distinctions, e.g. how they could be addressed, their assumed travel behaviour in terms of modal preferences and/or travel time. The more accurate these Target Groups are described the better will the MM Measured fit their requirements. The MOST-MET offers examples of Target Groups and their description.

**Step III Choosing MM Instruments and Services**

Based on the chosen Target Groups the required MM Instruments (Mobility Manager, Mobility Centre, Mobility Consultant etc.) and the suitable MM Services have to be decided on. A detailed description of each MM Service helps to clarify what exactly is planned and where synergy effects between different services can be used.

**Step IV Assessment Levels**

For the assessment of MM the MOST-MET offers Assessment Levels on which monitoring and evaluation could focus.

These levels depend on the kind of Services to be assessed and the status of implementation. Levels A to C concentrate on the quality and success of MM Services like marketing, information, consulting etc. Levels D to F deal with the quality of the transport system that offers the basis on which the MM Services rely. Seeing that one major aim of MM is having an impact on the transport system in terms of reducing traffic (growth) by limiting the number, length and need of motorised vehicle trips all measures should be included in the effort to reach that goal. Levels E to H of the assessment strategy allow the assessment of the change of people's travel behaviour and finally the impacts on the transport system. These changes in travel behaviour and impacts on the transport system should be the main results of the monitoring and evaluation process described in the MOST-MET.

Seeing that MM usually develops over time it might be possible that not all levels can be applied from the beginning. After implementing MM as a new approach or after introducing new services to an existing approach one would always have to start the assessment with the knowledge of the Target Group about the new Instrument / Service. When the knowledge or awareness of the new Instrument / Service is spread and people start using it.

Hence, the Assessment Levels A to H also show the development of new Instruments / Services over the time, starting from their implementation up to their finally reached impacts on the transport system.

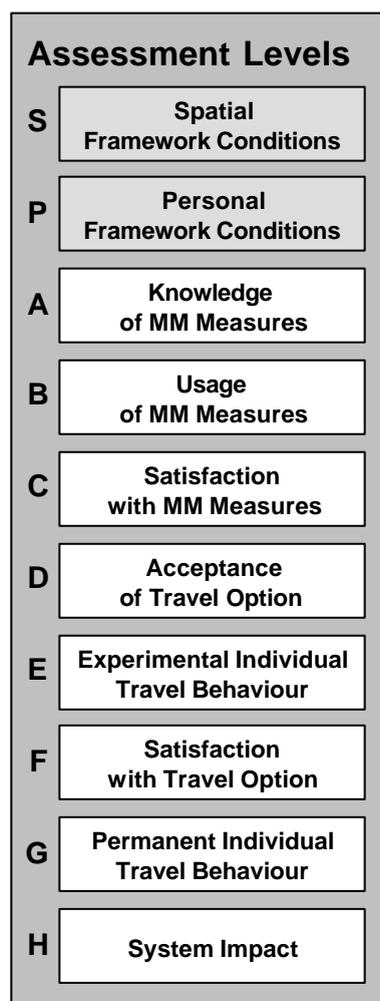


Figure 1: Assessment Levels

As the following example shows, there are different methods that can be used for the same services to examine different aspects on the various levels.

#### **Example Car Pooling**

**knowing** about a car pool matching scheme (interview of all employees) shows a successful marketing,

**usage** of the matching service (records of inquiries) shows that a number of people think about this alternative,

**satisfaction** with the matching service (interview of those, who contacted the matching service) shows whether or not people are satisfied with the performance of the matching service and whether or not the received information is acceptable

**acceptance** of the offered solutions (interviews of those, who contacted the matching service) shows whether the proposed car pool partners were contacted,

**experimental individual behaviour changes** (interviews of those, who contacted the matching service and counts of those who contacted the proposed car pool partners and tried car pooling) show whether those employees that accepted the proposal decided to try car pooling at least experimentally, based on the offered car pool matching service,

**satisfaction with the tested travel option** (interviews of those who car pooled a few times after receiving support by the car pool matching service) shows whether those employees that tried car pooling are satisfied with the new mode,

**permanent individual behaviour changes** (interviews of those, who car pooled a few times after receiving support by the car pool matching service) show whether those employees that tried car pooling as an alternative stuck to car pooling on a permanent basis,

**system impact** (calculation of the figures recorded in the levels before) gives an estimation of how many motorised vehicle trips or kilometres were saved through the offered car pool matching scheme.

According to the different aspects that altogether describe the success of the MM Services measurable objectives for each Assessment Level should be defined as shown below.

**MOST experience** It should be stated that the time the users need to start using MM Services and finally change their travel behaviour strongly depends on the accompanying sticks and/or carrots. The more attractive the carrot or the more painful the stick the faster the changes in travel behaviour and hence the resulting impacts will be.

#### **Step V Specification of Indicators**

In order to be able to measure the changes that could be established by the implemented MM Services the MOST-MET requires Indicators (i.e. measurable figures that indicate changes of not directly measurable aspects). For each MM Service Indicators should be defined per Assessment Level.

MOST-MET offers examples of the various Indicators for each Assessment Level, both for city-wide / regional and site-based approaches and shows examples of survey methods for the data collection.

**MOST experience** Seeing that data collection is quite expensive and sometimes done for other purposes anyway (e.g. an annual city marketing survey was also used by the Mobility Centre in **Wuppertal**), it might be helpful to use those existing surveys to place some questions instead of carrying out an extra survey.

## Step VI Monitoring

**Monitoring** is the collection of input data that is required for the examination of the impacts a MM approach has had. It includes traffic counts and the documentation of the public opinion about innovations of MM.

This data comprises the given framework conditions, the number of user contacts, peoples travel behaviour and attitudes against various transport modes. And finally the changes in the transport system (e.g. reduction of motorised vehicle trips and kilometres and hence reduced energy consumption and emissions).

## Step VII Evaluation

The evaluation of MM Services always describes the development of these measures and their (hopefully growing) impact on people's travel behaviour and the transport system. The aim of the MOST-MET is to document this development over a reasonable time-span. To document this development monitoring has to start **before** MM Measures are introduced and hence describes a before-status. The results of the before-study will later be compared with the results of the **after**-studies.

Examples for the calculation of the established reduction of motorised vehicle trips and kilometres are provided in the MOST-MET.

MOST experience Although comparable **before** and **after** travel behaviour is not available for many partners to assess mode changes, reduced vehicle kilometres travelled and other travel impacts, a variety of data sources and self-reported results are available from about half the MOST partners. The data come from user surveys (e.g. information provided or tickets sold at Mobility Centres in **Wuppertal**), target group surveys (e.g. employees in **Málaga**, residents in **Münster**) or counts of riders of sustainable modes (e.g. PT riders in **Málaga**).

In cases where **before** data was not available anymore, retrospective questions about people's travel behaviour at a point of time before the implementation of a MM Services at least allows a general idea of the changes up to now and gives hints about the reasons for these changes.

## Detailed Illustration of Assessment Level and results as established in MOST

The following overview offers a explanation of what shall be measured on the individual Assessment Levels that were used in MOST. It offers examples for measurable objectives for each Assessment Level and shows examples of results as they could be established by the MOST partners.

The overview shows the Assessment Levels as used in the final (improved) version of the MOST-MET. In the version used during the project lifetime of MOST only 5 Levels were given. Following the experience from MOST these levels were supplemented with 3 additional ones that mostly deal with the quality of the transport system or travel services and the following user acceptance and satisfaction that in the end leads to a permanent change in travel behaviour.

MET as used in MOST		improved MOST-MET	
Knowledge		MM Services	Knowledge of MM Services
Usage			Usage of MM Services
Acceptance			Satisfaction with MM Services
		Travel Options	Acceptance of Travel Options
			Experimental Individual Travel Behaviour
			Satisfaction with Travel Option
Individual Behaviour		Travel Behaviour	Permanent Individual Travel Behaviour
System Impact			System Impact

**Figure 2:** Comparison of the MOST-MET as used in MOST (left) and improvements based on findings in MOST (right)

### Mobility Management Services

<b>A</b>	<b>Knowledge of Mobility Management Services</b>
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First pre-requisite for the use of Mobility Management Instruments and Services is the knowledge of their existence. This knowledge or awareness about Mobility Management Instruments and Services can be established through marketing activities in a rather short-term scale. Hence, **Level A** is used to check whether or not people know about the local mobility management approach at all and, if so, which instruments and services are known best.

*Objective (example)* 30 % increase of the number of people knowing about the Mobility Centre and its Services, like PT information and booking of car sharing cars in the first year after opening the Mobility Centre.

**Results in MOST**

In **Wuppertal**, the Mobility Centre has seen awareness of the centre rise from 25% of residents in 1995 to almost 40% in 2000. Use has also increased during the same period among those aware from 48% to 57%.

In **Karlstad**, three-quarters of students surveyed in 2001 were aware of the MM information offered by the university Mobility Office and 49% said that their travel was influenced by the services offered.

In **Surrey**, a survey at one school (Tillingbourne) showed that 57% of parents talked about safety or travel to school during the action week

**B Usage of Mobility Management Services**

Mobility Management offers Instruments and Services to the end-users. The number of people using these services give an estimation on their attractiveness and tailored supply. **Level B** is used to check whether or not people actually use Mobility Management Services and, if so, which services are used and how often.

*Objective (example)* 20 % increase of the number of people using the offered Services, like asking for help in finding a car pool partner in the first 6 month.

Results in MOST

In **Karlstad**, programme effectiveness seems to have diminished somewhat between 2001 and 2002. For example, 53% used the free PT ticket offered in 2001 and 44% in 2002. Karlstad MM staff feel this reduction in use may have been due to several factors, including the reconstruction of the main bus stop near campus and the fact that the new students were living further away and had greater access to a car.

In **Münster**, the proportion of mobility centre clients asking for specific travel advice, as opposed to static information, has risen from 55% in 1998 to 67% in 2001,

In **Rome**, the mobility consulting service has registered some 730 car poolers into 250 different carpools.

**C Satisfaction with Mobility Management Services**

Only when the addressed end-users are satisfied with the offered Mobility Management Services there is a chance that they will follow the received information or advice. **Level C** is used to check the whether or not people are satisfied with the offered Mobility Management Services and how they could be improved to meet the users needs.

*Objective (example)* 20 % increase of the number of users that are satisfied with the Services they received, like consulting on alternatives to solo-car commuting after 1 year.

Results in MOST

In **Wuppertal**, a question on the satisfaction with the Mobility Centre's services has been included in the annual city survey. In 2001 it received a good mark (2.2 out of 6, with 1 being the best). In general 76 % are (very) satisfied with the services.

In **Bologna**, the customer satisfaction has been asked for over several years. The cusomer satisfaction with 'the quality of answers to requests about information and complaints' remains stable at 6.8 (out of 10, with 10 being the best) for the last 3 years.

**Travel Services**

**D Acceptance of Travel Options**

Satisfaction with a Mobility Management Service is a pre-requisite for the acceptance of alternative travel options. But there might still be reasons against their acceptance. Especially personal circumstances might stand against objective advantages. **Level D** is used to check whether or not people accepted the proposed travel options.

*Objective (example)* 15 % increase of the number of people that accept the offered travel options, e.g. that are willing to join a car pool and therefore ask for potential partners after 1 year.

Results in MOST

In **Málaga**, some 6,100 tickets are being sold each month to the new tourist bus services.

In **Rome**, an average of 366,000 visitors, pilgrims, and residents used the new, privately operated Jubilee lines each month during the Jubilee Year celebration.

**E Experimental Individual Travel Behaviour**

The willingness to try an alternative transport mode leads to a trial or experimental change in one's travel behaviour. **Level E** is used to check whether or not people changed their individual travel behaviour to try a (recommended) travel alternative.

*Objective (example)* 10 % increase of the number of people that are not only willing to try alternative modes but actually do so, at least on a trial basis, e.g. that cycle to work or join a car pool several times after 1 year.

Results in MOST In **Surrey**, a survey at one school (Tillingbourne) showed that about 30% changed their travel behaviour for school travel during the action week.

In **Zug**, about 450 people participated in the 8 "Action-Days" (2 days for every of the 4 round-trips). Surveys showed that only 14% to 23% of participants travelled to the locations via car (most of these carpooled).

In **Limburg**, surveys undertaken at the start of the project and again during and after implementation of school pool initiatives, such as car free school days and bicycle pooling). At one school (Diepenbeek) a before survey of parents was conducted in October 2001 and an after survey in June 2002, about a month after implementation of the car free days and bicycle pooling activities to get at longer term impacts. It appears that bicycling and walking increased among pupils by 16.4% (from 26.2% to 30.5% for a relative increase of 16.4%).

In **Nottingham**, an increase in PT by 11% among the Workwise recipients of monthly (free) PT tickets can be observed, however, at the same time car use remains the same and walking decreases by 9%. *This suggests a shift from walking to PT use, which emphasises the need of projects to control for the previous modes instead of simply counting new customers.*

**F Satisfaction with Travel Option**

Satisfaction with a tested travel alternative is a pre-requisite for a repeated and hopefully permanent use of that alternative mode. **Level F** is used to check whether or not people are satisfied with the tested alternative transport modes and how they could be improved to meet the users' needs.

*Objective (example)* 10 % increase of the number of people that are satisfied with the new mode they tested, e.g. that feel a lot healthier and more relaxed after riding the bike to work after 1 year.

Results in MOST -

## Travel Behaviour

### G Permanent Individual Travel Behaviour

The overall aim of Mobility Management is a modal-shift towards sustainable transport modes in the long-run. **Level G** is used to check whether or not people changed their travel behaviour and, if so, what they changed (mode choice, time choice, destination choice, trip frequency etc.).

*Objective (example)* 5 % increase of the number of people using the alternative mode not only a few times before switching back, but stick to the tested alternative over a longer time span.

Results in MOST

At **Sandwell** health care facility, over 100 employees are taking advantage of a discounted annual public transport pass and some 40 employees took part in a scooter pilot programme; both designed to reduce the need for parking.

In **Karlstad**, 43% of staff and 7% of students, surveyed in 2002, say that they cycled to the University more often than during the past year.

In **Rome**, substantial subsidies are being provided to PT users, resulting in some 1,700 annual passes sold in the region.

In **Lund**, 9% of the residents shifted travel mode during the implementation of LundaMaTs. More than 50% of the people that shifted mode, changed from driving alone in a car to bicycle, about 45% to bus, and another 5% to carpooling.

In **Münster-Weissenburg**, surveys were undertaken in 2000 and 2002 analysing the mobility behaviour of people living in the car-free community of Weissenburg. Of the sampled inhabitants of the car-free housing complex, 27% of the licensed drivers have given up their car in response to this new kind of neighbourhood. One-third of the respondents car shared at the new development, whereas 91% said they had not used a car sharing arrangement prior to moving to Weissenburg.

### H System Impact

Only permanent changes in travel behaviour will result in changes in the transport system. Either in respect to site-related traffic or in respect to the city level. **Level H** is used to check the changes in traffic flow, mode choice, emissions etc.

*Objective (example)* 5 % reduction of motorised vehicle kilometres travelled for the site-related traffic or city/region-wide after 2 years.

Results in MOST

In **Lund**, the survey among residents was used to estimate that a total of 3.9 million kilometres of travel had been saved by the inhabitants per year, or one percent of the total travel in the area (estimated for the entire LundaMaTs scheme). Among the specific pilot projects, the bus riders (72 persons) saved approximately 200,000 km per year (or about 2,800 km per person) and the Health Bikers saved 43,000 km per year (about 4,300 km per person) and 29,000 km the year after.

The following table shows the change in the modal-split and the corresponding reduction in car use as it could be established in Limburg, Camden and Málaga.

Partner	Target Group	Before Car Mode Share	After Car Mode Share	Reduction
Limburg	Parents/Students	68%	63%	7%
Camden	Staff	24%	21%	12%
Málaga	Employees	74%	63%	15%

## Conclusions

Altogether it can be stated that MOST showed that monitoring and evaluation of MM and similar approaches that rely on soft measures is feasible. The MOST-MET is a first step to bring monitoring and evaluation into practise. But still there is more to be done to provide tailor made and maybe more specialised monitoring and evaluation tools for individual MM approaches.

Also the question of costs and benefits of MM Measures could not be dealt with in the MOST-MET but should be looked at in more detail in the future.

In MOST, as in other MM projects, most partners did not include monitoring and evaluation into their budget. Experience, especially from the US, suggest to reserve about 10 % of the total budget for monitoring and evaluation.

A reasonable number of partners provided results of their assessment effort. But the timing within MOST prevented even more accurate results. This is due to the fact that the monitoring and evaluation strategy had to be developed while the partners had to get their MM Measures started. Hence, in a number of cases before surveys could not be done and also the budget for monitoring and evaluation was not considered in full scale in the planning.

Another important aspect that should be looked at in more detail in the future is cost-effectiveness of MM Measures. The results of the MOST-MET show what could be established by MM, but this should be compared with the budget used for the MM effort.

The final recommendations for MM practitioners learnt from MOST:

Integrate the assessment of your MM measures into the overall MM process. Do not fear that the established results to not meet your own expectations and those of your stakeholders, policy makers and the public. View assessment as an important project management tool that offers valuable information on performance and the results of the implemented measures. It helps you to improve your MM performance and leads to better results in the long run. Also these assessment results should be documented and published in periodic reports. They should assist you in your future performance, provide stakeholders and funders with an account of assessment findings and recommendations for improvements and finally it should be done to satisfy you and your staff with the realised results.

## Literature

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**Title:**

**How To Improve Framework Conditions for Mobility Management**

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Category: Workshop

In case of a workshop: The MOST Experience

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# How To Improve Framework Conditions for Mobility Management

## 1. Framework conditions as research subject

Within the EU-funded MOST project several demonstration sites have tested the use of Mobility Management strategies in various settings (schools, hospitals, new developments etc.). To learn from the implementation process and evaluation of results about barriers and success factors was one of the aims of MOST (see the contributions of Wilhelm and Finke in this publication). The picture will not be complete, though, without taking into account the numerous influencing factors which are beyond the reach of the implementers of Mobility Management strategies. All factors that can contribute to success and failure of a Mobility Management scheme, but which cannot be influenced by the local project are considered *framework conditions* for Mobility Management. Their influence can be powerful as the following examples show.

- ? In the *United Kingdom* mobility plans for companies and schools are supported by the national government which in 2001 issued a € 14 million funding programme for 111 mobility managers in local authorities across the country.
- ? Financial incentives such as cost reimbursement can be useful instruments in company Mobility Management. In *Germany* the use of incentives has been difficult because it was treated as taxable income of the employee – diminishing the worth. Now the employer contribution to a rebated public transport commuter ticket ("Job-Ticket") is tax free.

This article gives a brief summary on the policy analysis and recommendations of the MOST project on the issue of framework conditions for Mobility Management. The full report has been published as "The Framework for Mobility Management across Europe" (MOST 2003b). A longer summary can also be found in Chapter 5 of Final Report of the MOST project (MOST 2003a).<sup>1</sup>

The MOST research has looked into the following aspects: *political/programmatic, legal/regulatory/fiscal, financial, education/qualification* and *organisational* framework conditions. As in some countries there are not many direct references to Mobility Management yet, also indirect conditions have been analysed. Indirect conditions are considered to be all influences on Mobility Management policies and implementation from other policy fields. They can have, for example, a direct influence on the supply of sustainable modes.

The framework analysis has been carried out on different administrative levels: The *European*, the *national* and the *local* level. In political reality the levels are connected and influence each other. This article will concentrate on the national level (cf. Ch. 2). At this level the influence on local transport strategies is rather high. Also it can be shown, that especially in those countries, where the national level has become active, the overall level of practice has increased (e.g. United Kingdom, Italy, Sweden).

Main outcome of the MOST research is the *P.A.I.R.-scheme* (cf. Ch. 3). This scheme has been developed to structure a field of influences. It differentiates six domains, which have been identified as crucial factors for success and helps the assessment and improvement of the situation in each country.<sup>2</sup> The structural and institutional framework conditions might set the limits for activities of the local actors. However, "background factors do not make policy. Policymakers do" (Lundquist 1980)

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<sup>1</sup> All MOST reports can be accessed under <http://mo.st>.

<sup>2</sup> The presentation at the workshop will focus especially on the exemplary application of the P.A.I.R.-scheme.

## 2. Framework Conditions for Mobility Management on a National Level

The framework conditions for Mobility Management on a national level have been analysed for twelve countries across Europe.<sup>3</sup> Here, only a brief overview can be presented. Some selected examples from the report illustrate positive conditions in one of the analysed aspects (see above).

On a national level there are broad differences not only across Europe but also in relation to the various domains (political, legal, organisational, etc.) within the same country. The table at the end of this chapter shows an overview, especially about the degree of the development of certain aspects of Mobility Management, and hints as to which countries could function as catalysts on particular areas of Mobility Management. In general, the differences in the development of Mobility Management in Europe cannot be traced back *primarily* to the different organisational or administrative structures of government.

The policies of the national authorities are a key factor. Here, three groups can be roughly distinguished: The Netherlands, Belgium, the United Kingdom and Switzerland have included the approach of Mobility Management within their policy, which leads to specific action. In Italy, Sweden, France, Germany or Austria references to a supporting policy on a national level are more indirect, but there has been development in recent years. In Spain, Portugal and the Czech Republic currently there is an absence of national policies on Mobility Management.

### ***Example: United Kingdom***

With its White Paper in 1998, the government issued a clear policy statement for an integrated, sustainable transport system that is strongly supportive of Mobility Management. It has led to a number of subsequent activities directly concerning the advancement of Mobility Management. Companies, schools and lately hospitals have been identified as important trip generators. The Government wants to encourage widespread voluntary take-up of *travel plans (mobility plans)* and it wants to lead by example. Over 1000 government buildings have now developed travel plans. The Government is also looking to local authorities to promote them through the Local Transport Plan process. It has awarded grants to local authorities to employ 111 travel plan advisors across the country to help schools, businesses and other organisations in their area to make progress (budget of £9 million over three years). The government established the School Travel Advisory Group (STAG) in 1998 to spread best practice and to identify practical ways of reducing car use whilst at the same time improving safety on the journey to school. There is a Government funded programme that offers free site-specific advice. Information and guidance is offered through the transport ministry website ([www.local-transport.dft.gov.uk](http://www.local-transport.dft.gov.uk))

In general, Mobility Management has not yet found itself high up on the political agenda, regardless of the ideological direction of the administration in power. Nevertheless, a support for sustainability leads to a positive attitude towards Mobility Management. In most countries there is support from a wider spectrum of private-non-profit organisations, especially smaller user groups and lobbies, which will join motivational alliances in favour of Mobility Management. The first links to non-transport organisations (e.g. in the health, environment, energy or commerce sector) have been forged, but could be extended. Generally, the organisational framework on the national level which is *explicitly* dedicated to Mobility Management is still at a formative stage and has not developed a great deal. Only in countries with a tradition in Mobility Management or where development is currently dynamic does the first organisations for Mobility Management practitioners exist (e.g. Euromobility/Italy, Association for Commuter Transport/UK or Vervoermanagement Nederland/Netherlands).

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<sup>3</sup> Austria, Belgium, the Czech Republic, France, Germany, Italy, the Netherlands Portugal, Spain, Sweden, Switzerland, the United Kingdom.

Concerning the legal framework, currently, there are no direct laws which make mobility plans or mobility centres mandatory. At this point in time attention should be directed at those legal and fiscal policies that could have an indirect benefit for Mobility Management. For example in Italy, Sweden, France, the Netherlands, Belgium or the United Kingdom regulations exist which have a direct influence on the development of the approach. Often environmental legislation (e.g. Decreto Ronchi in Italy or on environmental management in the Netherlands) or planning laws (e.g. PPG 13 in the UK) are being used to further the implementation of demand-oriented transport strategies, especially for companies. In the United Kingdom, Mobility Management is also linked to health policy (e.g. the National Service Frameworks for the Health Service foresee mobility plans for all hospitals). A number of smaller barriers are encountered in a regulatory climate which favours car use. Especially the planning regulations should fix the non-car accessibility on a high quality level.

***Example: Sweden***

In October 2001, the Government presented its Infrastructure Bill for a transport system that is sustainable in the long-term. In December 2001, Parliament adopted the direction and proposals contained in that Bill, and in March 2002 the Swedish National Road Administration was issued a directive by the Government to draw up a new national road transport plan for the period 2004 – 2015. The Swedish National Rail Administration was also directed to draw up long-term plans, and similarly the County Administrative Boards has to draw up county plans. In the directive to the Swedish National Road Administration, interim goals were stipulated for attaining a sustainable road transport system, and the so-called "*four-stage principle*" is to apply. Measures are to be analysed in the following descending order of priority:

1. measures to influence the need for transport and choice of transport mode
2. measures for a more efficient utilisation of the existing road network and vehicles
3. limited re-construction works
4. new investments and more extensive reconstruction works

***Example: France***

The relationship between urban planning, transport and parking policies is a strong precondition to develop Mobility Management. The recent law on urban solidarity and renewal (SRU) may encourage more active working as a result of the urban mobility master plan (PDU). All agglomerations of more than 100.000 inhabitants (almost 60) have to implement a PDU. The smaller ones can also implement a PDU voluntarily (almost 20-30 in progress). The SRU law promotes the development of travel plans in companies. It requires the urban public transport authority responsible for managing the PDU to set up a mobility consulting service for large companies and other establishments. These services will be implemented progressively as soon as the national guidelines to implement a travel plan and for mobility consulting (both expected for September 2003) are published.

The current fiscal situation provides both incentives and disincentives towards more sustainable transport. The situation is mixed not only across the different countries but also within a country. Direct implications are evident with the fiscal treatment of commuting, where incentives often underlie fringe-benefit taxation – whereas free workplace parking does not.

***Example: The Netherlands***

Until 2001 Dutch employees, when they lived more than ten kilometres away from their work, could deduct a certain amount from their taxable income for their commuter trip. Since 2001 only users of public transport and bicycles can deduct a certain amount, car drivers can no longer do so. Employers may compensate (part) of the commuter trips without being taxed. When employees use public transport the employer may pay all the costs. When employees use other transport modes and live more than ten kilometres away from their work, the employer can give a non-taxable compensation, that varies from € 780 to € 1560 a year. A driver of a carpool may be given € 0,28 a kilometre without being taxed. If this is the case his passengers get no compensation at all. Employers can give bikes to their biking employees up to a value of € 749 (incl. VAT). Employees who drive company cars can be charged up to 25 % of the car's original price including VAT yearly, depending on how much kilometres they

use these cars for private trips. When an employee uses his own car for business trips, he may have a tax-free compensation of €0,28 a kilometre. When he uses his own bike the compensation is €0,05.

National initiatives for Mobility Management funding (e.g. in Italy, United Kingdom or France) remain to be exceptions. Acquiring funds seems to be a matter of strategy. Funding is more geared towards research and pilot projects than regular co-financing of implementation.

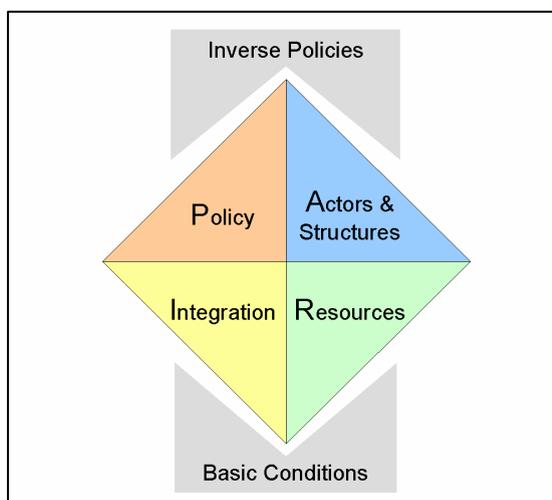
Regarding the qualification of the acting persons, one must say that transport formerly was an exclusive claim of economists, engineers and other technicians. Currently, there is an unintentional trend, particularly within the UK, to recruit mobility co-ordinators who have teaching, marketing, PR or sales backgrounds. The skills these people already have are very useful in the Mobility Management setting. More often than not mobility managers have to 'sell' the idea of Mobility Management and encourage people to travel by sustainable modes through the provision of incentives and better information etc. Qualification programmes nowadays are more multidisciplinary in content but are still at a very early stage.

The general result of the cross-sectional analysis across the twelve European countries is that a successful Mobility Management policy must be based on an acceptance of sustainable mobility as an overall objective. It needs at least three pillars: a multi-modal infrastructure, a co-operative administration and a well developed communication strategy and network with relevant stakeholders. Furthermore a robust legal and fiscal framework is needed which provides the right incentives for sustainable travel behaviour.

The situation in each country is not always congruent. In country A there might be a good policy, but a legal and fiscal situation favouring the car and little qualification of professionals. In country B there might be a great deal of activity by non-governmental organisations but little administrative policy support. A classification matrix (cf. Table 1 in the Annex) should help to gain both an European overview, especially about the degree of the development of certain aspects of Mobility Management, and hints as to which countries could function as catalysts on particular areas of Mobility Management. Although the countries shown in this matrix are chosen thoroughly it is neither a complete nor a concluding compilation.

### 3. Recommendations for Improvement: the P.A.I.R.-scheme

Mobility Management is a co-operative process, which relies heavily on alliances of different stakeholders. To implement Mobility Management schemes successfully on a local level various influences can either be supportive or restrictive. The main result of the MOST analysis is the P.A.I.R. scheme. The main aim is to enhance the ability of policy makers to assess and improve their situation, whether it be locally, on a national or European level.



**Fig.1:** The P.A.I.R.-scheme for improving framework conditions

The **P.A.I.R. scheme** (cf. Fig.1) differentiates six domains, which have been identified as crucial factors for success. Four domains are concerned with the core conditions:

- ? **Policy** – high-level guidance and course of action
- ? **Actors & Structures** – people and organisations, agency and exchange
- ? **Integration** – links with transport and non-transport policies
- ? **Resources** – available means and sources of support

Each domain is characterised by several recommendations:

## **Policy**

*(1) Leading policy documents should be clear and include Mobility Management.*

The right political framework conditions are a core requirement for successful Mobility Management. Transport policy usually builds on several lead policy statements and documents. Mobility Management approaches should be included in these and should be reflected in their general objectives and strategies.

*(2) The arguments for applying Mobility Management should reflect the prevailing societal needs.*

Mobility Management can be implemented for various reasons and with differing objectives. Whereas environmental concern has been a longstanding motive for Mobility Management, increased efficiency or a reduction of congestion can be of equal importance. To achieve favourable conditions for Mobility Management it is important that the argument follows the primary societal concerns and themes of discussion.

*(3) Responsibilities between sectors (public, private, public-private-partnership) and levels of government (local, regional, national) have to be clearly assigned*

Several levels of government are involved in Mobility Management and their respective role needs to be clear. On each level, but predominantly on a local or regional level, private activities play an important role. Both private and public actors need a sound understanding and acceptance of the approach. Since Mobility Management can both be initiated in the public or the private realm, but is mainly concerned with the establishment of public-private partnership, the relation of the sectors needs to be defined.

## **Actors & Structures**

*(1) A successful promotion of Mobility Management needs anchor points.*

Mobility Management strategies depend on certain structures and agents (“anchor points”). Therefore a clear responsibility needs to be assigned within the administration on all levels. But promoters are also crucial among non-governmental organisations, lobby groups etc. Here, active individuals can become champions for the development of respective strategies.

*(2) A co-operative and communicative mode of governance offers a greater ability to implement Mobility Management.*

Mobility Management is an approach which relies heavily on co-operation between different stakeholders. As such it needs a co-operative administration. Communication, networking, exchange, consultation and involvement of stakeholders are some key principles for such a mode of governance.

*(3) The approach needs to be consistent across levels and sectors.*

The development of Mobility Management can start from the top with high level authorities as a driving force or from the bottom-up with local activities. But whether the development is top-down or bottom-up – “political marketing” is needed to achieve a consistent approach across levels and sectors (cascade policies).

*(4) Qualification of key personnel beyond technical knowledge is crucial.*

Since Mobility Management is as much a communication as a technical task, qualifications in this area should be universally recognised. Existing personnel should receive further training and an appropriate qualification in recognition of that training. New personnel should be recruited from a wide range of disciplines.

- (5) *There could be a need for more formal organisational structures, if the embedding of Mobility Management in existing organisational structures is too slow.*

In a first step Mobility Management issues should be incorporated in the existing structures in the fields of transport, planning, land-use, environment, health etc. If the existing organisations are not willing or able to cope with the extended demand, a formal organisational structure devoted to Mobility Management should be considered both as a competence centre and as a promoter.

- (6) *European exchange and co-operation offers the opportunity to learn from best practice – including in the field of framework conditions.*

Exchange principally of information Mobility Management in Europe should not only be on implementation and best practice but also on the best framework conditions. The analysis of transferability is a priority.

## **Integration**

- (1) *Mobility Management policies should reflect the multi-modal nature of the approach.*

According to the multi-modal nature, the first step of integration should give attention to all transport modes including interchanges. Although the sustainable modes (public transport, cycling, walking, shared car-use) are priorities, the individual car should be included.

- (2) *A combination of push and pull, “carrot and stick” measures in transport policy will assure a higher degree of effectiveness.*

The combination of push and pull measures offers the opportunity to link Mobility Management with established transport policies such as infrastructure investment, regulatory or fiscal instruments. Mobility Management should not be seen as a panacea by itself but rather it should be integrated with a full catalogue of environmentally sustainable transport policies.

- (3) *Making the technical link is important for the further development of Mobility Management.*

Combining mobility services with telematics, traffic management and IT-solutions will enhance the advancement of Mobility Management. Whereas Mobility Management has often been associated with a less technical approach, in the future we will see a further integration of Mobility Management and telematics in the area of information and organisation.

- (4) *The early integration of Mobility Management with land-use planning and development policy is often cited but hard to achieve.*

Another example of an area that could benefit from being integrated with Mobility Management is that of land-use planning. The opportunities available to apply Mobility Management will increase if it is a fixed requirement of all new developments (both residential and commercial). Here, a revised planning framework is needed in most countries.

- (5) *A high potential can be assessed for linking Mobility Management to non-transport related policy areas.*

MOST has shown that there is a considerable possibility to link Mobility Management with non-transport policies, that are sharing some of the same objectives (e.g. quality of life, better health, safer environment, efficiency). Progressive integration of such policy areas with transport offers the potential for new motivational alliances and reaches out to areas such as education, health, environment, social inclusion or business development.

## Resources

- (1) *Knowledge is the most important tool – therefore research and innovation in the area of Mobility Management is necessary.*

Despite the growing research effort in the field of Mobility Management, there are various themes that need further investigation. Changing mobility behaviour is a complex task which is not yet fully grasped. Moreover, the evaluation of effects of Mobility Management on mobility behaviour needs a stronger evidence base and requires long-term research.

- (2) *Long-term financing for Mobility Management must be secured.*

Funding for Mobility Management does not necessarily have to come from public sources alone, but specific (national) programmes will help. If no specific Mobility Management funds exist, there is a need for practitioners to be “creative” with existing programmes. The contribution of private funding, especially from the business sector, needs to be explored.

- (3) *Information and guidance are necessary to achieve high quality implementation.*

The existence of specific information on concepts, tools and best practice examples, general guidance through handbooks or consulting services for Mobility Management applications is essential.

- (4) *In the long run quality standards and quality management are instruments that are essential to secure the quality of service and also cost efficiency.*

MOST has started to incorporate quality management into Mobility Management through the use of the EFQM model. As a general framework standardisation, processes and quality management characterise more advanced stages of Mobility Management practise.

- (5) *Legal resources can be an important support for Mobility Management, but the need for legal requirements is disputed.*

The need for a legal requirement for Mobility Management, e.g. for companies to develop Mobility Management plans, is being disputed. On the one hand this ensures fundamental support to local authorities, on the other hand it does not necessarily guarantee the quality of the measures. Often small incremental changes in the existing legal framework will be of more help than substantive changes in law, e.g. concerning the fiscal treatment of (financial) incentives for employees.

In addition, two domains show their impact in a more indirect way. Nevertheless these are of equal importance for a successful implementation of Mobility Management:

### Basic conditions

Without a *good supply of alternatives* to the single occupancy car all information and communication efforts of Mobility Management are futile. Therefore the first step is to work on continual improvements to the provision of alternative modes (including infrastructure measures).

Mobility Management is a policy approach which clearly supports the *objective of a sustainable transport system*. If general transport policy on the different levels, and the vision of the main stakeholders, is not geared towards this goal the conditions for Mobility Management are quite unfavourable.

The notion of “*mobility culture*” stands for shared attitudes, values, goals and practices that characterise a city, region or country concerning mobility. It includes the pattern of knowledge and behaviour regarding the transport modes. The existence of a cycling culture for example, supports the development of multi-modal services. Another central issue

is the treatment of public transport – as part of community services or as marginal mode for those without access to a car.

### **Inverse Policies**

Even if the supportive framework for Mobility Management is well developed and balanced in all areas, there can be important driving forces which counteract any effort towards an effective implementation of Mobility Management. Inverse policies is a term for all policies which develop unintentional contrary effects for Mobility Management. These can be both transport and non-transport policies, e.g. heavy road infrastructure investment, planning requirements which require a definite number of parking places or a tax system which does not allow an employer to financially support rebated public transport passes for its commuting employees. A rigorous screening of all potential inverse policies for Mobility Management should provide a number of new initiatives that could be introduced to remove existing barriers.

The P.A.I.R.-scheme guides policy makers in their effort to detect the most important barriers and support structures for Mobility Management in their city, region or country. The next step is to identify areas for action according to the degree of *urgency* and *difficulty*. The report suggests a general priority of all recommendations that must be differentiated according to a country specific basis.

With a good supply of alternative mobility options and the general goal of sustainable transport as a solid background, a first step includes the introduction of the “Mobility Management” approach in leading policy documents; further development is needed in the area of integrating multi-modal policies and high quality guidance on the subject needs to be produced. Responsibilities among the levels of government and between private and public sectors should be assigned and clearly anchored in the institutions. At the same time the governance structure needs to work towards developing a co-operative and communicative style. Possible unintentional, but negative effects on Mobility Management of other related policies should be closely examined. Along these lines Mobility Management is evolving slowly but positively across Europe and has the potential to contribute its share to transport and mobility solutions.

### **Literature**

- MOST Consortium (Eds.) (2003a): Mobility Management Strategies for the Next Decades (MOST), Final Report. Graz.
- MOST Consortium (Eds.) (2003b): Framework for Mobility Management across Europe. Report D 6 of the MOST project. Graz.
- Lundquist, Lennart (1980): The hare and the tortoise: Clean Air policies in the United States and Sweden. Ann Arbor.

*All MOST reports will become available under <http://mo.st>*

## Annex

Country Type	Policies National Authorities	Objectives and Strategies National Organisations	Legal and Fiscal Framework	Public Funding	Education and Qualification	Organisational Conditions
<b>CC</b> Catalyst Countries	<p><b>United Kingdom</b> Central Government is pushing the issues of Mobility Management for companies and schools</p> <p><b>Switzerland</b> General orientation on sustainability in transport policy of the national government</p> <p><b>Belgium</b> Supportive attitude of the national Government for Mobility Management in companies and national plan for sustainable mobility</p>	<p><b>United Kingdom</b> A range of organisations and networks work towards developing Mobility Management</p>	<p><b>The Netherlands</b> Fiscal rules have been improved to support company Mobility Management</p> <p><b>Sweden</b> The Transport Bill from 2001 supports Mobility Management in a positive manner</p> <p><b>Italy</b> A decree requires companies to draw up mobility plans and establishes a support structure</p>	<p><b>The Netherlands</b> A budget for Mobility Management is available to the regions according to levels of congestion</p> <p><b>Italy</b> Funds are provided to municipalities and companies in relation to the legal decrees</p> <p><b>United Kingdom</b> Financial support is available for installing mobility managers at local authorities to work with schools and companies</p>	<p><b>Austria</b> The first professional training for mobility consultants was developed</p>	<p><b>The Netherlands</b> There are long established regional structures for consulting of companies as well as guidance and software tools</p> <p><b>United Kingdom</b> School Travel Advisory Group to spread best practice of reducing car use on the journey to school.</p>
<b>TC</b> Threshold Countries	<p><b>Austria</b> Transport and Environment Ministries are conducting pilot projects</p> <p><b>Germany</b> The modal organisational structure of the Transport Ministry is a hindrance for a multi-modal approach such as Mobility Management.</p>	<p><b>Switzerland</b> The awareness of large (public) transport providers is rising</p> <p><b>Germany</b> A number of large and small organisations are involved in Mobility Management</p> <p><b>Belgium</b> Several non-governmental actors work for the objectives of Mobility Management</p>	<p><b>France</b> Legal framework on urban transport master plans (PDU) supports Mobility Management</p>	<p><b>France</b> New grants are available for companies and public transport authorities but are little known</p> <p><b>Sweden</b> Some funding is available but its share is rather small compared to the overall transport budget</p>	<p><b>Italy</b> Short courses for mobility coordinators are available</p> <p><b>Belgium</b> Several possibilities for professional training and seminars including Mobility Management</p> <p><b>Sweden</b> Courses for mobility coordinators are available, seminars are held in different places</p>	<p><b>Spain</b> Transport consortia have been created at the regional level which also implement Mobility Management</p> <p><b>Germany</b> Existence of several handbooks and guidance; pilot projects have produced supportive tools.</p>
<b>FC</b> Follower Countries	<p><b>Spain</b> At present there are no specific objectives, policies or strategies at the national level</p> <p><b>Czech Republic</b> Broad discussion, dissemination of results and best practices is needed to initiate a development</p>	<p><b>Sweden</b> Almost no strategies relevant for Mobility Management</p> <p><b>Portugal</b> Few transport related organisations or lobby groups relevant to Mobility Management</p>	<p><b>Austria</b> The existing framework favours car use and has seen few changes</p> <p><b>Czech Republic</b> A legal framework in support of Mobility Management is lacking</p>	<p><b>Portugal</b> National level funding for Mobility Management is not significant</p> <p><b>Czech Republic</b> No public budgets in support of Mobility Management</p>	<p><b>Portugal</b> Transport is led by engineers with few training offers for Mobility Management</p> <p><b>Spain</b> The educational framework does not actively enhance the development</p>	<p><b>France</b> The fragmentation of the national authorities leads to disorganised initiatives</p> <p><b>Austria</b> The organisational framework is still underdeveloped but outlook is positive</p>

Table 1: Status of framework conditions in selected countries