

Mobility Management

A guide of international good practices



UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

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UNITED NATIONS

Geneva, 2020

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This publication is issued in English only.

United Nations publication issued by the United Nations Economic Commission for Europe.

ECE/AC.21/7

ISBN: 978-92-1-117224-9

eISBN: 978-92-1-004547-6

Sales No. E.20.II.E.10

ACKNOWLEDGEMENTS

This document has been prepared by Massimo Infunti with the expert input of Ioanna Lepinioti as part of the work of the Transport, Health and Environment Pan-European Programme (THE PEP) on achieving its Priority Goal 2: Manage sustainable mobility and promote a more efficient transport system.

The authors acted under the guidance of the United Nations Economic Commission for Europe project manager (Francesco Dionori) and THE PEP Steering Committee. The authors would like to thank the members of THE PEP Steering Committee for their valuable input and contributions as well as the representatives from the case studies analysed for their assistance.

THE PEP secretariat would like to thank the Federation of Switzerland for providing the funds for the preparation of this study.

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EXECUTIVE SUMMARY

Introduction

Mobility management is the promotion of sustainable transport and the management of the demand for car use by influencing travellers' attitudes and behaviour.¹ This approach has been increasingly gaining attention as a part of efforts to improve urban transport and urban environmental quality as a whole. The appeal of mobility management as an approach for dealing with mobility issues lies in the numerous potential benefits it can generate, including (but not limited to):

- a) Less congestion, resulting in a reduction in air pollution and in time wasted in traffic, as well as less stress;
- b) A greater variety of transport solutions, resulting in better accessibility;
- c) More efficient use of existing transport infrastructure, resulting in less public spending on unnecessary infrastructure;
- d) More efficient land-use management;
- e) Cost savings for local authorities, private companies and individuals;
- f) Healthier life styles and less stress, thanks to more active modes of transport.

Study on mobility management

Mobility management practices are the focus of this study in an effort to offer concrete examples of implemented measures and a better understanding of their impact on urban transport and its negative externalities, including carbon dioxide emissions and traffic congestion.

The study was developed following a case-study approach focusing on eight areas of analysis:

- a) Home to work mobility;
- b) Home to school mobility;
- c) Major events;
- d) Sustainable urban logistics;
- e) Parking management;
- f) Sustainable Urban Mobility Plans;
- g) Demand responsive transport;
- h) Communication and information.

Where possible, national coordinated efforts have been included and reviewed. The collection of case studies was based on a desktop study and interviews with key actors, with the aim of including examples from a variety of countries. As a result, the study includes a total of 22 good practices from 17 different countries that set out the positive and potentially significant impacts that mobility management programmes can have, such as:

- a) Reduction by 26 per cent of single occupancy car trips in the case of home to work mobility;
- b) Children identifying the benefits of travelling on foot and cycling in the urban environment thanks to dedicated walk-and bike-to-school programmes;
- c) More than 50 per cent of people travelling to major events using sustainable modes of transport;
- d) Reduction of carbon dioxide emissions by 17 tons, nitrogen oxides by 35 kg and inhalable particulate matter (PM₁₀) by 2 kg per year for sustainable urban deliveries;

¹ European Platform on Mobility Management.

- e) Reduction in car use (33 per cent of the total trips) for reaching multifunctional developments thanks to parking management measures and land-use planning;
- f) Reduction by 17 per cent of cars entering the city centre in the case of Sustainable Urban Mobility Plans;
- g) Cost-efficient demand responsive transport for sparsely populated areas;
- h) Positive, long-term impact on the mobility behaviour of citizens thanks to communication and information.

Main examples

Land-use planning and mobility management: It is important that Governments integrate land-use planning with transport and introduce elements of mobility management from the planning phase. (See the Parking management at Sihlcity and Strasbourg Sustainable Urban Mobility Plan examples in the main text.)

Home to work mobility: Mobility management should become standard practice for individual companies as well as for entire business and industrial parks. It is therefore important that national regulations ensure that the mobility manager figure becomes the norm for companies, and that local administrations provide assistance in the development and implementation of home – work mobility plans. (See the Green Way, Mobility Jackpot, Ropka tööstusrajoon, Andalusia Technology Park, Factory for Non-ferrous Metals– Mobility Green Label and the Skolkovo science and innovation park examples in the main text.)

Home to school mobility: Schools should be invited to appoint a mobility team that commits the school to engaging in mobility management, increasing student autonomy in terms of mobility and reducing congestion around schools. This is also important for university campuses, where mobility management practices can increase accessibility and reduce the need for parking spaces. (See the Reggio Emilia, West Midlands and Camosun College examples in the main text.)

Major events: Mobility management should be an integral part of the organization of major events, guaranteeing accessibility with a variety of transport modes other than the car and raising awareness among participants of their transport options. (See the Brussels concerts and London Olympics examples in the main text.)

Sustainable urban logistics: There are significant advantages to be obtained through sustainable urban logistics, for example, reductions in urban traffic, pollution and noise. Therefore, local administrations should seek solutions suitable for their characteristics, and logistics companies should be incentivized to develop innovative technologies and methods for greener last-mile deliveries. (See the Beer Boat, Cityporto and Cubicycle examples in the main text.)

Parking management: A significant leverage for sustainable mobility which can greatly influence car use for urban trips. It is therefore important that national and local Governments, as well as private companies, integrate it with mobility management elements. (See the Sihlcity and INFICON examples in the main text.)

Sustainable Urban Mobility Plans: A planning instrument for providing sustainable mobility and reducing car use in urban areas. There are three key aspects for their development and successful implementation:

- a) National Governments should assist local administrations through guidelines and technical support;
- b) Sustainable Urban Mobility Plans should address different policy areas and sectors and foresee the active participation of citizens and other stakeholders;
- c) Sustainable Urban Mobility Plans should be updated to reflect emerging transport innovations.

(See the Kruševac, the Strasbourg Sustainable Urban Mobility Plan and the Seattle Mobility Playbook examples in the main text.)

Demand responsive transport: This can prove to be an effective and efficient alternative to conventional public transport for sparsely populated areas, reducing car dependency. (See the Publicar and the Village Bus examples in the main text.)

Communication and information: These activities are valuable both as an integral part of mobility management measures and as stand-alone initiatives, which should still be integrated into transportation and urban planning. It is, however, important that the communication methods and information used be tailored to consider different target groups. (See the Munich – Gscheid Mobil example in the main text.)

Key lessons learned

Although there is no one size fits all approach to mobility management, for managed mobility schemes to work the following should be considered:

- Ensure that there are alternatives to the car;
- Introduce both “push” and “pull” measures;
- Know the target group;
- Ensure there is a long-term approach with commitments from all stakeholders in the area and integration with other programmes;
- Dedicate resources to raising awareness and communication;
- Make it fun and rewarding.





CHAPTER 1: INTRODUCTION

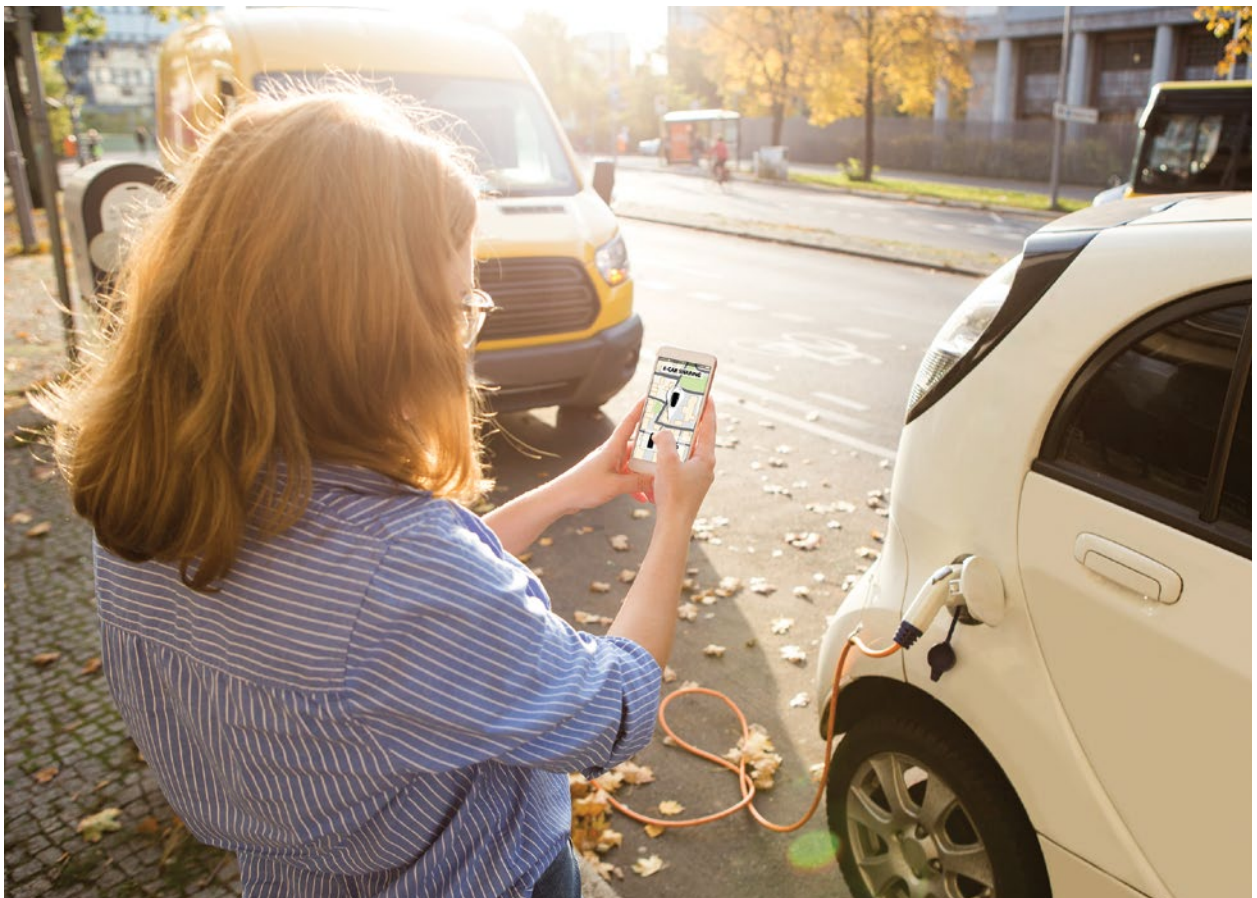
This guide has been prepared under the umbrella of the Transport Health and Environment Pan-European Programme (THE PEP) under Priority Goal 2: Manage sustainable mobility and promote a more efficient transport system.

The guide explores the subject of mobility management and provides a selection of good practices from around the world. Its aim is to offer concrete examples of how managed mobility schemes can improve the urban transport environment and, thus, inspire companies, cities, national and regional authorities, and all interested bodies in the planning and implementation of such schemes.

The guide is composed of four main parts:

- a) An introduction to mobility management that introduces the practice and provides an understanding of its objectives, benefits, levels of implementation and so on (Chapter 2);
- b) A brief analysis of regional, national or federal and supranational policies supporting mobility management (Chapter 3);
- c) A selection of good practices on different mobility management measures (Chapter 4);
- d) An analysis of the key lessons stemming from the good practices that can significantly influence the implementation and success of mobility management measures (Chapter 5).

A list of links with useful online information and resources closes the guide and provides additional material to further explore the subject.



CHAPTER 2: SETTING THE SCENE

Contrary to conventional transport management practices, mobility management (also referred to as travel demand management) is a demand-orientated approach that aims to enhance mobility and improve accessibility while tackling urban transport related problems such as congestion, poor air quality, loss of public space and energy consumption.

More specifically, mobility management focuses on changing the travel behaviour of people towards more sustainable modes of transport through the promotion and implementation of a diverse set of “soft” measures, including the organization of services, application of incentives and disincentives, information and communication.

There are three characteristics that make mobility management an appealing and effective approach for dealing with mobility issues:

- a) **Tailor made solutions:** mobility management is a flexible approach, it allows decision makers to choose from a variety of mobility measures according to the needs, challenges and scale of application, and therefore it can be adapted and modified to each case accordingly. In addition, it includes evaluation and user feedback, which allows for the further adjusting of the measures applied in order to obtain the “perfect fit”;
- b) **Low cost:** as mentioned earlier, mobility management is based on the implementation and promotion of “soft” measures, which in comparison to “hard” ones (e.g. road infrastructure) tend to require low financial resources and are highly cost effective;
- c) **Short to medium term impacts:** another advantage of “soft” measures is that they can be implemented quickly and thus their impacts can be visible within a short to medium period (6 months – 2 years) from decision making.

TARGET GROUPS

Mobility management can target different groups of the population depending on the level of implementation but most importantly on the objectives of the decision makers. This breakdown of the population in groups is usually based on one or more of the following aspects:

- Socio-demographic characteristics (e.g. young people and families);
- Socioeconomic characteristics (e.g. low-income population);

DEFINITIONS

MOBILITY MANAGEMENT

Mobility management is a concept to promote sustainable transport and manage the demand for car use by changing travellers’ attitudes and behaviour. (EPOMM)

TRAVEL DEMAND MANAGEMENT

Transportation demand management refers to various strategies that change travel behaviour (how, when and where people travel) in order to increase transport system efficiency and achieve specific planning objectives.

(Victoria Transport Policy Institute, 2014)

OBJECTIVES OF MOBILITY MANAGEMENT

- Encourage **change of attitude and behaviour towards sustainable modes** of transport
- **Improve accessibility** for all people and organizations
- **Satisfy mobility needs** by a more efficient and integrated use of (existing) infrastructure
- **Reduce traffic (growth)** by limiting the number, length and need for motorized vehicle trips
- **Improve co-operation between transport modes**
- **Increase the efficiency** of the entire transport system

(MOMENTUM/MOSAIC, 2000)

SOFT VS HARD MEASURES

SOFT MEASURES

Lower level of investment needed

Short-term implementation

More easily reversible

HARD MEASURES

Higher level of investment needed

Medium to long term implementation

More difficult and costly to reverse

Table adapted from European Parliament

- Trip purpose (e.g. commuters, students, shoppers and tourists);
- Geographical areas (e.g. residents of certain areas and employees of specific industrial zones);
- Timing (e.g. residents who have just relocated and newly-hired employees).

The **identification of the group to which mobility management is targeted is of great significance for its success**. The target group will determine the type and characteristics of the mobility management measures employed as they will have to meet its mobility challenges and needs.



LEVELS OF IMPLEMENTATION

Another important aspect of mobility management that should be highlighted is its ability to be implemented at **different scales**. In particular, two different levels are identified, **(1) urban or regional level** and **(2) site level**, that share the same objectives but can differ in the following aspects (*MOMENTUM/MOSAIC, 2000*):

- **Promoters** of mobility management (e.g. local administration or area mobility manager **vs.** site mobility manager);
- **Organization and procedures**;
- **Target groups** (e.g. entire local population or a specific segment **vs.** site users such as employees, students and visitors).

BENEFITS

Over the past few decades, mobility management has been increasingly embraced by both the public and private sector, which is highly justified considering the **numerous potential benefits** it can generate:

- Reduction of air pollution and thus better air quality with a positive impact on human health;
- Reduction of energy consumption;
- Reduction of noise;
- Less congestion resulting in a reduction of air pollution and time wasted in traffic as well as less stress;
- Greater variety of transport solutions resulting in better accessibility;
- More efficient use of the existing transport infrastructure resulting in less public spending on unnecessary infrastructure;
- Reduction of the overall number of trips;
- More free public space due to the reduction of the number of cars;
- More efficient land use management;
- Less accidents and better safety especially for the more vulnerable categories, for example pedestrians and cyclists;
- Cost savings for local authorities, private companies and individuals;
- Healthier life styles and less stress thanks to more active modes of transport;
- Improvement of the overall quality of life.

MOBILITY MANAGEMENT AND LAND-USE PLANNING

The integration of mobility management and land-use planning, that is the long-term planning and development of land use, can yield great benefits as well as contribute significantly to the sustainable development of urban areas.

The application of mobility management in land-use planning ensures the consideration of sustainable transport issues in new developments and long-term decision making, guaranteeing in this way the collaboration between land use and transport experts and ensuring that urban planning is less dependent on car use. More specifically, it draws attention to issues such as:

- Transport demand of new developments;
- Location of new developments in order to guarantee multimodal accessibility through existing transport infrastructures;
- Transport impacts of land-use planning processes.

Furthermore, the application of mobility management measures during planning is much more effective since (EPOMM, 2015):

- It ensures the presence of infrastructure for alternative modes of transport, for example public transport, cycling; walking and car sharing;
- It can introduce restrictions on car use, for example limited car parking and car free zones;
- It guarantees that non-car transport options are available from the beginning before (private car based) mobility choices are entrenched;
- Funding for the implementation of the measures can be influenced and secured.

There are two main ways in which the integration of mobility management with land-use planning can be achieved (EPOMM, 2015):

- a) **Legislation:** mobility management can be incorporated in national or regional legislation in the form of mandatory or optional regulations, for example planning and parking regulations and environmental legislation;
- b) **Building permission requirements:** mobility management measures can be part of building permission requirements set by local authorities for new developments.

The present guide includes two good practices where the positive impact of such integration is apparent:

- "Parking management at Sihlcity (Zurich, Switzerland)";
- "Strasbourg SUMP – a highly integrated SUMP (Strasbourg, France)".

The European Union project MaxLupo and its guidelines (2014) have set a milestone in the integration of land use and mobility policies (<http://www.epomm.eu/index.php?id=2748>).

MOBILITY MANAGEMENT PROGRAMMES AND MEASURES

Mobility Management programmes and measures can be divided in categories according to their characteristics, such as target groups, objective and mode of transport promoted.

Mobility Management programmes target a specific type of trip or a geographic area and they include a diversity of measures in order to promote sustainable modes of transport. The most important categories include:

- a) **Home-work:** the main target are systematic trips of employees towards a company or an industrial or business zone, whereas visitors are a secondary target group;
- b) **Home-school:** the target are students (and often parents of very young children) and the aim is to promote the use of sustainable modes of transport to and from schools;
- c) **Major events:** as opposed to the previous two categories, the target here are non-systematic trips carried out towards a specific geographic area due to an event, for example, a concert, sports event or international exhibition.

Sustainable Urban Mobility Plans (SUMPs) could also be considered here. They are strategic plans targeting trips carried out in an entire city and its surrounding areas with the aim to facilitate and promote a shift from cars to more sustainable modes of transport.

Mobility Management measures tend to facilitate and promote a specific mode of transport (e.g. walking, cycling, public transport and carpooling) or focus on a specific type of practice that contributes to sustainable mobility (e.g. parking management, communication and information).

AREAS OF INTERESTS

The present guide focuses on the certain mobility management programmes and measures aiming to provide a taste of the possibilities in the field. More specifically, considering the importance of certain programmes and measures and the work being carried out within the United Nations Economic Commission for Europe and THE PEP in parallel to the present guide, the following topics have been chosen for review:

- Home-work
- Home-school
- Major events
- SUMPs
- Demand responsive transport
- Parking management
- Sustainable urban logistics
- Communication and information.

GEOGRAPHICAL SCOPE

In addition, attention was taken to include good practices from a variety of countries as often mobility management practices may differ from country to country. In this way a selection of different approaches has been provided with as broad a spectrum as possible on the same subject.



CHAPTER 3: REGIONAL, NATIONAL OR FEDERAL AND SUPRANATIONAL POLICIES SUPPORTING MOBILITY MANAGEMENT

Coordinated regional, national or federal and even supranational (e.g. European Union) strategies for the development and promotion of Mobility Management initiatives are crucial for the effectiveness and mainstreaming of such practices. They provide the supportive framework, for example regulatory, financial and incentives, for the development and promotion of mobility management initiatives at companies, schools, cities, regions and so on, as well as the stimulus for the implementation of such practices. In addition, they can be useful for avoiding counterproductive measures (e.g. measures that promote the use of cars) and for making use of synergies with other policies, for example multimodality and infrastructure for public transport and air quality.

According to EPOMM (2013), supportive strategies for mobility management can be of three types:

- a) **Policies and laws:** they provide a framework for mobility management initiatives as well as promote their adoption. For example:
 - National legislation that makes mandatory the development of Sustainable Urban Mobility Plans for cities as well as provide guidelines and support for their preparation (present in many European Union member States);
 - National legislation in Italy obliges companies with more than 300 employees in a single branch or with more than 800 employees in multiple offices to appoint a company mobility manager;
 - Tax law in Switzerland promotes sustainable mobility by ensuring that children attend school in their own neighbourhood avoiding in this way long home-school trips;
 - The Norwegian National Walking Strategy encourages walking among all population groups while making it easier to walk more on a daily basis.
- b) **Fiscal measures:** for example, reimbursement for public transport or bicycles, reimbursements for millage covered by bike to reach the workplace, as well as measures for discouraging car use, for example a carbon dioxide (CO₂) tax for motor vehicles in Germany.
- c) **Awareness raising and promotion:** these include campaigns at regional, national and supranational level for the promotion of sustainable mobility, i.e. walking, cycling, public transport. For example:
 - “Nati per camminare” (Born to walk): campaign organized by the Region of Emilia Romagna (Italy) and aimed at children and parents of primary schools in its territory in order to promote walking for home-school trips;
 - Bike2Work: a campaign at national level that is present already in many countries including Brazil, the Russian Federation and Denmark. The characteristics of the campaign vary from country to country but in all cases the aim is to promote cycling for home to work trips;
 - European Mobility Week: a campaign at European level that promotes clean mobility and sustainable urban transport by giving people the chance to explore the role of city streets and to experiment with practical solutions to tackle urban challenges, such as air pollution.

GOOD EXAMPLES OF MOBILITY MANAGEMENT POLICIES AND STRATEGIES

More and more countries are adopting national Mobility Management policies and strategies in order to provide guidance and support for its application as well as facilitate its mainstreaming. It should be noted that the UN Paris Climate Agreement has contributed to this end as signatory countries have to meet ambitious climate objectives which among others call for the decarbonization of mobility and the wider transport system.

The approach to Mobility Management policies and strategies varies from country to country. For example, in the Netherlands the emphasis is on accessibility, while in Germany and Switzerland the attention is on energy savings and efficiency, while in France it is a matter of social inclusion and mobility solutions for people facing economic or social difficulties (EPOMM, 2013).

The following examples of national or federal policies and strategies for the development and mainstreaming of sustainable mobility and mobility management provide a more in depth understanding of their characteristics and their positive impacts.²

AUSTRIA

With efforts aimed at tackling climate change starting in the 1990s, in 2004 Austria established “**klimaaktiv mobil**”, a climate protection initiative in transport aiming at greenhouse gas reduction, energy efficiency and an increase of renewable energy. It does so by providing a national framework for motivating and supporting the development and implementation of measures for the reduction of CO₂ emissions from transport activities. “**klimaaktiv mobil**” is part of the broader “**klimaaktiv**” initiative of the Federal Ministry of Sustainability and Tourism for decarbonization in the fields of mobility, renewables, electricity saving and efficient buildings (EPOMM, 2018).

The “**klimaaktiv mobil**” programme is characterized by five pillars of action (EPOMM, 2018):

- a) **Consulting programmes** targeted at cities, municipalities and regions, businesses, fleet operators and associations, tourism operators, schools, youth initiatives and citizens, and offering expert advice, free-of-charge, on clean low-emission mobility and Mobility Management;
- b) **Financial support programmes** for CO₂ reducing mobility projects of municipalities, companies and associations. Projects receiving funding include: mobility management, green logistics, intelligent multimodal mobility services, innovative demand oriented public transport, cycling promotion including infrastructure, walking and so on;
- c) **Awareness raising programmes** offering information on clean low-emission mobility, for example cycling, eco-driving and public transport;
- d) **Training and certification**, including schemes for qualifying eco-driving trainers, bicycle mechanics and youth mobility coaches;
- e) Development of **partnerships** with actors in transport and relevant stakeholders. So far “**klimaaktiv mobil**” has developed partnerships with national institutions (e.g. Austrian Economic Chamber, Institute for Economic Promotion of the Economic Chambers, the Austrian Association of Cities and Towns and the Austrian Association of Municipalities) as well as the federal states, cities, municipalities, companies and institutions.

Since the establishment of “**klimaaktiv mobil**” in 2004 (BMNT, 2018):

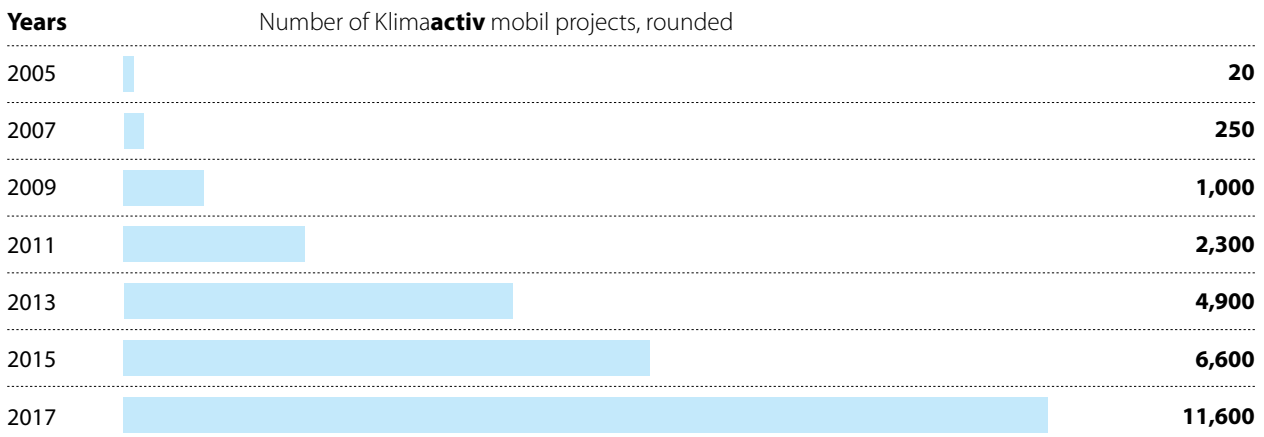
- a) **11,600 mobility management projects** have received funding and been initiated (see graph below):
 - 9,200 for businesses
 - 1,100 for cities, municipalities and regions
 - 900 for leisure and tourism
 - 400 for cycling projects;

² The examples are drawn from the EPOMM Mobility Management Strategy Book http://www.epomm.eu/docs/EPOMM_strategy_book.pdf.

- b) Around **250 cycling projects**, including the expansion of cycling infrastructure in the federal states and cities, have received funding;
- c) Around 77,500 children and adolescents, and 5,000 teachers have been reached;
- d) 26,300 alternative vehicles, including 23,800 electric vehicles, have been funded;
- e) Training of around 2,000 klima**aktiv** mobil competence partners, including:
 - Eco-driving trainers
 - Bicycle technicians
 - Youth mobility coaches
- f) Certification of 34 klima**aktiv** mobil driving schools;
- g) **Annual CO₂ savings** of approximately **0.5 million tons** have been achieved;
- h) Approximately 6,000 “green jobs” have been secured or created;
- i) The **total financial support** for mobility projects amounts to a total of around **€108 million** and has **triggered an environmentally relevant investment of €645 million**.

CHART I. KLIMA-AKTIV MOBIL PROJECTS

years 2005-2017, aggregate figures



Source: EPOMM, 2018.

FRANCE

The important role of the transport sector in economic development, social policies, improvement of health, as well as air pollution and climate change were the driver for the development of the national transport policy in France that aims to shift mobility behaviour towards more sustainable modes of transport. In fact, the 2016 “**National strategy for sustainable mobility development**” has set the following targets:

- a) 40 per cent less greenhouse gas emissions in 2030 compared to 1990;
- b) 30 per cent less fossil fuel consumption in 2030 compared to 2012;
- c) A 32 per cent share of renewable energy in 2030.

The “National strategy for sustainable mobility development” defines five priorities for the development of Sustainable Mobility and thus Mobility Management (General Directorate for Infrastructure, Transport and the Sea, 2019):

- a) Allow all territories to benefit from alternative mobility services compared to the individual use of the car and foster innovation;
- b) Contain mobility demand;
- c) Develop low-emission vehicles and improve the fleet’s energy efficiency by building on the alternative fuels market;
- d) Promote modal shift towards sustainable modes of transport for passenger transport;
- e) Promote the efficiency of freight transport and modal shift towards rail and river.

In addition, in June 2019 France adopted the “**Mobility Act**” (Loi Mobilités) which pays particular attention to sustainable mobility, the lack of transport alternatives in rural areas, innovation in transport and climate change. In particular the Act consists of **three pillars**:

- a) **Better and more investments** in everyday transport;
- b) Facilitate and encourage the deployment of **innovative solutions**;
- c) Facilitate the transition to **cleaner mobility**;

and is organized in **five projects**:

- a) Provide mobility solutions to all and in all territories;
- b) Accelerate the growth of new mobility solutions;
- c) Achieve the ecological transition of mobility;
- d) Invest in daily transportation service;
- e) Ensure the smooth operation of transport.

The Act contains **concrete actions** for the promotion of sustainable mobility including:

- a) Home-work mobility: companies with more than 50 employees have to facilitate the home-work trips of their employees through: working schedule or team arrangements, telecommuting, facilitating the use of bicycles or carpooling, taking charge of part of the expenses;
- b) Home-work mobility: creation of the sustainable mobility package: up to €400 per annum for home-work trips carried out by carpooling or by bike (replacing the bicycle kilometre allowance). All private and public employers will be able to contribute to carpool or bike commuting costs for their employees as well as other shared mobility services;
- c) Cycling: the implementation of a new bike plan with the aim to triple the modal share of cycling by 2024 (from 3 to 9 per cent) with a focus on:
 - The fight against bike theft through the progressive marking of bicycles and secure parking
 - Teaching how to ride a bike at school so that all children can master this practice
 - The requirement to create cycling routes in case of working places on urban or interurban roads
 - The development of a plan of national cycle routes and greenways
 - Banning parking five meters from pedestrian crossings for better visibility
- d) Encourage behavioural change: the requirement that all advertising for motorized vehicles is accompanied by a promotional message encouraging the use of active or shared mobility;
- e) 40 per cent increase in the investment in transport in the period 2018-2022 compared to 2013- 2017;
- f) Funding of projects that enable and facilitate clean, shared and active modes of transport.

The national policies for sustainable mobility in France have assisted the adoption of **Mobility Management measures**, which are **widely implemented** in France through different types of actions (EPOMM, 2018):

- a) **Mobility plans** (e.g. SUMPs and home-work mobility plans) that enable and promote sustainable modes of transport against single car use;
- b) Activities targeting citizens, **including mobility advice** for the population or specific groups (e.g. children and the unemployed);
- c) **Financial incentives**, for example bike allowance for home-work trips and half-price public transport fare nationwide for people with low incomes;
- d) Investments in **infrastructure for alternative modes to single car use**, for example bike lanes, public transport and carpooling lanes;
- e) **Regulations for limiting car use**, for example parking policies, 30 km/h speed zones and low emission zones;
- f) Actions aimed at **enhancing the understanding** of the professional and personal mobility behaviour of citizens in order to improve urban transport services.

As a result, some of the positive outcomes achieved by 2017 include (EPOMM, 2018):

- a) 133 sustainable urban mobility plans covering 55 per cent of the population;
- b) Well-developed home-work mobility plans resulting in 15 per cent fewer car trips of employees within 3 years;
- c) In big urban areas, like Lyon or Grenoble, an increase in the modal share of public transport, from less than 10 per cent 40 years ago, to 15 and 20 per cent, respectively.

PORTUGAL

The first major step towards a national strategy for sustainable and clean transport in Portugal was taken in 2011 with the launching of the **"Mobility Package"**, which included (EPOMM, 2013):

- a) Guidance for accessibility, mobility and transport issues in land-use planning and management instruments at municipal level;
- b) Guidance for the development of Mobility and Transport Plans – equivalent to Sustainable Urban Mobility Plans;
- c) Brochures for technical and thematic support on sustainable mobility and Mobility and Transport Plans;
- d) Guidance for mobility plans for companies.

This then led to national directives on mobility.

The "Mobility Package" also resulted in greater awareness on sustainable mobility through national and local workshops, as well as the coordination of local stakeholders.

Other relevant policies include (EPOMM, 2018):

- a) The 2015 **National Strategic Framework for Climate Policy**, which recognizes the transport sector as one of the challenges to be addressed both in terms of mitigation – under the National Climate Change Programme – and adaptation – under the National Adaptation Strategy;
- b) The **National Climate Change Programme 2020-2030**, which has set the reduction targets for the greenhouse gas emissions to be achieved at national level, and which for the transport sector specifically are -14 per cent by 2020 and -26 per cent by 2030 compared to 2005.

The National Climate Change Programme also includes policies and measures relevant to the transport and mobility sector (EPOMM, 2018):

- c) Sectoral initiatives:
 - Mobility management: medium- and long-distance transport (passengers and goods)
 - Mobility management: urban and suburban transport (passengers and goods)
 - Technology: vehicles and fuels
 - Behaviours
- d) Transverse measures:
 - Research, development and innovation
 - Knowledge, information and awareness
 - Green Taxation
- e) Areas of integrated intervention:
 - Public Administration: ECO.mob (Sustainable Mobility Programme for Public Administration)
 - Sustainable Cities

These policies and actions taken at national level in Portugal have led to important sustainable mobility programmes and results, including (EPOMM, 2018):

- a) The adoption of sustainable urban mobility plans by several municipalities;
- b) The decarbonization of the public transport fleet, through the replacement of the most polluting vehicles with low emission ones;
- c) The facilitation and promotion of soft and active mobility, through bicycle usage projects;
- d) Financial incentives for the use of public transport;
- e) Financial incentives for the acquisition of electric and hybrid vehicles.

OTHER INITIATIVES

A number of additional initiatives have been developed across Europe. Of note is the work undertaken in Germany which has recently updated its "Guidelines for Mobility Management in the Federal Administration"³ aimed at ensuring a coordinated approach to developing mobility management initiatives.

³ https://www.umweltbundesamt.de/sites/default/files/medien/376/publikationen/uba_fb_lf_mobilitatsmanagement_final_bf.pdf.



CHAPTER 4: MOBILITY MANAGEMENT GOOD PRACTICES

STUDY METHODOLOGY

Following the requirements of the terms of reference for the project, the good practices presented in this Chapter were collected through a desktop study that examined a number of mobility management programmes and measures implemented in different countries around the world. In addition, for certain good practices further data was obtained through telephone interviews with the people responsible for their development and implementation.

The following three main criteria were used for the selection of the examples included in the guide:

- Duration in time:** particular attention was given to the sustainability over time of the good practices selected as it is an important factor for guaranteeing significant and long-term results;
- Element of innovation:** innovation both in the methodology used and the measures implemented was also considered important as it has the potential to inspire and encourage other decision makers to think out of the box in order to achieve their sustainable mobility targets;
- Results obtained:** both quantitative (e.g. modal shift) and non-quantitative (e.g. development of a SUMP) were also deemed to be fundamental as they are an important indicator of the effectiveness of the programmes or measures.

Therefore, the good practices presented in the guide meet at least one of these criteria and in ideal cases they meet two or all three.

In total, 22 good practices covering 8 different types of mobility measures were collected, from 17 countries.

TABLE I. PROJECTS AND COUNTRIES REVIEWED

Types of programmes and measures covered	Countries (no. of good practices)
Home-work mobility	Austria (1)
Home-school mobility	Belgium (1)
Major events	Bulgaria (1)
Sustainable urban deliveries	Canada (1)
Parking management	Estonia (1)
Sustainable Urban Mobility Plans	France (1)
Demand responsive transport	Germany (1 - plus 1 with Netherlands)
Communication and information	Italy (2)
	Lichtenstein (1)
	Russian Federation (1)
	Serbia (1)
	Spain (1)
	Sweden (1)
	Switzerland (3)
	The Netherlands (1 - plus 1 with Germany)
	UK (2)
	USA (1)

GOOD PRACTICES

4.1 Home-work mobility

Green Way – Infineon’s Mobility Management Programme (Villach, Austria)

50 per cent of employees travel to work with sustainable modes of transport

How a Company in Austria, manages to achieve a strong modal shift using a motivated Mobility Management Team, which focusses regularly on mobility and has a clear company mandate.

Company: Infineon Technologies Austria AG⁴

No. of people working at the Villach site: about 3,400 people are employed by Infineon in Villach. In addition, a large number of people from other companies (supply industry) support Infineon at the site. The daily peak is at 2 p.m. with about 3,300 people simultaneously present.

Sector: semiconductor

Location: outskirts of Villach

Country: Austria

Implementation body: Infineon Technologies Austria AG – Mobility Team of 8 employees from various departments and varying from senior managers to shop-floor employees. The team is led by the company’s mobility manager.

Level of implementation: site specific with a positive impact for the local community in general

Topic: company mobility management

Target group(s): Company employees

Stakeholders involved: a variety of stakeholders including

- Company board
- Employees
- City administration
- Regional government
- Public transport operator
- Tourism union, or city and region marketing
- Companies in the area

INTRODUCTION

In 2016 Infineon Technologies Austria AG launched the mobility management initiative “Green Way” in order to promote sustainable mobility as an alternative to the daily trip to work by car. A mobility survey and an analysis of the employee’s



⁴ Reference to commercial companies and products does not imply endorsement by the United Nations or its member States.

residential location was carried out at the beginning of the project that provided useful insight on the mobility habits for home-work trips (Wukovitsch, 2018):

- More than 70 per cent of the employees travelled to work by car due to inadequate public transport connections, long commuting distances, shorter travel times, perceived lack of alternatives;
- Only 25 per cent of the employees live within 5 km (road network) of the company, around 50 per cent lives within 10 km and more than 20 per cent over 30 km away;
- A considerable number of employees were willing to carry out at least part of their home-work journey by bike.

This information formed the basis for the development of the “Green Way” measures.

OBJECTIVES

- Create attractive and sustainable alternatives to single occupancy home-work car trips that are available all year round.
- Reduce the CO₂ emissions from home-work trips and comply with the company’s commitment to sustainable growth.

MEASURES IMPLEMENTED

Mobility management at Infineon is a dynamic activity that evolves through the years in order to better meet the needs of the employees. In fact, the mobility team has regular meetings (once every two weeks) in order to discuss the development and implementation of mobility measures.

Mobility measures that have been implemented in order to facilitate and promote sustainable mobility include:

- **Public transport:**
 - Improvement of the public transport connections: since September 2017, there are two bus connections between the company and Villach’s city centre with a 15-minute frequency on two different bus routes;
 - Promotion of public transport through economic incentives: since March 2019 the company offers free annual public transport tickets to the employees that request them;
 - Continuous collaboration with the city government and the local public transport operator in order to further improve the connections with the different parts of the city and increase the number of employees for which public transport presents a valid alternative to car.
- **Cycling:**
 - Upgrading of bicycle parking facilities: a total of 800 parking spaces are now available, with further cycling parking facilities currently planned;
 - Creation of a covered multifunctional service station for bicycles;
 - Financial subsidies for the purchase of e-bikes;
 - Discussions with the city authorities for the creation of bicycle lanes.
- **Carpooling:**
 - Reserved parking spaces for carpoolers: 100 spaces with direct access to the company’s building;
 - Access to visitor parking spaces for employees that carpool to work;
 - Carpooling app “TwoGo” to facilitate employees in offering and finding a ride; Infineon has promoted the app to other local companies and at a city level in order to increase the number of users and, thus, the formation of carpooling groups.
- **Electric mobility:**
 - Creation of parking spaces with charging points for electric cars with a plan to further expand them;
 - Raising awareness on electric mobility.
- **Smart working:** employees can be offered the possibility to work from home for a number of days per week - max. up to 20 per cent following approval by the group manager.
- **Communication and visibility:** communication and visibility of the measures implemented are an important part of the “Green Way” programme. Since the beginning, all the above measures were accompanied by a number of communication activities including the creation of a visual identity for the project (e.g. logo), development of a motto (e.g. Take the Green Way), e-newsletter, communication messages on screens, emails and so on.

■ Miscellaneous measures:

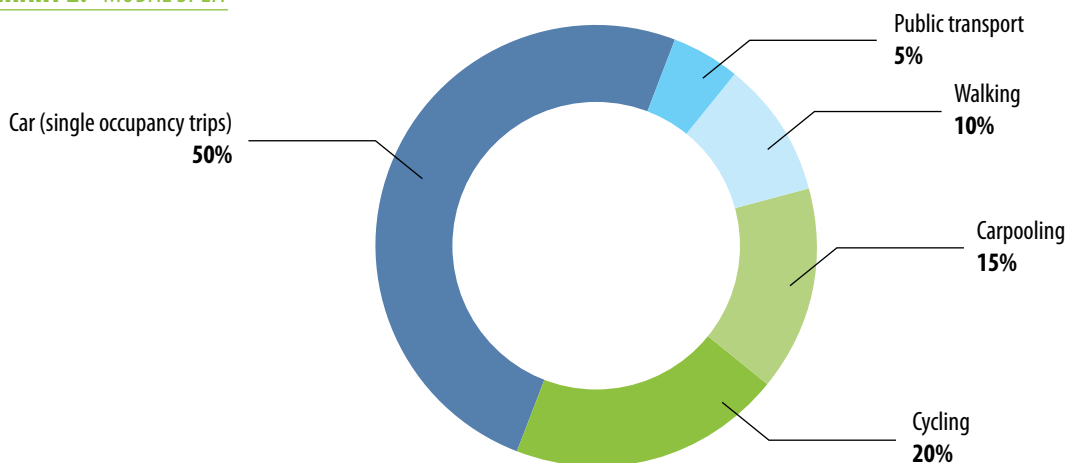
- Encourage employees to live in Villach in order to shorten home-work distance: Infineon contributes to the welcome2villach.at platform and in the development of measures to increase the attractiveness of the city (including transport planning approaches, public transport improvements and creation of new cycle paths);
- Participation in the European Union project STEVE,⁵ one of the objectives of which is the development of an e-bike and quadricycle sharing system.

Note: Infineon is currently expanding its Villach site with a new factory and office buildings. During construction works, challenges could arise for certain mobility measures, e.g. carpooling reserved parking spaces, nonetheless the mobility team follows a very flexible approach that allows it to adapt to changes and continue the “Green Way” programme without major alterations.

RESULTS

The amount of car trips fell from 76 per cent to 50 per cent, therefore 50 per cent of employees commute with sustainable modes of transport and the ongoing efforts continue to increase this percentage with a particular focus on public transport.

CHART 2. MODAL SPLIT



Source: Felsberger, Matthias (2019). Infineon Case Study v3, 15 May 2019

SUCCESS FACTORS

- Management board supported the “Green Way” initiative from the beginning.
- Identification of transport solutions that meet the needs of the employees.
- Good communication and information campaign targeted at the company employees.
- Visibility of the mobility measures at a local and national level.
- Close collaboration with the local stakeholders.

The success of Infineon’s “Green way” initiative was recognized at national level when in 2018 the company won the VCÖ⁶ - Kärnten Mobility Award and the Austrian VCÖ award in the category “workplace and education”.

BARRIERS AND OBSTACLES

The greatest barrier encountered in the change of travel behaviour towards sustainable modes of transport was the general pro-car mindset among employees and society as a whole.

⁵ <http://www.steve-project.eu>.

⁶ The VCÖ is Austria’s biggest competition for sustainable mobility carried out in cooperation with the Ministry for Transport, the Ministry of Sustainability and Tourism, and the ÖBB.

Mobility Jackpot (or Lottery) at Seewer AG (Burgdorf, Switzerland)

A simple game can shift four per cent from car to bike

How a lottery can transform a trip into a game and challenge workers for change. The success of Seewer AG.

Company: Seewer AG

No. of employees: 200

Sector: Bakery machine factory

Location: Burgdorf

Country: Switzerland

Implementation body: Seewer AG in collaboration with Büro für Mobilität AG

Level of implementation: site specific

Topic: home-work mobility

Target group(s): employees

Stakeholders involved:

- Company management
- Employees



INTRODUCTION

Mobility Jackpot is a communication campaign tool that aims to promote sustainable mobility among employees. It is based on the idea that employees who travel to work by sustainable modes of transport, for example on foot, bike, public transport or by carpooling, have the opportunity to win a sum of money every week. In this way positive mobility habits are rewarded, encouraging employees to rethink and eventually shift to more sustainable modes of transport for their home-work trip.

The Mobility Jackpot was implemented at Seewer AG in the early 2000's and it has been adopted by various other companies and local authorities in the past years as it is a fun way to raise awareness on sustainable mobility habits among employees.

OBJECTIVES

- Encourage employees to use sustainable modes of transport for their home-work trips.

DESCRIPTION OF THE MEASURE

The Mobility Jackpot implemented at Seewer AG worked in the following way (Mobilservice PRATIQUE, 2007):

- 50 Swiss francs was placed in the Mobility Jackpot every week.
- Once a week on a random day an employee was selected arbitrarily.
- He/she was asked what mode of transports he/she used for reaching the workplace that day.
- He/she won the Jackpot if the trip was carried out by a sustainable mode of transport, that is on foot, cycling, public transport and carpooling, and was offered the amount of money in cash.
- If he/she had reached the workplace alone by car the money remained in the Jackpot and was added to the sum of the following week. The Jackpot prize could reach considerable amounts when nobody hit the Jackpot for a number of weeks in row.

The higher the amount of money in the Mobility Jackpot, the higher the propensity of the employees to travel to work by sustainable modes of transport.

RESULTS

A survey carried out before and after the implementation of the Mobility Jackpot showed (Mobilservice PRATIQUE, 2007):

- A modal shift of four per cent from car trips to cycling.
- 16 per cent of employees had questioned their choice of transport mode during the Mobility Jackpot.

SUCCESS FACTORS

- The Mobility Jackpot raised interest on mobility behaviour, which, in the case of Seewer AG, became a topic often discussed by the employees.
- It is a fun way to raise awareness on sustainable mobility.
- It rewards those who adopt a sustainable mobility approach.
- A low-cost measure that can be modified according to the company's objectives.

BARRIERS AND OBSTACLES

- Sustainable modes of transport should be a valid alternative to the private car to reach the place of employment.
- In order to have a long-lasting impact on the mobility behaviour of the employees it is important to have the measures in place for long periods and, preferably, the Mobility Jackpot should be part of the company's mobility plan.

Ropka tööstusrajoon a Public – Private Partnership for Mobility Management (Tartu, Estonia)

Creating a culture of sustainable mobility in a medium-sized town

Cooperation between the city government and private companies has been the key element to raise awareness and have a positive influence on mobility behaviour.

Industrial zone: Tartu Ropka tööstusrajoon

Location of the event: Tartu

Country: Estonia

Implementation body: City of Tartu

Level of implementation: site specific

Topic: home-work mobility

Target group(s): employees and visitors of the industrial zone

Stakeholders involved:

- Tartu city administration and planners
- Transport experts
- Public transport operator
- Representatives of the companies located at the industrial zone
- Non-governmental organizations



INTRODUCTION

The industrial zone of Ropka tööstusrajoon is situated 5 km away from the centre of Tartu. It hosts more than 450 small and medium-sized enterprises and commercial activities, drawing in about 3,300 employees daily. In addition, every day it receives around 6,500 visitors.

The presence of a high number of small and medium-sized enterprises and commercial activities, with differing work schedules, that do not perceive a clear economic or marketing benefit from implementing mobility measures created a significant barrier. Coupled with the lack of a management body responsible for the accessibility of the industrial area, meant that there was a lack of spontaneous interest in mobility management. In response to that the Municipality of Tartu, with the support of the European Union project MoMa.BIZ⁷ and in collaboration with the representatives of the companies, developed and implemented a mobility plan for Ropka tööstusrajoon.

OBJECTIVES

- Improve the sustainable mobility options to and from Ropka tööstusrajoon.
- Reduce the number of employees going to work by car and, thus, decrease the environmental impact of home-work mobility.
- Promote a Public-Private Partnership approach for the creation and implementation of a realistic and commonly-agreed mobility plan.

⁷ MoMa.BIZ – Mobility Management for Business and Industrial Zones, <http://moma.biz/>.

MEASURES IMPLEMENTED

Background work:

- Creation of a local mobility group – the group involved local stakeholders such as non- governmental organizations, transport experts, local administration, representatives of the companies, etc. Its aim was to analyse the mobility situation of the industrial area and develop a mobility plan.
- Audit of the walking and cycling conditions between the town and Ropka tööstusrajoon.
- Desktop research on flexible transport good practices.
- Organization of training sessions on mobility management for the creation of a culture on sustainable mobility among local stakeholders.

Planning and implementation of mobility management measures:

- Development of a mobility plan for Ropka tööstusrajoon that focused on three areas:
 - Improvement of public transport
 - Improvement of cycling and walking conditions
 - Awareness raising campaigns and activities for the promotion of sustainable modes of transport
- Implementation of the mobility plan:
 - Public transport: improvement of the timetables and comfort of public transport, as well as dissemination of information on the lines connecting the industrial area with the city
 - Feasibility study on flexible transport
 - Cycling and walking: safer infrastructure for cyclists and pedestrians, installation of bicycle stands
 - Awareness raising campaigns: collaboration with non-governmental organizations, local and state authorities, preparation and dissemination of an accessibility map for sustainable modes of transport, organization of a mobility competition among the employees of the industrial area
 - Distribution of mobility information packages to new employees in the zone: promotion of a sustainable mobility mentality by supplying the new employees who are unfamiliar with the local transport offer with information on alternative modes of transport.

RESULTS

- Better accessibility of the industrial area in particular with sustainable transport modes.
- Raised awareness among employees over the different transport modes available for reaching the industrial area and modal shift in favour of sustainable modes of transport.
- Creation of a sustainable mobility culture among the local stakeholders, i.e. local authorities, companies, local planners, engineers, transport specialists, architects and so on.

SUCCESS FACTORS

- Local mobility group – this public-private partnership was central to the creation of a commonly- agreed mobility plan.
- Creation of a realistic mobility plan that had the support of local stakeholders.
- Participation in a European project on mobility management that allowed for the exchange of know-how and expertise on mobility management.

BARRIERS AND OBSTACLES

- High number of small and medium-sized enterprises and commercial activities present at the industrial area.
- Lack of sustainable mobility culture among local stakeholders.

Mobility Management at the Parque Tecnológico de Andalucía (Malaga, Spain)

Increasing the transport options for 16,774 employees

The mobility management initiative of the Parque Tecnológico de Andalucía has improved the travel conditions of the employees of 600 companies.

Business area: Parque Tecnológico de Andalucía

City: Malaga

Country: Spain

Implementation body: Management body of the Parque Tecnológico de Andalucía

Level of implementation: site specific

Topic: home-work mobility

Target group(s): employees and visitors of the Parque Tecnológico de Andalucía

Stakeholders involved:

- Management body of the Parque Tecnológico de Andalucía
- Malaga city administration
- Regional government Public transport operator



INTRODUCTION

The Parque Tecnológico de Andalucía (PTA) is located 13 km west of Málaga and 6 km from the Málaga International Airport. At the moment over 600 companies are located at its premises with more than 16,774 employees, meaning a significant number of trips are made to the PTA area (PTA website).

Therefore, a mobility management programme was necessary in order to offer valid alternatives to the private car and limit the number of single occupancy trips to and from its premises.

The mobility management plan was an initiative of the PTA management body, and the measures implemented affect the mobility behaviour of the employees of all the companies located at the site.

OBJECTIVES

- Provide a variety of transportation options for employees and visitors in order to improve accessibility while tackling traffic and parking issues.

MEASURES IMPLEMENTED

- **Public transport:** PTA is connected with Malaga with two bus lines with a frequency of 10 to 15 minutes. That was achieved thanks to the lobbying activity of PTA aimed at convincing the public transport operator to improve bus connections between PTA and Malaga.
- **Free bike loan system on site:** PTA offers a free bike loan system to all its companies with the aim of facilitating mobility within its premises. Companies have to register in order to make use of the system and pay a deposit of €50 per bike.

In that way their employees can use the bikes free of charge for moving within the Park. Registration to the bike loan system is annual and it is renewed automatically unless cancelled.

- **Carpooling:** in order to facilitate and promote carpooling among people that travel to and from the site, the PTA adopted an interactive carpooling matching tool. Employees working at the site can register and connect with other employees that are looking for or are offering a ride.
- A **Mobility Centre** at PTA provides information and promotes the different modes of transport for reaching the site. It also collects transport related requests and suggestions from the site companies and employees with the aim of improving mobility at the PTA.
- Clear information on the different modes of transport available for reaching PTA is also available to visitors through the PTA website.

Factory for Non-Ferrous Metals in Plovdiv – Mobility Green Label (Plovdiv, Bulgaria)

Labelling at the service of mobility

How Mobility Labelling can be of great use to the development of a Mobility Management Plan.

Industrial area: Factory for Non-Ferrous Metals in Plovdiv

City: Plovdiv

Country: Bulgaria

Implementation body: Factory for Non-Ferrous Metals in collaboration with the Energy Agency of Plovdiv

Level of implementation: site specific

Topic: home-work mobility

Target group(s): employees and visitors of the Factory for Non-Ferrous Metals

Stakeholders involved:

- Management of the Factory for Non-Ferrous Metals
- Employees
- Energy Agency of Plovdiv

INTRODUCTION

The Factory on Non-ferrous Metals (FNM) is a corporation of 10 companies situated 10 km south of Plovdiv (the second largest Bulgarian city). It covers an area of 0.9 km² and has approximately 2,500 employees, 90 per cent of which are factory workers and 10 per cent administration staff. In addition, it receives around 2,700 visitors per year, mainly students and interns, that represent 12-15 per cent of the people flow.

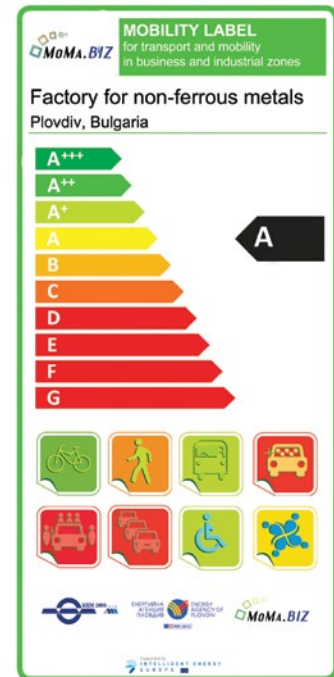
Although FNM is easily accessible by public transport, car, and motorbike (the last one in good weather conditions), there were still mobility issues on site including:

- Low quality of the public transport service
- Inadequate parking management with parking area being overcrowded
- Lack of carpooling culture
- Lack of bike lanes to and from the site rendering cycling to work dangerous
- Flexible working hours or teleworking not available to administration staff.

It should be noted that FNM has a centralized management that is responsible for the development and the implementation of policies at its premises.

OBJECTIVES

- Improve and promote sustainable mobility options to, from and within the site.
- Decrease the number of home-work trips carried out by car.



MOBILITY MANAGEMENT ACTIONS

FNM collaborated with EAP within the framework of the European Union project MoMa.BIZ, and following the Mobility Labelling⁸ methodology proposed by the project produced a mobility plan entitled “Transport and Mobility Improvement Plan”, which focused on the following areas:

- Improvement of public transport connecting the site with the surrounding areas
- Setting up and promotion of carpooling
- Introducing a parking management scheme
- “Greening” of deliveries within the site
- Raising awareness on sustainable mobility.

MEASURES IMPLEMENTED

- Definition of new quality tender obligations for the transport operators and improvement of existing bus stops. It should be noted that public transport is organized and co-financed by FNM.
- Development and dissemination a Parking Management Map allocating special spaces to carpoolers and bikes.
- Facilitation and promotion of carpooling through:
 - An online platform for bringing together employees interested in carpooling
 - Reserved parking for carpoolers
 - Guaranteed ride back home
- Introduction and test drive of cargo bicycles for deliveries within the FNM site. They serve a dual purpose:
 - Facilitate greener deliveries within the site
 - Encourage employees to consider cycling for their trips
- Awareness raising:
 - Information campaign highlighting to the employees the benefits of using sustainable transport
 - Use of MoMa.BIZ’s Mobility Labelling tool for the promotion of sustainable mobility as well as promoting a green image for FNM. In particular, the mobility situation at FNM was evaluated before and after the implementation of the mobility plan by using the Mobility Labelling tool. The tool indicated a net improvement in the sustainable mobility options since FNM passed from Class B to Class A thanks to the measures implemented
 - Organization of an information day at FNM that included:
 - Presentation of the Transport and Mobility Improvement Plan to the employees
 - Individual trip advice for employees
 - Dissemination of transport related information material
 - The Green Label Award Ceremony during which FNM was awarded with an “A Class” Mobility Label Certificate
 - Press conference.

RESULTS

- The first industrial area in Bulgaria to develop a Mobility Management plan.
- Improvement of the mobility situation at FNM which is also certified by the Mobility Labelling tool.

SUCCESS FACTORS

- Interest and support of the Senior Management of FNM to the mobility plan and sustainable mobility initiatives.
- Creation of a common vision regarding sustainable mobility at the FNM site by triggering dialogue regarding the needs of the businesses and their employees.

⁸ MoMa.BIZ Mobility Labelling <http://moma.biz/et/documentation/mobility-labelling>.

Mobility management at a Science and Innovation Park - Skolkovo Foundation (Moscow, Russian Federation)

Site specific mobility management with an innovation campus

Planned public transport, cycling and electric mobility measures conceived within the framework of Skolkovo's mobility management plan could have a potential impact on the surrounding community.

Location: Mozhaysky District of Moscow

Country: Russian Federation

Implementation body: Skolkovo Foundation

Level of implementation: site specific

Topic: home-work mobility

Target group(s): employees of the companies located at the Science and Innovation Park

Stakeholders involved:

- Companies located at the Park
- Employees
- Local authority
- Local public transport operator
- Car sharing provider
- Investors



INTRODUCTION

Skolkovo is a research and innovation park located at the Mozhaysky District of Moscow. Companies in the fields of IT, Energy Efficiency, Nuclear Technologies, etc. are present in the Park and, therefore, it is the destination of numerous employees. Sustainable mobility has been part of the Park's development plans and, within the framework of its Green Code.⁹

More specifically, Skolkovo intends to prioritize the following modes of transport for the people working at its premises (listed in order of priority):

- Pedestrian
- Cyclist
- Public transport
- Individual transport.

⁹ Green Code is a document that collects rules and urban development standards and contains requirements that must be met when developing urban planning documentation. Its purpose is to guarantee that Skolkovo is an environmentally-friendly development with respect to the natural and social environment as well as the economy.

OBJECTIVES

- Reduction of the energy consumption for home-work trips
- Ensure that the existing parking spaces at 11 entrances meet Skolkovo's needs
- Improving of infrastructure beyond Skolkovo for electric cars
- Improving public transport: the authorities are considering higher frequency and establishment of new routes.

MEASURES IMPLEMENTED

- Promotion of electric car sharing: collaboration with car sharing services such as Belkacar, Delimobile, YouDrive (electric cars).
- Infrastructure adapted for high percentage of non-car-using employees (bicycle lanes, bike or scooter stations and parking places).
- Promotion of cycling.
- Bike sharing: a bike sharing service is available with a monthly cost of a bike on the territory of Skolkovo of 566 Russian roubles (€7.85).
- Parking management: employees driving diesel cars cannot access the Park.
- Eco-friendly corporate transport services (buses).

PLANNED MEASURES (BAKLANOV, 2018)

- An important milestone regarding transport infrastructure for Skolkovo is the railway hub, which should be completed in mid-2019. It will be possible to reach the Park from the railway station on foot via a covered pedestrian street (more than a kilometre long), or by renting a bicycle or scooter through the cycling network.
- Access by car will still be possible, however, parking spaces will be limited (11,200 places for an estimated 50,000 employees and residents) and parking fees high (parking will cost approximately 12,000 Russian roubles per month (about €166)¹⁰ against €7.85 for a monthly bike rental).
- Infrastructure will be adapted for high percentage of electric-car-using employees (special lanes on the roads, recharge stations, parking places).
- Connect Skolkovo, through a network of bicycle lanes, with the city centre of Moscow.

EXPECTED RESULTS

- Shift from motorized individual transport to more sustainable modes of transport.
- Reduction in the CO₂, thanks to the reduction of motorized individual transport for home-work trips.

SUCCESS FACTORS

- Mobility management is an integral part of the Skolkovo's environmental management process: Green Code.
- The rules apply to all the employees.
- Some of bike sharing services and electric taxis were developed right at the Skolkovo Park, and technologies continue to improve.

BARRIERS AND OBSTACLES

- Poor infrastructure for sustainable mobility around Skolkovo.

¹⁰ Exchange rate of 29 April 2019.

4.2 Home-school mobility

Mobility Management at campuses – the case of Camosun College (Victoria-British Columbia, Canada)

14 per cent reduction in vehicle use for home-work or college trips

Mobility Management has led to a steady decrease in vehicle use among Camosun College staff and students.

Campus: Camosun College

City: Victoria, British Columbia

Country: Canada

Implementation body: Camosun College

Level of implementation: site specific

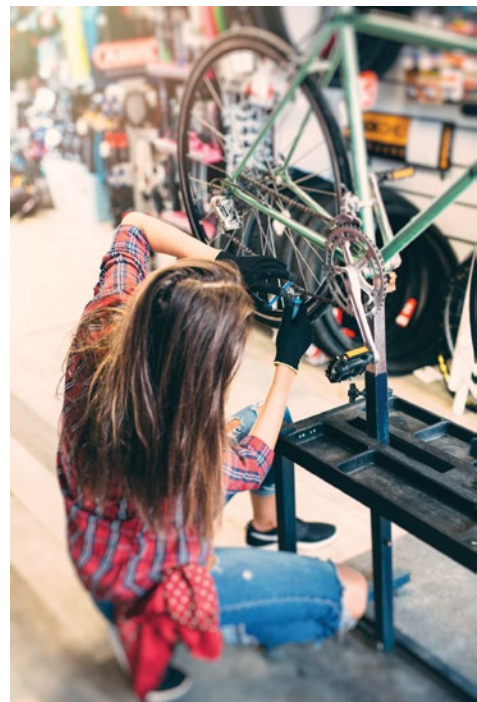
Topic: home-work and home-school

Target group(s):

- staff
- students
- visitors

Stakeholders involved:

- Camosun College
 - Director of Ancillary Services
 - Manager of Environmental Sustainability
 - Transportation and Parking Management Advisory Committee
 - Human resources
 - Unions
- TPM Advisory Committee
- CRD Regional Transportation Planning;
- Local and provincial governments
- Neighbourhood associations
- BC Transit



INTRODUCTION

Camosun College has around 1,200 staff and approximately 10,000 full time students who are distributed between two campuses, Lansdowne and Interurban (Camosun College, 2013).

Transportation and parking challenges led to the development of Camosun's College "Transportation and Parking Management Plan" in 2009, which provided an insight of the transport situation and issues at the time and set out clear objectives and recommendations. Since then the College, is regularly preparing and implementing three year working plans that include mobility management measures aimed at achieving these objectives.

OBJECTIVES

Camosun's College overarching goal is to provide "convenient, environmentally responsible and affordable access to the College's campuses". In order to achieve this, its "Parking & Transportation Demand Management Plan" identifies the following objectives (Camosun College, 2013):

- Reduce parking demand and the total number of motor vehicles – especially single occupancy vehicles – driven to campus.
- Increase use of alternative transportation modes to the college.
- Provide funding for parking maintenance, alternative transportation, and other college programmes.
- Accommodate additional campus development, minimize impervious surfaces and preserve green space.
- Support regional and provincial goals towards transportation demand management and reduction of greenhouse gas emissions (help achieve the British Columbia greenhouse gas emission reduction targets).

MEASURES IMPLEMENTED

The measures implemented since 2009 have led to an improvement in, and a greater variety of, the transport options available for reaching the campuses and, thus, the improvement of the campuses' overall accessibility. More specifically, the campuses can be easily reached on foot, by bike, public transport, car and carpooling, and there is also a free shuttle service connecting the two campuses. This good practice is focusing on the measures implemented to increase cycling trips and reduce parking demand and the number of vehicles, especially single occupancy vehicles, driven to campuses.

Actions implemented to facilitate and promote cycling:

- Bike fix-it stations (one at each campus):
 - They offer cyclists the ability to make basic repairs and maintenance of their bicycles. They are equipped with a basic repair stand, durable air pump, basic tools and a hanger arm that allows for suspending bikes so the wheels and pedals can spin freely while making adjustments
 - Extra assistance is available through a database of repairs that offers detailed instructions on fixing bikes, this is made available on smartphones by scanning a Quick Read (QR) code on the front of each fix-it stand.
- Showers and changing rooms:
 - Students and staff have free access to change rooms, showers and day use lockers. There is also a towel service, available for a small monthly fee.
- Lockers:
 - Lockers are also available for rent for those that need a secure space to keep their belongings, and they are positioned at convenient locations throughout the campus.
- Bicycle parking: there are three options for parking bicycles:
 - Outdoor racks: free of charge bicycle racks located throughout the campuses
 - Secured parking that is available for a fee of Canadian \$5.50/month
 - A limited number of individual bicycle lockers available for rent on a monthly or six-month basis.
- Cycling maps and routes are readily available to download on the College's website.
- Events: promotion of cycling within the campuses through dedicated cycling events such as Bike to Work (and School) Week (May/June) or the Nasty November Cycling Challenge.

Actions aimed at reducing parking demand and the number of vehicles, especially single occupancy vehicles, driven to the campus:

- Carpooling: dedicated parking spaces reserved for carpoolers until 9 a.m.
- Car sharing: partnership with car sharing operator Zipcar to bring self-service, on-demand car sharing to the campuses.
- Parking: elimination of free parking at the campuses and collaboration with Honk Mobile to offer a pay-by-phone parking app in order to facilitate payment of the fees.

- Park & Ride program: free parking is available for students at Tillicum Mall in Victoria from there the College campuses can be reached by public transport, bike, or carpooling.
- Communication and promotional events, e.g. National Ride-Share Week and Car Free Day celebration (2012).

In addition, the College is developing a teleworking policy and programme in order to increase its use and uptake by staff.

RESULTS

Some of the results obtained since 2009 include (Camuson College Website, 2019):

- Decrease in single occupancy vehicles from 5.4 per cent in 2010 to 3.8 per cent in 2012.
- Decrease in vehicle use from 63 per cent in 2008 to 56 per cent in 2010 to 49 per cent in 2013.
- Successful discussions with local authorities leading to better transit services, improved access to the campus and new bicycle lane infrastructure.



A comprehensive approach to mobility management for home-school trips (Reggio Emilia, Italy)

A Mobility Manager present in 72 per cent of the schools

The comprehensive approach of the city of Reggio Emilia to home-school trips is influencing the mobility behaviour of 72 per cent of its schools.

City: Reggio Emilia

Country: Italy

Implementation body: City administration in collaboration with the different stakeholders

Level of implementation: city level

Topic: Home-school mobility management

Target group(s):

- Students
- Teachers
- Parents
- Citizens in general

Stakeholders involved:

- City administration
- City boroughs
- Provincial School Office
- Heads of schools
- Reggio Emilia Mobility Agency
- Italian Federation of Paediatricians
- Arpa – regional agency for environmental protection
- Ausl - local health authority
- Road Safety Observatory
- Cycling association “Tuttinbici-Fiab”
- Students
- Parents



INTRODUCTION

When it comes to home-school mobility management the Municipality of Reggio Emilia has followed a comprehensive approach that involves a variety of stakeholders, clear objectives and allows for the co-creation of action plans and projects. More specifically, in 2009 the Municipality launched the “Manifesto for safe, sustainable and autonomous mobility for home-school journeys”. Since the signing of the “Manifesto” a number of projects have been carried out with the aim to promote home-school trips which are more autonomous, sustainable and safe (Pellegrini, 2018).

OBJECTIVES

Ensure that going to school without the car and with friends becomes a consolidated habit and an opportunity to improve:

- Health
- Safety
- Environment
- Autonomy
- Social interaction
- Schools and the local area.

SPECIFIC TARGETS:

- Reduce road accidents and traffic near schools
- Double the number of children going to school with sustainable modes of transport
- Ensure each school has a mobility manager.

MEASURES IMPLEMENTED

The measures implemented fall under six lines of action (Pellegrini, 2018):

1. Education:

- Promote better and healthier lifestyles and raise awareness on environmental issues
- Raise awareness and educate children on sustainable mobility.

2. Communication: ensure that drivers and road users respect road traffic rules

3. Promotion:

- Provide the opportunity for students to experience sustainable modes of transport during the home-work trip;
- Incentivize the participation at sustainable mobility projects.

4. Safety: ensure more safety on main home-school routes and around schools

5. Services:

- Provide and promote collective modes of transport, e.g. school bus, carpooling
- Promote non-motorized modes of transport, e.g. walking and cycling

6. Planning:

- Sustainable mobility should be at the centre of planning - develop a safe network for vulnerable users
- Consider mobility issues when designing new schools.

The city of Reggio Emilia has implemented a number of projects within the framework of its Manifesto, the most important ones include:

- **School Mobility Manager (SMM):** the school representative regarding mobility who can:
 - Act as a spokesman for the school's mobility issues and demands
 - Receive and propose initiatives regarding sustainable mobility education
 - Encourage safe and sustainable modes of transport
 - Provide a continuous communication channel between the school and the Municipality.
- **BiciBus** (bicycle bus) and **PediBus** (walking bus): groups of children travelling to school by bike and on foot respectively, accompanied by volunteers (parents, teachers, etc.) along pre-established routes.
- **Mobility experiences for day nurseries and nursery schools:** provide nursery schools with balance bikes in order to give the opportunity to children between two and six years old to learn how to balance on a bicycle. As a result, Primary School children are able to ride a bicycle.

- **Shared use of public spaces:** a series of initiatives aimed at promoting the use of spaces near schools in a shared and safe way. Three main lines of action:
 - Traffic calming and infrastructural improvement of the areas surrounding the schools
 - Temporary car free zones at the beginning and end of the lessons
 - Clearly marking the presence of schools outside the school grounds and on the roads that serve the schools. This is achieved by the co-creation of “Urban Tattoos”, that is designing and painting with the children relevant designs on the streets.
- **Collaboration with paediatricians:** local paediatricians participate at public events and school meetings and have direct contact with individual parents in order to raise awareness of the importance of daily activity for the healthy growth and development of children.

RESULTS

The following data refer to the school year 2017-2018 and represent some of the results achieved so far:¹¹

- 72 per cent of the schools have a Mobility Manager
- 12 per cent of schools have a bicycle and/or walking bus programmes
- Shared use of public spaces: 5 “school streets” have been established that cover 17 per cent of the city’s student population.

In 2014 and 2019, 99 balance bikes were distributed to a total of 34 nursery schools and kindergartens.

SUCCESS FACTORS

- The adoption of a comprehensive and interdisciplinary approach regarding home-school mobility and its incorporation in the city’s framework of Mobility Governance.
- Sharing of lines of actions and projects with relevant stakeholders.
- Possibility to have access to national funding thanks to this interdisciplinary approach and collaboration with stakeholders.
- Flexibility in implementation: since 2009 a variety of mobility management initiatives have been implemented, some of them covering multiple years, others were stopped and new ones adopted.
- When possible, testing mobility initiatives initially in order to allow for changes and for understanding their real impact.

BARRIERS AND OBSTACLES

- The limited human resources available within the Municipality for the implementation of the Manifesto.

¹¹ Source: Degl’Incerti Tocci (2019). Re: Manifesto – Informazioni aggiuntive [email to I.Lepinioti], 15 May 2019.

A successful School Travel Plan (West Midlands, UK)

Car use for home-school trips more than halved

How mobility management at schools can result in a significant reduction of car use for home-school trips. The success story from West Midlands (UK).

Type of school: Rural Primary School

Region: West Midlands

Country: UK

Implementation body: Head-teacher in collaboration with teachers, parents and volunteers

Level of implementation: site specific

Topic: Home-school mobility management

Target group(s): school children and their parents

Stakeholders involved:

- Headteacher
- Teachers
- Pupils
- Parents
- School travel adviser¹²



INTRODUCTION

This example is related to a primary school located in a rural area in the West Midlands, UK. At the time of the initiative the school had between 120 and 150 pupils (aged between 3 and 11 years) the majority of which were driven to school by their parents, resulting in traffic and parking problems in the school area.

OBJECTIVES

- Encourage the use of more sustainable modes of travel for home-school trips.
- Obtain an Eco-School status.¹³

MEASURES IMPLEMENTED

- "Walk to School Week" prior to the development of the School Travel Plan (STP) with the aim of encouraging pupils and parents to participate in walking initiatives and then get involved in the development of the STP.
- Development of STP, which involved:
 - An analysis of the origin of the pupils with the help of postcodes
 - Survey targeted to parents in order to identify mobility issues
 - Survey targeted to pupils collecting information on current and preferred modes of travelling to school

¹² The figure of the School Travel Adviser was created during the "Travelling to School Initiative" and its role was to develop, promote and coordinate the delivery of School Travel Plans, and provide support to schools to assist the implementation of actions and initiatives resulting from them.

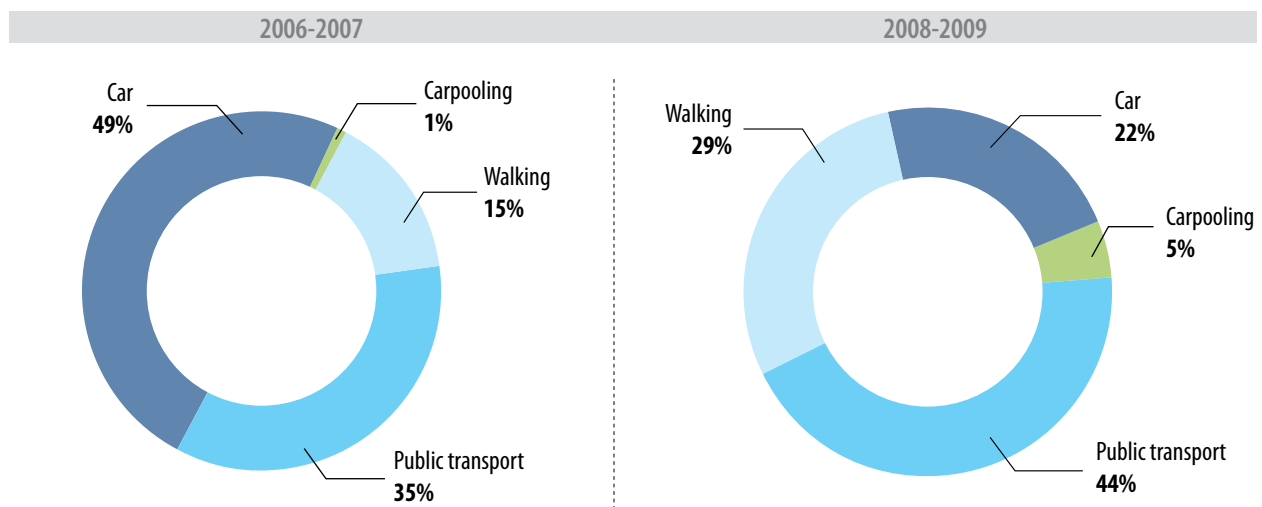
¹³ <https://www.eco-schools.org.uk>.

- Review of best practices regarding Walking Buses
- Continuous communication with the parents
- Implementation of two Walking Buses.
- Following the development of the STP the school implemented the following initiatives:
 - Walk on Wednesday scheme that led to the development of two Walking Buses
 - Park and Stride scheme: pupils living outside the village could be dropped off at the village hall and walk to the school for part of the Walking Bus route
 - Pedestrian and cycling training for year 3 and 4 pupils and distribution of badges and cards encouraging children to walk and cycle to school
 - Organization of wider community meetings providing information on the initiatives
 - Communication: articles in the weekly school newsletter to parents with information and updates on initiatives.

RESULTS

Following the implementation of the STP the school managed to achieve an important modal shift, that is a considerable reduction in car use from 49 per cent in the school year 2006-2007 to 22 per cent in 2008-2009.

CHART 3. CHANGE IN MODAL SPLIT



The most significant contribution to this modal shift was through the Walking Bus initiative that was initially introduced once per week and was gradually extended to every day with approximately a third of the children participating.

SUCCESS FACTORS

- Involvement and continuous communication with the parents.
- Support received from the School Travel Adviser including ideas and resources.

BARRIERS AND OBSTACLES

- Parents’ reluctance to stop driving their children to school and allow them to carry out the trip on foot or bike.
- Convenience issue related to both parents’ and pupils’ lifestyles, for example working hours and after-school activities.

4.3 Mobility management for major events

Mobility Management for the U2 and Coldplay 2017 concerts in Brussels (Brussels, Belgium)

Sustainable modes of transport preferred among concert fans

Obtaining positive mobility results for three consecutive concerts in Brussels that attracted around 50.000 fans each.

Event: U2 and Coldplay 2017 concerts in Brussels

Location of the event: King Baudouin Stadium
(around 6 km from the city centre of Brussels)

Country: Belgium

Implementation body: Event organizer with the support of Scelta Mobility, a mobility consultant firm, and in collaboration with the different stakeholders

Level of implementation: mobility measures at city level and communication activities at a wider level

Topic: mobility management for major events

Target group(s): U2 and Coldplay fans attending the concert



Stakeholders involved:

- Event organizers
- Mobility consultant
- City of Brussels
- Police
- Public transport providers in Brussels
- Railway operator

INTRODUCTION

The 2017 U2 and Coldplay concerts in Brussels were a music event of national importance that attracted thousands of visitors from all over the country. Considering King Baudouin Stadium's capacity of 50,000 and the limited parking spaces available (from 10,000 down to 6,250 at the time due to construction works), the risk of traffic problems and car park chaos in the concert area was rather high. In order to prevent this, the event organizers and their mobility consultants, in collaboration with local stakeholders, set up and implemented a series of mobility management measures aimed at facilitating and promoting sustainable modes of transport.

OBJECTIVES

- Avoid traffic congestion by creating alternative solutions to car use.
- Avoid parking chaos at the area surrounding the concert location by limiting parking demand.

MEASURES IMPLEMENTED

All the tickets for the three concerts were pre-booked which provided the event organizers with information on the post code of origin for all the fans attending the concert. This information allowed for the planning of a variety of mobility measures that were tailor made to the different areas of origin. The measures implemented included (Scelta Mobility, 2018):

- Establishment of night trains: night trains were organized for areas outside Brussels that had a high concentration of fans.
- Extension of the metro and tram services in Brussels in terms of frequency, capacity and timetables.
- Creation of Park & Ride services.
- Creation of guarded bicycle parking.
- Extra private parking places in presale.
- Communication:
 - Clear and direct communication to the fans regarding the lack of parking spaces at the concert area
 - Targeted communication: mobility alternatives were communicated to the fans based on the mobility solutions available for their area of origin. This included information on public transport, cycling routes and parking areas, park and ride services and so on.
- Price setting: the price of the train ticket was lowered from €18 to €10 whereas the cost of parking was more expensive €20.
- Promotion of carpooling through the application “Eventpool”.

RESULTS

At each one of the concerts the great majority of the fans reached the stadium using sustainable modes of transport (Backx, 2018):

- Transport by bike: 1,500
- Train: 5,000
- City public transport between 16,000 and 20,000
- Cars: 5,500 on all parking lots (between 3,200 – 3,700 cars per concert at the parking lots around the stadium)
- Less than 3,500 cars on the main parking lot.

Obtaining these results for three consecutive concerts that attracted around 50,000 fans each, highlights the importance of mobility management in influencing mobility behaviour.

SUCCESS FACTORS

- Good communication:
 - Targeted mobility information to the fans based on their post code
 - Clear and direct message regarding the shortage of parking spaces.
- Event organizer interested in mobility and sought to ensure that the transport mode used by the audience was as sustainable as possible.
- The construction works taking place in the stadium parking area at the time provided an excellent opportunity to influence the travel decisions of fans.
- The variety of solutions offered that allowed people to choose their optimal solution.
- Knowing the visitor: the fact that tickets were booked in advance provided useful information regarding the origin of the trips and thus allowed for better planning of the mobility solutions and targeted communication.
- Stakeholder cooperation.
- Very good weather conditions during the concerts.

BARRIERS AND OBSTACLES

- Convincing the event organizer to be clear and direct in its communication to the fans regarding the limited number of parking spaces available.
- The variety of stakeholders (due to the complex governance system in Brussels) that had to be involved in order to organize and implement the various mobility solutions.
- The stadium is adjacent to the Expo Site in Brussels that owns part of the parking spaces. It was not possible to obtain control of these parking spaces during the concerts and thus not possible to have a better control of the trips made by car.

Travel demand management at the London 2012 Olympic Games (London, UK)

Transport demand management for the smooth running of major events

How communication and relatively modest changes in behaviour could help make the most of the available capacity on transport networks. The case of the London Olympics.

Event: London 2012 Olympic Games

Location of the event: London

Country: UK

Implementation body: Transport for London

Level of implementation: national with focus on London

Topic: mobility management for major events – focus on information measures

Target group(s):

- spectators
- local citizens
- local businesses

Stakeholders involved:

- London Organising Committee of the Olympic and Paralympic Games
- Olympic Delivery Authority
- Transport for London (TfL)
- Highways Agency
- Network Rail
- Department for Transport



INTRODUCTION

Transport is key to the success of an event such as the Olympic Games and vital for avoiding heavy disruptions to the normal functioning of a city. In the case of London, a city already characterized by extremely high travel demand, the 2012 Games presented a significant logistics challenge. A number of measures were taken, including hard (e.g. infrastructure) and soft ones (e.g. incentivizing public transport use) and travel demand management initiatives. Travel demand management was undertaken in order to deliver a travel behavioural change in businesses and regular travellers and allow the transport system to run well during the Games.

OBJECTIVES (TRANSPORT FOR LONDON, 2012A)

- Overall London 2012 Games objective: London 2012 to be the first 100 per cent public transport and walking and cycling Olympic Games.
- Travel demand management objective: provide robust and authoritative information to businesses, spectators and regular travellers to help them plan ahead and keep the system moving.

MEASURES IMPLEMENTED (TRANSPORT FOR LONDON, 2012A)

■ Spectators:

- London 2012 Spectator Journey Planner: a planner dedicated to the spectators of the Games. The planner was fed with journey patterns modelled to identify optimal routes from across London to all Games venues. Spectators were advised of routes that maximized available capacity, not necessarily the most obvious one.

■ Public:

- A nationwide publicity campaign was made to alert people to the situation during the Games including messages such as: "Cycling could be the quickest way during the Games" and "Walking part of your journey may be quicker during the Games"
- GetAheadoftheGames.com, online platform that provided:
 - Information about public transport hotspots across the UK
 - Alternative routes and options
 - An interactive tool to help people understand changes on the road network
- Public messaging: transport related messages were delivered to the public before and during the Olympic Games through a variety of channels including advertisements on the radio, press, online and outdoors, leaflets, station posters, maps, website, social media, rail station information screens, etc.

■ Businesses:

- 550 large businesses (600,000 employees) in locations affected by the Games were given direct planning support
- 3,000 businesses, particularly small and medium-sized enterprises, attended planning workshops
- A range of business planning toolkits were made available
- Presentations, events, letters and advertising were used to inform businesses and ensure they could continue to operate during the Games.

■ Freight operators:

- A freight forum, led by business, was set up to identify key issues
- A freight journey planner was created to help operators select optimal routes and avoid the busiest spots.

- **Additional information through staff and volunteers:** easy to identify staff and volunteers equipped with smartphones and tablets were located at key points of the transport network in order to assist travellers with transport information.

RESULTS (TRANSPORT FOR LONDON, 2012B)

- Travel demand management contributed to the smooth running of the London 2012 Games, with around one third of Londoners reporting a change to their weekday daily travel during the Olympic Games.
- Travel demand management during the Games proved an important experience for TfL that gathered important lessons for transport system management the following the Games:
 - Communication and relatively modest changes in behaviour could help make the most of the available capacity on transport networks
 - Travel demand management could provide benefits during planned closures of the underground metropolitan or rail network for upgrade works
 - The importance of digital and social media channels for the provision of real-time travel information and advice.

4.4 Sustainable urban logistics

The Beer Boat – waterborne last mile deliveries in Utrecht (Utrecht, the Netherlands)

Fast, efficient and silent deliveries

Utrecht using waterborne freight distribution for last mile deliveries in its city centre.

City: Utrecht

Country: The Netherlands

Implementation body: Municipality of Utrecht

Level of implementation: City level

Topic: Sustainable urban logistics

Target group(s): Shops, restaurants, bars and commercial activities in general in the city centre

Stakeholders involved:

- City of Utrecht
- Breweries
- Catering industry wholesaler
- Final customers: clients, shops, bars and restaurants in the city centre



INTRODUCTION

The city of Utrecht has a medieval city centre characterized by narrow streets and several canals. The local authority was concerned about the negative impacts of freight distribution in the city centre including damage, blocking of streets due to loading and unloading, accidents, noise and air pollution (CIVITAS MIMOSA Project 2008–2012). As a result, over the years it has introduced different vehicle restrictions such as time windows for freight traffic to deliver goods and a low emission zone. One of the most successful initiatives was the introduction of waterborne freight distribution for last mile deliveries to the city centre.

OBJECTIVES

- Decrease freight traffic in the city centre
- Exploit waterborne freight distribution to improve the accessibility of goods to the city centre.

MEASURES IMPLEMENTED

The Municipality of Utrecht introduced waterborne freight deliveries in its city centre in 1996. More specifically, it established the Beer Boat, a specially adapted diesel barge that carried out beer deliveries to bars and restaurants along the canals. This measure proved very effective in reducing the number of trucks and the related negative impacts at the city centre while it guaranteed the delivery of beer and compliance with labour laws (for carrying barrels and crates).

Considering the results and following a market survey and feasibility study, the city of Utrecht introduced in 2010 an electrically-powered vessel (with auxiliary diesel engine), increasing the load capacity to 18 tons while reducing air pollution (BESTFACT, 2013).

RESULTS (BESTFACT, 2013)

- Continuous operation from 1996 till today.
- Decongestion of roads in the city centre.
- Better air quality: the electric vessel has reduced emissions of CO₂ by 17 tons, nitrogen oxides (NO_x) by 35 kg and PM₁₀ by 2 kg per year.
- Fast, efficient and silent deliveries.

Thanks to the success of the Beer Boat, in 2012 the Municipality of Utrecht, in a continuing effort to minimize negative impacts of heavy traffic in the city centre, introduced a second electrically-powered cargo vessel called ECOBOOT for the collection of waste from the city centre (Connecting Citizen Ports 21).

SUCCESS FACTORS

- Existing vehicle restrictions at the city centre.
- Cost and time efficient practice.
- Reduction of transport costs.
- Higher flexibility for deliveries as the delivery time window for the city centre was extended.
- Informed decision making and business plan: market survey and feasibility study before the acquisition of the electrically-powered vessel.

BARRIERS AND OBSTACLES

- High original investment for the acquisition of the vessels.

Cubicycles for last-mile inner-city delivery (Frankfurt, Germany, and Utrecht, the Netherlands)

Innovation at the service of inner-city deliveries

How standardized containers and customised electrically assisted cargo bicycles can contribute to zero emission urban last mile deliveries.

City: Frankfurt and Utrecht

Country: Germany and the Netherlands

Implementation body: DHL

Level of implementation: City level

Topic: Sustainable urban deliveries

Target group(s): DHL inner city deliveries

Stakeholders involved:

- DHL – multinational package delivery and supply chain management company
- Velove – producer of the Cubicycle
- Local authority



INTRODUCTION

The delivery of goods and parcels by bicycle is a key factor in ensuring sustainable urban deliveries and is becoming increasingly popular thanks to:

- Zero energy consumption and zero emissions
- No limits in accessing city centres
- Reduction of delivery trucks within cities.

DHL is one of the various multinational package delivery and supply chain management companies that has been investing in cycle logistics projects for inner city deliveries. One of its latest successful pilots includes the use of City Hubs and Cubicycles in order to replace truck deliveries in city centres.

OBJECTIVES

- Increased use of cargo bikes for urban deliveries
- Minimize the company's environmental footprint
- Support city governments' efforts to promote sustainable cities.

MEASURES IMPLEMENTED

There are three important parts of the central part of the City Hub – Cubicycle project (DHL press release 10 March 2017):

- The use of standardized one cubic meter containers which match the dimensions of a standard shipping pallet (80 x 120 x 100 cm).
- City Hub: a customized trailer which can carry up to four such containers.
- Cubicycle: a customized four wheeled electrically assisted cargo bicycle which can carry a container with a load of up to 125 kg.

THE DELIVERY PROCESS (DHL PRESS RELEASE 03 JANUARY 2017):

- The containers are preloaded at a DHL operational site and loaded on the City Hub.
- A van delivers the City Hub to a designated area in the city centre.
- The containers are easily and quickly loaded on the Cubicycles.
- The Cubicycles carry out the last mile deliveries within the city centre.
- Empty containers (possibly also with returns or picked up parcels) are returned to the City Hub.
- The containers are transported back to the operational site.

RESULTS

- Reduction of emissions by minimizing the mileage and time spent on the road by standard delivery vehicles.
- Since the pilot in Frankfurt and Utrecht DHL has introduced this system in many other Dutch cities, such as Nijmegen and Alkmaar (Erlandsson, 2017).
- Each City Hub can replace up to two standard delivery vehicles, with an equivalent CO₂ saving of over sixteen tons per year and a significant reduction in other emissions. (DHL press release 10 March 2017).

SUCCESS FACTORS

- The ease and speed with which the containers can be moved between the different modes.
- The possibility to transport higher volumes by bicycle.
- The cargo bicycle itself that, despite the weight and volume of the container, can be easily manoeuvred, does not impair the view for other cyclists and is self-powered using solar panels.
- The possibility to equip the cargo bicycle with Global Positioning System or Internet of Things transmitters, to facilitate real-time shipment tracking and to ensure they can be monitored for security purposes.
- The reduced cost of ownership when compared to that of vans.

Cityporto of Padova – a successful urban distribution service (Padova, Italy)

Reduction of 1,216 km per day for inner city deliveries

The successful and long-running urban distribution service that contributes to the reduction of air pollution in the City of Padova.

City: Padova

Country: Italy

Implementation body: Interporto Padova

Level of implementation: city level

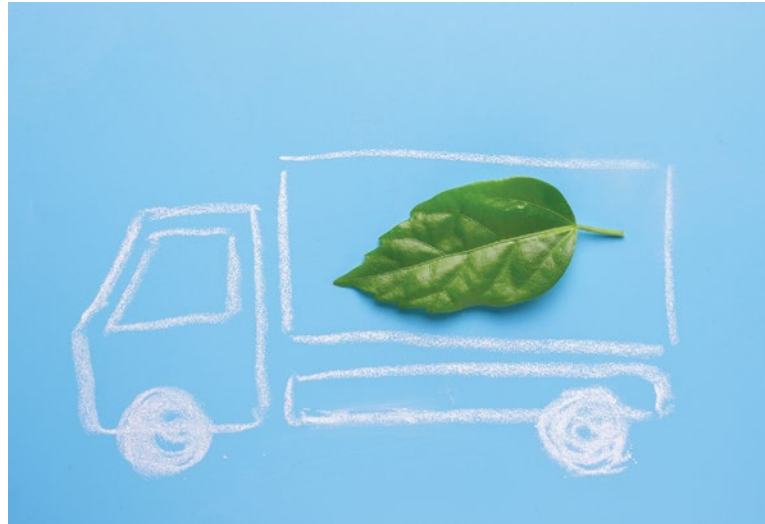
Topic: sustainable urban deliveries

Target group(s):

- Freight transport operators and carriers

Stakeholders involved:

- Municipality of Padova
- Province of Padova
- Veneto Region
- Chamber of Commerce of Padova
- Local Public Transport Company (APS Mobilità)
- Interporto di Padova



INTRODUCTION

The Cityporto of Padova logistics scheme offers a last-mile delivery service in the urban area of Padova using an environmentally friendly fleet. The service was initiated in 2004, following the need of the Veneto Region to rationalize freight distribution and improve air quality in urban areas. It was the result of an agreement between the province, the municipality, Interporto Padova (a freight village at the outskirts of Padova), the local chamber of commerce and APS Mobilità, the local public transport company (Eltis, 2015).

Throughout the years, the Cityporto has proven a successful operation with a steady increase of urban deliveries and a considerable contribution in limiting air pollution in the city of Padova.

OBJECTIVES

- Rationalize urban deliveries and decrease their environmental impact in urban areas.

DESCRIPTION

The Cityporto of Padova is located at the Interporto Padova and consists of an urban logistics platform and a fleet of methane and electric vehicles. The model of the service is based on a voluntary subscription of freight transport operators and carriers. Those who join the service benefit from easier access to the city centre of Padova for last-mile deliveries since the vehicles used (Eltis, 2015):

- Can access the city centre at any time and do not have to respect the time windows for deliveries set by the Municipality of Padova

- Have preferential lanes
- Are able to park inside the limited traffic zones at any time of the day.

In addition, the use of ITS for the management of daily deliverables guarantees high efficiency in urban deliveries in terms of vehicle loading capacity and number of delivery trips.

RESULTS

- In February 2018 (Frigato, 2018):
 - More than 60 operators subscribed to the service
 - More than 1 million of deliveries since 2004.
- Decrease in the environmental impact of urban deliveries: the following results are based on a study carried out for the Italian Ministry of Environment on the Cityporto Activity over a 24-month period, 2008–2010 (Eltis, 2015):
 - Reduction in the total number of km covered by freight vehicles: 561,400 km
 - Daily average reduction: 1,216 km/day
 - Access of some 100 pollutant vehicles (Euro 1 and Euro 2) to the city has been avoided every day resulting in an important overall reduction of pollutants:
 - * CO₂: 219 tons
 - * NO_x: 369 kg
 - * SO_x: 72,8 kg
 - * VOC: 210,4 kg
 - * PM₁₀: 51,4 kg

SUCCESS FACTORS

- Stakeholder involvement since the beginning allowing for the design of a commonly agreed service where public and private interests were taken into account.
- Support of the Municipality of Padova and presence of freight vehicle access limitations to the city centre.
- Industrial plan focused on economic sustainability.
- Voluntary subscription of the operators to the service.
- Attention on the economic sustainability of the project and gradual implementation of the activities.
- Management of the service by an independent entity, the Interporto Padova SpA.
- Strategic location of the logistics platform: at the outskirts of the urban area and easily accessed by the motorway.

4.5 Parking management

Parking management at Sihlcity (Zurich, Switzerland)

Only 33 per cent of the trips to a retail centre carried out by car

How parking management in combination with mobility management can bring about significant results in favour of sustainable urban mobility. The successful case of Sihlcity in Zurich.

City: Zurich

Country: Switzerland

Implementation body: Sihlcity developers and management body

Level of implementation: site specific

Topic: parking management

Target group(s): visitors and people who work at Sihlcity

Stakeholders involved:

- Sihlcity developers
- Municipality of Zurich



INTRODUCTION

Sihlcity is a multifunctional development located in the southern part of Zurich, 2.5 km from the city centre. The development was inaugurated in 2007 and includes a total of 97 businesses, the majority of which are shops (75), cafés and restaurants (14) (Field, 2010). The site also includes a hotel, cinema, library, gym, medical centre and church. It is a major trip attractor in Zurich with 2,300 employees and an estimated 10,000 visitors per day, however, thanks to its parking management and the presence of public transport alternatives only a limited number of trips is carried out by car (EPOMM, 2013).

OBJECTIVES

- Limit the number of trips carried out by car at Sihlcity and, thus, prevent traffic congestion and air pollution.

MEASURES IMPLEMENTED

The site was originally a paper mill and in order for the developer to obtain planning permission for its transformation into a retail centre a number of restrictions to car access were imposed by the local authority. More specifically, the Sihlcity developers signed a contract that provided (EPOMM, 2013):

- A financial contribution for better public transport
- The financing of access routes to the area
- The provision of at least 600 and at most 850 parking spots
- The requirement to have paid parking
- A maximum of 8,800 car trips per day to the location (and a penalty if the number is more than that)
- A home delivery service.

As a result, the current parking situation is characterized by (ZVV website):

- A limited number of available parking spaces: 850 in total of which 50 are park-and-ride season ticket spaces that can be used only by public transport season ticket holders.
- None of the parking spaces is allocated to the staff of the businesses on site.
- There is no free parking and parking fees are high: for example, the parking fee for 5 hours is 11 Swiss francs¹⁴ whereas a public transport single ticket for 1–2 zones costs 4.40 Swiss francs and a daily ticket 8.80 Swiss francs.

The parking in the area surrounding Sihlcity is also controlled with on street parking dedicated only to residents, in this way employees and visitors to Sihlcity are discouraged from parking there.

RESULTS

- In 2010 only 33 per cent of the trips to Sihlcity were carried out by car (Field, 2010).

SUCCESS FACTORS

- Zurich's land management policy that only allows new development in sites that have adequate access to public transit, walking and cycling facilities.
- Zurich's Access Contingent Model¹⁵ which recommended a limited supply of parking spaces and application of high parking fees.
- Limited parking spaces.
- High parking fees.
- Good variety of alternative modes of transport: public transport, cycling, walking.

¹⁴ 1 Swiss franc = \$1 or €0.89 (exchange rate on 4 April 2019).

¹⁵ The Access Contingent Model is a strategy created to keep the car traffic volume under control which derives from sites which are generating a high traffic impact. It defines the maximum number of car trips which are allowed to be generated from a development respectively from the different types of utilization allowed. (EPOMM – Web: http://epomm.eu/old_website/study_sheet.phtml?id=928&study_id=2525 accessed on 4 April 2019).

INFICON AG – parking management at the work place (Balzers, Liechtenstein)

A reduction of 100 tons of CO₂ emissions per year

The leverage offered by parking management at the workplace to incentivize modal shift to sustainable modes of transport for home-work trips.

Company: INFICON AG

No. of employees: 225

Sector: Electrical Engineering

Location: at the outskirts of the town Balzers

Country: Liechtenstein

Implementation body: INFICON AG

Level of implementation: site specific – company level

Topic: home-work mobility management, parking management

Target group(s): Company employees

Stakeholders involved:

- Company management
- Employees
- Local authority
- Local public transport operator
- Car sharing provider



INTRODUCTION

INFICON AG is located in the town of Balzers on the border with Switzerland. Within the framework of the environmental management certification process ISO 14001 the company developed and implemented a comprehensive mobility management plan, which among other measures included a courageous parking management policy (Eltis, 2015).

OBJECTIVE (INFICON, 2008a)

- Reduction of the energy consumption for home-work trips.
- Ensure that the existing parking spaces (120 in total) meet the company needs.
- Maximum 40 per cent motorized individual transport for the journeys to work (yearly average) defined in the year 2000.

MEASURES IMPLEMENTED

INFICON's mobility management plan on one hand increased the transport options for home-work trips for its employees and on the other it used incentives and disincentives to promote sustainable modes of transport. Mobility management measures implemented throughout the years include the creation of covered bike parking spaces and dressing rooms at work, promotion of car sharing, various incentives for carpoolers, mobility jackpot (see good practice "Mobility Jackpot (or Lottery) at Seewer AG") for the promotion of sustainable mobility in general, amongst others. Nonetheless, the cornerstone of its mobility plan is the parking management policy, which made the most of the lack of parking spaces to favour the development of sustainable modes of transport.

INFICON's parking management is characterized by three aspects:

- Clear and transparent criteria for the assignment of the existing parking space that are applicable to all staff member
- Mostly nominative parking spaces and only a limited number of non-dedicated ones
- Parking fees.

1. Criteria for the assignment of parking spaces

In order to guarantee that the existing parking spaces are allocated to employees who need the car for home-work trips due to lack of valid alternatives a set of criteria for "non-car commuting" were set up. Employees meeting any of the following criteria are not eligible for a parking space unless otherwise justified (OECD/ITF, 2010):

- Home-work trip on foot within 8–15 minutes
- Home-work distance within 3 km by bicycle and with a change in height above sea level of less than 50 m
- Closest usable public transport stop within 600 m from home and, for bus rides of less than 11 minutes, total walking distance throughout the trip less than 900 m
- Home-work public transport travel time up to three times travel time by car and no longer than 60 minutes.

2. Nominative vs non-dedicated parking spaces

Parking spaces allocated with the above criteria are nominative and, therefore, are dedicated to specific employees. However, a limited number of spaces is also made available as free day-parking to those who carpool to work. In particular, these spaces are not dedicated to any specific employee and are made available (in addition to those not used by absent employees) to carpoolers free of charge when they travel to work by car alone.

It should be noted that there are two categories of carpoolers (OECD/ITF, 2010):

- "Top" members: single occupancy car trips limited to a maximum of 2 per month or 24 per year
- "Regular" members: single occupancy car trips limited to 8 per month or 96 per year.

3. Parking fees

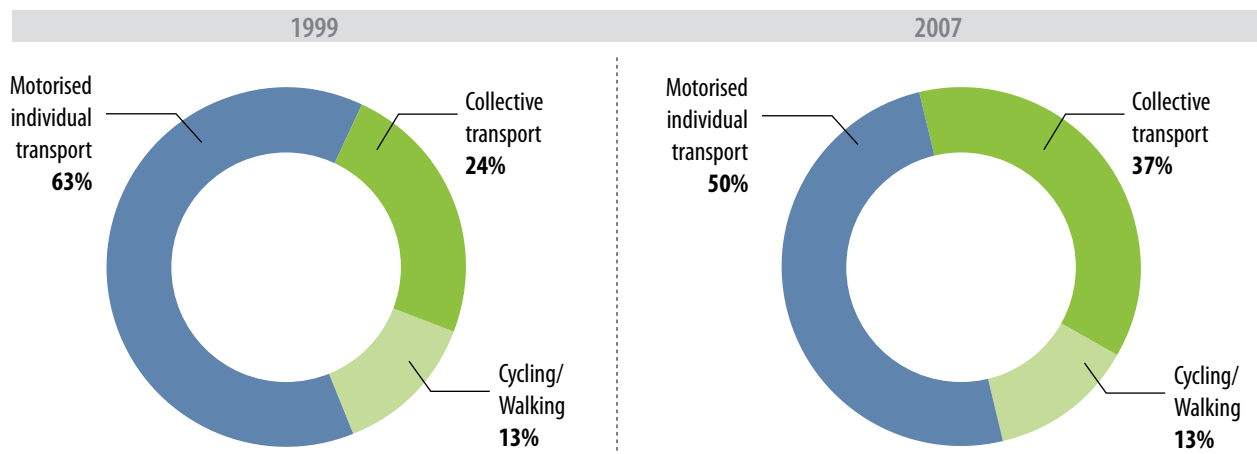
All employees with an assigned parking space have to pay an annual parking fee. Parking fees in 2010 were (OECD/ITF, 2010):

- For employees that meet non-car commuting criteria but still use a car: €480/year
- For employees with no alternatives to the car: €240/year

RESULTS (INFICON, 2008c)

- There was a significant modal shift from motorized individual transport to more sustainable modes of transport as shown below.

CHART 4. CHANGE IN MODAL SHARE



Notes: Data collected with a mobility survey in 1999 and by counting vehicles in 2007 (cars, motorcycles and bikes). Motorized individual transport includes both car and motorcycle. In the case of 2007 collective transport includes both public transport and carpooling (32 per cent and 5 per cent respectively).

- Reduction in the CO₂ emissions of about 100 tons per year, thanks to the reduction of motorized individual transport for home-work trips.
- Company savings of €80,000 per year: The mobility management measures have resulted in a yearly net saving of €80,000 for the company. This calculation takes into account the costs for the implementation of the measures (including working hours), income from parking fees and savings due to fewer parking spaces being needed.

SUCCESS FACTORS

- Mobility management is an integral part of the company's environmental management process.
- Employees are engaged in the mobility management process.
- A clear and transparent parking management policy that applies to all employees (including senior management).



4.6 Sustainable Urban Mobility Plans

Kruševac, the first Serbian City with a Sustainable Urban Mobility Plan (Kruševac, Serbia)

From a “follower” to a “pioneer”

Overcoming the lack of national legislation for the development of a Sustainable Urban Mobility Plan. The success story of the city of Kruševac.

City: Kruševac

Country: Serbia

Body responsible for development and implementation: City of Kruševac

Level of implementation: city level

Topic: Sustainable Urban Mobility Plans (SUMP)

Target group(s): all the citizens travelling within the city of Kruševac

Stakeholders involved:

- Local politicians
- City administration departments
- Urban Planning Public Enterprise Kruševac
- Council for Traffic Safety
- First Technical School of Kruševac
- Agency for Regional Development of the Rasina Administrative District
- Local Police
- Centre for Disabled People
- Public Transport Operator
- Taxi association
- Public Health Institute
- Representatives of primary and secondary schools, and preschool institutions
- Bicycle clubs
- Citizens



INTRODUCTION

Kruševac is the administrative centre of the Rasina District in central Serbia with a population of 130,000 inhabitants. Despite the lack of national regulations and guidelines regarding sustainable urban mobility and the lack of expertise in the field at a local level, the city of Kruševac decided to change its approach of solving transport related problems and adopt a SUMP.

Participating in European Union sustainable mobility projects (as a “follower city”)¹⁶ as early as 2012, as well as the positive reaction of citizens to campaigns carried out within the framework of the European Mobility Week,¹⁷ inspired and encouraged the City Administration to continue this work and in 2017 Kruševac developed its first SUMP (Panozzo, 2018).

¹⁶ A city that does participate directly to a project but follows closely its development and results.

¹⁷ A European campaign that seeks to improve public health and quality of life through promoting clean mobility and sustainable urban transport. The campaign gives people the chance to explore the role of city streets and to experiment with practical solutions to tackle urban challenges, such as air pollution. <http://www.mobilityweek.eu/>.

OBJECTIVES OF THE SUMP

The main objectives of Kruševac's SUMP are (Panozzo, Niccolò, 2018):

- To achieve an 80:20 modal split by 2030, that is 80 per cent of trips carried out with sustainable modes of transport (on foot, or by bicycle or public transport) and 20 per cent by car.
- To render Kruševac a "city accessible to all citizens", regardless of age, gender, physical and mental capabilities and income.

The SUMP also sets a number of medium- and long-term goals.

DEVELOPMENT OF THE SUMP

The development of Kruševac's SUMP involved a variety of stakeholders.

Following the decision to develop a SUMP in November 2015, the City of Kruševac appointed a Commission for the drafting of the document. The Commission included members of the City Council for traffic safety, the City Committee for urban planning and City Committee for environment protection, representatives from Urban planning and Parking management departments from the City Administration, representatives from public transport and other private companies, local politicians, personnel from various departments of the city administration, representatives of the Urban Planning Public Enterprise and the city's First Technical School and the local Council for Traffic Safety.

Working groups dealing with specific topics were formed:

- Traffic and innovation
- Ecology and social progress
- Public involvement.

Amongst others, the working groups included representatives of primary and secondary schools and preschool institutions, bicycle clubs, and the Regional Development Agency of Rasina District.

There was a comprehensive collection of data in order to assess the existing mobility situation and demand as well as support the development of action plans for the improvement the different modes of transport.

Citizens were also involved in the SUMP process. Information and awareness raising was carried out through media, the municipality's website and during the event "Vidovdan eco day". In addition, a mobility survey was carried out in order to obtain information on the citizen mobility habits as well as their opinion on certain modes of transport.

RESULTS

- Kruševac is the first Serbian city to have developed and adopted a SUMP.
- Since the adoption of the SUMP the city of Kruševac has implemented a number of actions (Panozzo, 2018):
 - Establishment of a network of school mobility coordinators for the promotion of sustainable mobility for home-school trips (a total of 37 school coordinators from urban and rural parts of the city)
 - Investment in the improvement of pedestrian and bicycle infrastructure and accessibility
 - In 2018 the city centre was closed to traffic and dedicated to active modes every day from 1 May to 1 October from 6–10 p.m.
- Continuous participation to the European Mobility Week since 2015 with activities for the promotion of sustainable mobility (Panozzo, 2018).
- Sharing of its experience with other cities at national and international level: in February 2018, Kruševac hosted the annual assembly and round table of the CIVINET network – a network of cities exchanging information and working together to engage with the European Union and national governments, about transport policy issues, legislation, regulations, and funding¹⁸ (Panozzo, 2018).

¹⁸ <https://civitas.eu/civinet>.

SUCCESS FACTORS

- Commitment of the local administration to move away from the traditional car-centric urban planning to sustainable urban planning.
- Participation as a “follower city” in various European Union projects on the topic of sustainable mobility.
- Study visits to European Union cities with best practices on sustainable mobility.

BARRIERS AND OBSTACLES

- Lack of national regulations and guidelines regarding sustainable urban mobility;
- Lack of expertise at the local administration level in the field.

Strasbourg SUMP – a highly integrated SUMP (Strasbourg, France)

The first cross-border tramline

How territorial and sectoral integration in the development of a SUMP can improve accessibility beyond the limits of a city.

City: Strasbourg

Country: France

Body responsible for development and implementation: City of Strasbourg

Level of implementation: city level

Topic: Sustainable Urban Mobility Plans (SUMP)

Target group(s): citizens and visitors of Strasbourg

Stakeholders involved: the stakeholders involved include

- Strasbourg's transport department
- 12 other city departments
- Chamber of Commerce and Industry



INTRODUCTION

The city of Strasbourg has a long history on sustainable urban mobility the beginning of which is traced in the 1990's with the construction of a modern tram system. The city developed its first Sustainable Urban Mobility Plan in 2000 and revised it in 2012 setting up new objectives and actions.

INTEGRATION

Territorial and sectoral integration are two important characteristics of Strasbourg's SUMP. More specifically, the SUMP covers the entire Eurometropolis of Strasbourg, formerly known as Urban Community of Strasbourg, that comprises 28 municipalities. In addition, it includes cross-border coordination with the neighbouring city of Kehl in Germany for certain initiatives, i.e. the extension of tram line D to Kehl railway station in Germany that provides a direct connection between the two cities.

Sectoral integration was achieved thanks to the collaboration of the city's transport department with 12 other departments including health, economic development, urban ecology, land-use planning, local democracy and proximity. As a result, the city's mobility policy is an integral part of its urban policy, e.g. urban planning and housing, as well as other policy fields such as the Atmosphere Protection Plan, the Air Energy Regional Climate Programme, the Territorial Coherence Plan, the Mobility Pass, the Health Plan and the Intercommunal Local Development Plan.

OBJECTIVES OF THE SUMP

The SUMP defines targets for 2025 and sets the following key objectives (SUMP Award, 2013):

- A 30 per cent reduction in driven mileage relating to the Urban Community of Strasbourg (calculated in vehicle-km).
- Traffic reduction on the A35 and along the "Route du Rhin".
- Reliable journey times for all modes of transport.

Active modes must contribute to 30 minutes of daily physical activity.

SUMP CONTENTS

Strasbourg's SUMP is a strategic document and its implementation is defined by the following operational plans:

- Pedestrian Plan
- Cycle Plan
- Public Transport Plan – 2025
- Accessibility Plan
- Charter of Public Spaces Planning
- Plan of hierarchical organization of the road network

The SUMP identifies 4 actions to develop a multimodal transport system and provide a better service to the inhabitants (Strasbourg Eurometropole, 2015):

1. Controlling, organizing and reducing automobile traffic:

- Limiting car traffic within the city centre
- Parking management – encourage short stay parking, limit long-term parking of people working in the city centre and promote of public transport through an advantageous fare policy, maintain residential parking
- Providing park + ride services
- Facilitating intermodality.

2. Developing alternatives to private cars

- Close collaboration between Strasbourg Eurometropolis and the local Public Transport Operator
- Implementing the Public Transport Masterplan 2025
- Developing the tram and bus network
- Implementing the Pedestrian Plan of the city
- Continuing the extension of the cycling network
- Offering innovative transport services, e.g. bicycle sharing, car sharing.

3. Link Transport and Urban planning – focus on a major cross-border project:

- Extension of the line D to the German city of Kehl

4. Make the different modes of transport affordable and facilitate their use:

- Fair and affordable public transport based on the economic situation of each household
- Multimodal transport card and single pricing between urban areas.

RESULTS

Some the results obtained thanks to the implementation of the SUMP include:

- Public transport – 2009–2012 (SUMP Award, 2013):
 - 20.2 per cent increase of the number of season-pass holders.
 - 19.5 per cent increase in trips per annum with 113.9 million trips in 2012.
 - 16 per cent increase in revenue from clients with €42 million in 2012.
- Cars entering the city centre: 17 per cent decrease between 2000 and 2011 (Strasbourg Eurometropole, 2015).
- Transport CO₂ emissions: 13 per cent decrease between 2000 and 2010.
- An improvement of the public spaces in the city.
- Improved cross-border connectivity following the introduction of the tramline (Narvydas, 2018).

Seattle's Mobility Playbook (Seattle, USA)

Recognizing the potentials and risks of emerging transport innovation

How the city of Seattle is attempting to leverage emerging transport innovation in order to meet its mobility and broader community objectives.

City: Seattle

Country: United States of America

Implementation body: City of Seattle

Level of implementation: city level

Topic: Sustainable Urban Mobility Plan

Target group(s): all the citizens travelling within the city of Seattle

Stakeholders involved: a great variety of stakeholders were involved including:

- Seattle Department of Transport as well as an interdepartmental team
- Seattle Office of Sustainability and Environment
- Major employers
- Mobility providers
- Seattle Information technology
- Community-based organization partners and many others



INTRODUCTION

In 2017 the city of Seattle updated its sustainable urban mobility plan, entitled “New Mobility Playbook” (NMP). The innovation behind Seattle’s NMP lies in understanding the importance of emerging transport innovation in the shaping of future urban mobility and the city’s determination to leverage it in order to meet Seattle’s mobility and broader community objectives. More specifically, the city recognizes that while traditional modes of transport such as walking, cycling and public transport will remain the backbone of its transportation system, new technologies and mobility services could provide more transport options and convenience if properly managed.

THE NEW MOBILITY PLAYBOOK

The NMP identifies the opportunities and risks that lie within new mobility as:

- Potential benefits:
 - Accommodate growth without increasing congestion
 - Enable more transportation options
 - Build a more responsive transportation system
 - Create a more equitable transportation system
 - Create a safer and greener transportation system

■ Potential risks:

- More congestion and more pollution
- Lead to more inequity
- Erode the support and resources for public transit
- Disrupt the economy and lose jobs faster than innovation creates them
- End up with systems we don't understand, can't manage, and can't protect.

Considering the above, the aim of the city of Seattle and its NMP is to create “a safe, interconnected, vibrant, affordable, and innovative city for all”. In order to achieve this the NMP adopts a flexible, outcome-oriented approach based on five “plays”:

PLAY 1: Ensure new mobility delivers a fair and just transportation system for all

PLAY 2: Enable safer, more active, and people-first uses of the public right of way

PLAY 3: Reorganize and retool Seattle's Department of Transport to manage innovation and data

PLAY 4: Build new information and data infrastructure so new services can “plug-and-play”

PLAY 5: Anticipate, adapt to, and leverage innovative and disruptive transportation technologies.

For each of the “plays” the NMP identifies a number of strategies with short- and long-term actions, and for each action key partners and their role are indicated.

Finally, the city welcomes partnerships with entrepreneurs, advocates, and creative thinkers to plan and implement programs, pilot projects, and services that are in line with the NMP.

4.7 Communication and information

Munich – Gscheid Mobil (Cleverly Mobile – Munich, Germany)

Harnessing life-changing events for promoting sustainable mobility

How the city of Munich is having a positive long-term impact on the mobility behaviour of its citizens.

City: Munich

Country: Germany

Implementation body: City of Munich

Level of implementation: city level

Topic: awareness raising on sustainable modes of transport

Target group(s):

- Existing and new residents
- Children and youth
- Seniors
- Migrants
- Poor people
- Tourists
- Companies

Stakeholders involved:

- City of Munich – coordinated and implemented by the Road Traffic, Transport and Mobility Management Office
- Schools
- MVG – local transport company
- Car sharing operators
- Cargo bikes companies
- Target groups



INTRODUCTION

Since 2006 the City of Munich is implementing “Munich – Gscheid Mobil”, a mobility management programme that supports citizens, companies, tourists and new migrants in their individual mobility planning and promotes environmentally friendly modes for trips within the city (Bühler-Karpati, Barbara, 2017). More specifically, the programme takes advantage of life-changing events, e.g. birth of a baby, retirement, moving to the city etc. in order to influence the mobility behaviour of people through consultation, motivation and education.

OBJECTIVES

- Promote sustainable modes of transport and reduce car traffic in Munich.
- Reduce transport related CO₂ emissions.

MEASURES IMPLEMENTED

Gscheid Mobil is a mobility management project focused on raising awareness among the different target groups on the existence of a sound mobility service in Munich and the benefits of using it (both for individuals and for the society in general). The project has six different target groups:

- Families
- Children
- Senior citizens
- Companies
- New residents
- Migrants

For each one of these groups the programme offers targeted information both in terms of contents and modes of communication. For example, education related activities have been prepared for schools, mobility information has become a key part of the new citizen integration project, information is provided to new families through maternity hospitals and midwife practices. The projects launched so far include (URBACT Good Practices Website, 2019):

- Children and youth: with the aim to shape mobility behaviour towards sustainable mobility from early childhood to young adulthood, the project is made up of different mobility education sub- projects that accompany children from the age of 3 till the age of 16, split into different categories:
 - “Bambini”: target 3–6 years of age
 - “Walking bus”: target 6–10 years of age
 - “School rally”: target 10–16 years of age
- New citizens: each new citizen of Munich receives a welcome folder with information on mobility and transport, leisure activities and culture in the city. Further information on the mobility and the transport network (e.g. cycling maps, public transport timetables, free public transport tickets etc.) are also available on request. The information is available in German and since 2016 the folder includes a summary in English, French, Italian, Spanish and Polish.
- New families: “Go!Family – en route with a baby” is targeted to new families with the aim to discourage the acquisition of a new car. More specifically, the project allows for parents-to-be to test mobility options including bicycle trailers, cargo bikes or electric bikes, carsharing and special family tickets for public transport.
- Migrants:
 - the topic of sustainable mobility is integrated in the educational material of the integration courses available to migrants
 - “My bike – My Munich”: it targets refugee women and youth with the aim to start a cycling culture among them and make them feel comfortable in cycling around Munich. The initiative includes: cycling courses, joint excursions, training to become a cycling teacher as well as a bicycle repair workshop.
- Senior citizens: mobility consultancy for 65- to 75-year-olds.
- Companies: providing support so that companies establish a mobility manager figure, design and implement a home-work mobility plan. For example, the city offers support in all the stages of the designing and implementation of the mobility plan, that is survey, analysis, development of measures, implementation and evaluation.

RESULTS

Gscheid Mobil aims to have long term impacts on the mobility behaviour of Munich’s citizens and thus it is hard to measure its exact impact on car traffic. Nonetheless the city has been supporting the programme for over 10 years since it strongly believes that it has a positive influence on citizens’ mobility behaviour and consequently to reduce car traffic and less CO₂ emissions within the city.

According to a study evaluating the impact of welcome folders to new citizens the number of new citizens who used public transport was 7.6 per cent higher among the group who received the information folder and the telephone consultation compared to the group who did not. This is equivalent to almost 6,500 cars less in the streets of Munich per year (URBACT Good Practices Website, 2019).

SUCCESS FACTORS

- Integration of “Gscheid Mobil” into transportation and urban planning, taking into account new forms of residential development with reduced parking spaces and a new mobility culture.
- Customized information and communication methods for the different target groups.

4.8 Demand responsive transport

PubliCar – the Swiss Demand Responsive Transport (Switzerland)

A demand responsive transport service operating for over 20 years

The successful model of PostBus for offering flexible public transport that meets the needs of residents in sparsely populated areas while being cost-efficient.

Location: rural areas and small towns

Country: Switzerland

Implementation body: PostBus

Level of implementation: rural areas and small towns

Topic: demand responsive transport

Target group(s): residents of rural areas and small towns

Stakeholders involved:

- Municipalities
- Cantons
- Federal administration
- PostBus
- Residents of rural areas and small towns



INTRODUCTION

PubliCar, launched in 1995, is a demand responsive transport solution offered in rural areas or small towns or during periods of low demand, for example the night service. It is a flexible service with no timetables or fixed routes that is complementary or alternative to conventional public transport.

OBJECTIVES

- Offer a flexible public transport service that meets the needs of residents in sparsely populated areas.

DESCRIPTION OF THE SERVICE

The planning and offer of the service are based on the following “tools” (Massa, 2011):

- Call centre which collects the requests for the journeys
- Software for the automatic grouping of the requests and the optimization of the journeys
- Management and communication tool: via telephone or smartphone and SMS

- The fleet also includes 7–19 minibuses that are easier to manoeuvre in narrow streets while still meeting the transport demand for each journey.

The service consists of the following five steps (Massa, 2011):

1. Booking of the trip: the user contacts the reservation centre (call centre) and indicates origin, destination and time of the journey (rules regarding when the of booking should be made vary from area to area and in certain cases it can be done up to an hour before the journey).
2. The reservation centre identifies available vehicles.
3. The reservation centre coordinates the requests of the users and defines the best possible itinerary.
4. The driver is informed about the journey and reservations via telephone or smartphone.
5. PubliCar collects the users and brings them to their destination.

The service is different from a regular taxi service in that:

- It is limited to certain geographical areas and service hours
- It aims to optimize journeys by bringing together requests of different individuals
- It tries to discourage individual trips.

RESULTS

PubliCar has been operating successfully for more than 20 years. On average it has around 50–90 users/day per service, and in certain areas this increases to 200 users/day (Veja Barbero and Topi, 2014). Being a public service, PubliCar is subsidized by public funds and its operation costs are similar or even cheaper than traditional transport services with a cost recovery rate of approximately 25 per cent (Veja Barbero and Topi, 2014).

SUCCESS FACTORS

- Public transport that meets the needs of the local population.
- Integration with main public transport network.
- Economies of scales as the service is offered at a national level.

BARRIERS AND LIMITATIONS

- If the service is very successful it tends to be costly and has to be replaced by a conventional public transport service.

Innovative Transport in Rural Areas – the case of The Village Bus (Kolsillre, Sweden)

4,100 passengers in a year for a population of 100 people

A self-managed and cost-efficient demand responsive transport service for a village of 100 people.

Location: Kolsillre

Country: Sweden

Implementation body: residents

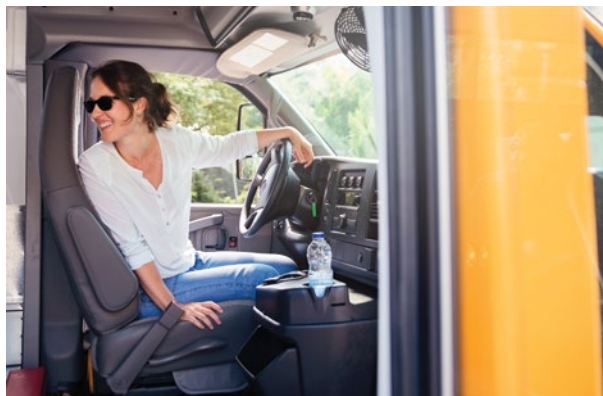
Level of implementation: entire village

Topic: innovative modes of transport, demand responsive transport

Target group(s): village residents

Stakeholders involved:

- Village residents



INTRODUCTION

Kolsillre is a village in the county of Vasternorrland in Sweden with a population of about 100 people. Like in many rural areas, conventional public transport was limited and not effective in connecting the village to the services and facilities in Vasternorrland and thus used very little. As a result, within the framework of the “Rural Transport Solutions”¹⁹ project, the residents of Kolsillre carried out the pilot “The Village Bus”, where they organized their own public transport by means of a minibus.

OBJECTIVES

- Develop a demand responsive public transport service run 100 per cent by the passengers (including the registration of journey requirements and driving of the bus).

DESCRIPTION OF THE SERVICE

The service was launched in 2010 and it made use of a nine-seat minibus and the website www.byabussen.se (not in service at the moment) that allowed for the registration of the journeys. The residents that wanted to make use of the service had to create an account on the website and the minibus could be operated by registered drivers only. The minibus was stationed at the village, so that it was accessible to everybody (Project “Move on Green”, 2014).

The service did not have fixed routes or timetable, but the users organized it themselves according to their needs. More specifically, residents would access the website and book a seat on an existing route or create a new one. The bus would also stop to pick up people standing on the road.

¹⁹ The overall aim of this project was to develop innovative and sustainable rural and coastal transport schemes and services reducing social exclusion and enhancing the vitality and sustainability of sparsely populated areas in Northern Periphery. <https://www.northernperiphery.eu/en/projects/show/&tid=70>.

RESULTS

- More than 4,100 passengers, transported in 2011, a high amount for a population of 100 people (European Commission, 2012).
- The majority of trips was towards the town of Ånge located 45 km away (European Commission, 2012).
- Cost effective service: average cost per person €7.26 which translates into €0.61 per kilometre, that is considerably less than the cost of regular bus lines in the area, €2,00 per kilometre (Project “Move on Green”, 2014).
- Increased contact and community spirit among the residents of the village.

In March 2012 the Village Bus was awarded the “Best Results” National Award in Stockholm.

SUCCESS FACTORS

- Flexible solution that offered public transport according to the needs of the residents.

BARRIERS AND OBSTACLES

- National legislation regarding commercial transport services. At the time of the project it was not allowed for the users of the Village Bus to pay or collect fares in order to fund the service, allow it to become financially sustainable and continue over time.

CHAPTER 5: LESSONS LEARNED

The present chapter draws from the success factors and barriers of the good practices presented in the previous chapters to highlight the points that could significantly influence the results of mobility management practices.

EXISTENCE OF ALTERNATIVES TO THE CAR

Key to the success of mobility management at all levels is the presence of sustainable modes of transport that are valid alternatives to single occupancy car trips, e.g. walking, public transport, cycling, carpooling, car sharing, etc. The higher the number of alternatives the larger the number of transport needs that can be satisfied and, thus, the higher the modal shift to be expected. In addition, a wide variety of transport solutions provides a guarantee that the transport needs of the people are going to be met throughout the year, even in the case of events such as public transport strikes or in the case of bad weather (when considering cycling and walking).

“PUSH” AND “PULL” MEASURES

In order to increase the effectiveness of mobility management programmes it is important to include both measures that make individual car use less attractive (“push”) and measures that increase travel choices and improve the attractiveness of sustainable modes of transport (“pull”). The implementation of just “pull” measures is often not sufficient to induce changes in mobility behaviour and in particular in reducing car use, due to:

- The pro-car mindset of the society and lack of sustainable mobility culture.
- The comfort and joy that the use of car represents for many people.
- The difficulty in changing human habits.

Therefore, the implementation of management techniques that discourage the use of private cars is fundamental. In this sense, parking management can be a very effective “push” measure as it is demonstrated by good practices in chapter 3, i.e. *“Parking management at Sihlcity”* and *“INFICON AG – parking management at the work place”*.

In the case of mobility management at city level integration of “push” and “pull” measures can be achieved through Sustainable Urban Mobility Plans (see section 3.6).

KNOW THE TARGET GROUP

As was mentioned in chapter 2, having a clear idea and a good understanding of the target group(s) of the mobility management programme allows for the selection and implementation of the most suitable measures.

Once the target group(s) have been identified it is important to collect information on the transport mode used for their trips and why. What is the origin and/or destination of the journey? Is a car leg involved? If yes, why? Is it because of a lack of alternatives, busy lifestyle, comfort and joy of driving, etc.?

As was shown in the good practices of *“Green Way – Infineon’s Mobility Management Programme”* and *“Mobility Management for the U2 and Coldplay 2017 concerts in Brussels”*, this information facilitates the identification of mobility measures that meet the needs of the people and for targeted communication.



STAKEHOLDER INVOLVEMENT

Whoever the stakeholders of a mobility management programme, e.g. employees, citizens, transport operators, companies, cities, etc., their active involvement throughout development and implementation can generate numerous benefits and contribute significantly to the success of mobility management. More specifically, benefits of stakeholder involvement include:

- Awareness raising regarding the issues the programme intends to tackle.
- Transparency over objectives and communication of outputs.
- Identification of mobility needs and issues, and development of a tailor-made and realistic mobility management programmes.
- Allowing for both public and private interests to be taken into consideration.
- Creation of a sense of co-ownership and ensuring acceptance of the measures.
- Possibility of establishing networks and synergies that not only contribute to the success of the programme but could also result in savings and a more efficient allocation of resources.

In reality, stakeholder involvement has been a central part of all the good practices presented in this guide.

In some cases, the large number and variety of stakeholders that need to be involved can slow down the planning and implementation process, however it is a fundamental part of the process.

LONG-TERM APPROACH (COMMITMENT AND INTEGRATION WITH OTHER SECTORS AND PROGRAMMES)

Even though the impacts of mobility management can be visible in a short to medium period (six months to two years), a long-term approach is fundamental for achieving consistent results towards sustainable mobility.

A key for guaranteeing longevity of results is support and commitment from senior officials, whether this is a company board, senior management or a city council.

At the same time integration with other sectors and programmes is also important. For example, as was highlighted by the good practices of *"Parking management at Sihlcity"* and *"Munich – Gscheid Mobil"* integration of mobility management with land-use planning is essential. At the same time, mobility management can contribute to the environmental objectives of

companies and cities, and it should, thus, be an integral part of the environmental programmes and management processes (for example see good practices “INFICON AG – parking management at the work place”, “Mobility management at a Science and Innovation Park – Skolkovo Foundation” and “Cityporto of Padova – a successful urban distribution service”).

RAISING AWARENESS AND COMMUNICATION

Raising awareness and communication activities are at the core of mobility management. They:

- Raise the visibility of mobility measures and alternatives to single occupancy car trips.
- Facilitate the shift from cars to sustainable modes of transport by providing useful information.
- Inform the public about the benefits (economic, health, environmental, social, etc.) of sustainable modes of transport.
- Raise acceptance of mobility measures.
- Motivate changes regarding mobility behaviour.

As can be seen from the “Travel Demand Management at the London 2012 Olympic Games” good practice, communication campaigns and targeted information can determine the success of other mobility measures and can be fundamental in achieving mobility targets.

In order to maximize the impact of raising awareness and communication activities it is important to:

- Pay attention to the target group and even consider a further “segmentation” to smaller groups based on characteristics such as the origin of the trip, distance covered and age, so as to offer tailor made information and incentives.
- Consider establishing an identity (branding – slogan, logo) so that mobility management measures are easily recognized.

MAKE IT FUN AND REWARDING

As is indicated by the “Mobility Jackpot (or Lottery) at Seewer AG” good practice, gamification (that is the use of games and fun elements) can be a very effective tool for achieving a shift from single occupancy car use as it:

- Provides an incentive to change mobility behaviour by rewarding the use of sustainable modes of transport.
- Creates excitement and interest on sustainable mobility.

As can be inferred from the information in chapter 2, the good practices illustrated in chapter 4 and the lessons that stem from them (chapter 5), when it comes to mobility management there is no one size fits all solution but there are good examples to draw on. As a result, the present document is not an exhaustive guide but offers a snapshot of the different possibilities. For those who wish to further explore the subject, internet is a valuable tool as it offers numerous websites and online platforms on mobility management and good practices, a selection of the most interesting ones is available in the annex.



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ANNEX: ONLINE RESOURCES

This annex provides the list of websites and online platforms with useful materials and tools on Mobility Management for those interested in further explore the subject.

- **Allinx** (<https://www.allinx.eu/>): a network of mobility managers with a “Knowledge base” section that collects articles, documents and research reports. Registered members have access to webinars too.
- **CIVITAS** (<https://civitas.eu/>): is a network of cities dedicated to sustainable urban mobility. The platform provides sustainable mobility material, case studies, tools, e-courses and webinars.
- **Crow – Mobiliteit en gedrag** (<https://www.crow.nl/mobiliteit-en-gedrag>): this website focuses on influencing mobility behaviour and offers materials and case studies from the Netherlands as well as other countries (in Dutch).
- **Die Transferstelle Mobilitätsmanagement** (<https://www.mobilitaetsmanagement.nrw.de/>): the data library of the platform offers a selection of guidelines and case studies from Germany (in German).
- **Eltis** (<http://www.eltis.org/>): this is Europe’s main observatory on urban mobility that “facilitates the exchange of information, knowledge and experiences in the field of sustainable urban mobility in Europe”. The platform collects case studies, tools, training materials, etc. on sustainable urban mobility and Sustainable Urban Mobility Plans.
- **EPOMM** (<http://www.epomm.eu/index.php?id=2632>): the European Platform on Mobility Management offers information on mobility management planning and acts as a database of materials produced by European projects on sustainable mobility. It also hosts the presentations carried out at ECOMM, the European Conference on Mobility Management that is held annually (<http://www.epomm.eu/index.php>).
- **ITDP** (<https://www.itdp.org/>): the Institute for Transportation and Development Policy offers a selection of publications and articles on sustainable mobility.
- **National Centre for Mobility Management** (<https://nationalcenterformobilitymanagement.org/>): it provides e-courses, webinars and links to mobility management resources.
- **Sustainable Urban Transport Project** (<https://www.sutp.org/en/>): it provides case studies and publications on sustainable urban transport in a variety of languages.
- **Victoria Transport Policy Institute** (<http://www.vtpi.org/tdm/>): it offers materials on mobility management and sustainable modes of transport, as well as an online encyclopaedia on Transport Demand Management (www.vtpi.org/tdm/tdm75.htm).







Mobility Management

A guide of international good practices

This study, prepared under the umbrella of the Transport, Health and Environment Pan-European Programme (THE PEP) and directly related to the achievement of Priority Goal 2: “Manage sustainable mobility and promote a more efficient transport system” describes what is managed mobility and how it can help local, regional and national authorities to achieve their traffic and congestion reduction goals.

The study does this by provides a summary of good practices in managed mobility identifying where individual schemes have been successful and why.

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ISBN 978-92-1-117224-9



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