

## D.3.1.2 Desk work on behavioral change Most important solutions adopted to convince users and operators to make a radical change and co-create the solutions to be adopted

WP3 Understanding mobility needs and trends  
A 3.1. Understanding trends & scenarios on mobility services

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## List of abbreviations and terms

## Introduction

Current transport systems suffer from a number of intractable problems, including congestion, emissions of greenhouse gases and local air pollutants, and accidents. Indeed, transport is the sector with the highest increase of greenhouse gas emissions in recent decades, and nearly one-third of global CO<sub>2</sub> emissions come from the transportation of people. In addition, transport systems have significant impacts on the environment, accounting for between 20% and 25% of world energy consumption and carbon-dioxide emissions and road transport is a major contributor to local air pollution and smog. Given these problems, and their associated economic, social and environmental impacts, there is an emergent need for sustainable transportation. Sustainable transport systems make positive contributions to the environmental, social and economic sustainability of the communities they serve. The available strategies for improving the sustainability of mobility vary and span from actions that affect the supply of transport to actions that affect the demand side. Regarding the supply side, indicative actions include investments on infrastructures or financial measures to reduce or limit the usage of vehicles that have lower levels of sustainability. Actions on the demand side involve making people aware of the negative impacts of their transport choices and nudging them towards the use of sustainable transport modes. One way to achieve this is to design and implement approaches that increase travelers' awareness of the environmental impact of travel mode choices and provide behavioral change interventions towards adopting transportation habits that reduce single occupancy vehicles and rely more on the use of public transportation, bicycles and walking than on private cars.

Many people are involved in supporting and encouraging changes in the behaviour of others and of course many seek to change their own behaviours and may seek the support of others in doing so. It is thus important to identify effective approaches and strategies that motivate change and sustain newly-adopted behaviours.

This report presents approaches to behaviour change and highlights evidence of their effectiveness. It refers to the development of theories about the processes that shape behaviour, to empirical studies that test these theories, and to applied research. The latter particularly relates to how behaviour can be changed in everyday settings and situations.

## 1.A global approach to behaviour change

There is a wide range of personal, social, and environmental factors that influence behaviour. Most can be assigned to three levels:3

- Personal or individual: beliefs, knowledge, attitudes, skills, genetics
- Social: interaction with other people including friends, family and the community
- Environmental: the area in which an individual lives, e.g. school, work place, local shops and facilities, and wider factors including the economy (such as prices) and technology.

A complex web of societal and biological factors must be considered when one aims to tackle a behaviour. Behaviour change is generally best served by a mix of interventions, delivered over a long period of time and modified in response to measured impact. Interventions that only address factors at the individual level, and do not take into account the social and environmental influences mentioned above, are unlikely to work. An ecological approach “that identifies and addresses the factors influencing behaviour at all three levels is likely to be most effective at bringing about behaviour change”.

.Information and advice are not enough

The traditional approach, still sometimes used in consultations and media campaigns, relies on providing direct advice and information. While information is important for education and informing consumers, it is rarely sufficient to change behaviour. It is based on the assumptions that people lack knowledge (of what they should be doing) and that improving knowledge changes attitude, creating the desire to change. It does not take account of the many complex influences on behaviour. This approach prescribes changes for the client in a style that may be perceived as

being “told what to do”. The practitioner may place emphasis on the benefits of change, without fully addressing the personal implications for the individual, which may result in resistance to change. The same is true of many education programmes and campaigns aimed at raising awareness. The provision of information is likely to appeal to those who want to know how to change their behaviour. In turn, information provision approach may worsen inequalities, disadvantaging those whose behaviour is more immediately shaped by their environment, and who may have less access to, or desire for, information.

#### .Behaviour change theories

In recent years there is much interest in theories of behaviour and models of behaviour change largely drawn from psychology and informed by economics and sociology. They consider the wide range of psychological, social, societal and contextual factors such as emotions, habits and routines.<sup>10</sup> The theories of change support interventions by describing how behaviours develop and change over time.

Which behaviour change techniques are most effective?

It is not completely clear which techniques are effective under which conditions.

#### Self-determination theory

Combining skill development with underlying, intrinsic motivation and reason, is believed essential for lasting change. Intrinsic motivation does not rely on external pressure, like rewards/approval or punishment/disapproval from peers or health professionals. It exists within the individual, and is driven by interest or enjoyment in the task itself. This is the basis of the self-determination theory. Contrary to rewards and incentives, self-driven motivation is believed to be stable and enduring. The individual must believe the behaviour is enjoyable or compatible with their ‘sense of self’, values and life goals. This is supported by probing why one should persist, or in what ways the new behaviour would relate to wider goals. People need to feel a sense of choice and



responsibility for their actions, to feel capable of achieving the goal and also understood, cared for, and valued by others.

There are many parallels between the self-determination theory and motivational interviewing.

#### . Motivational interviewing

Motivational interviewing is a counselling approach which uses a combination of behaviour change techniques, and has been shown to be significantly more effective than traditional advice-giving. It is a directive, client-centred method for enhancing intrinsic motivation by exploring and resolving ambivalence and barriers to behaviour change. This approach views lecturing or confrontation as unhelpful. The main principles underpinning motivational interviewing are:

- Express empathy (through reflective listening)
- Develop discrepancy (between the individual's goals and their current behaviour) Avoid argumentation
- Roll with resistance (acknowledge and explore the individual's resistance to change, rather than opposing it)
- Support self-efficacy

To gain a better understanding of the factors which impact its success, further research combining motivational interviewing with the self-determination theory has been recommended.

The best theory is the one you make yourself by intimately knowing your audience and understanding their needs. Generic theories are, however, useful in expanding our thinking as change agents.

. What if people just aren't interested?

Don't blame them. Instead, act more like a designer. Immerse yourself in their lives until you figure out how to create solutions that answer their real needs. Imagine if the inventors of the first mobile phones (known affectionately as "bricks") just sat around blaming the public for not buying them. Instead they set about evolving the phone into something that met more and more people's practical needs. The same applies to, for instance, a climate change project. If you want people to reduce their energy use then get to know your audience and work with them to innovate solutions that are a good fit to their real life needs.

. Do threats work?

Rarely. After all, when was the last time you changed your behavior because of a threat? Threats create waves of denial and resistance. Yet campaigns based on threat appeals are common in areas like climate change, alcohol and tobacco control, and road safety. The failure of threat-based appeals results in a common marketing syndrome, the Just Shout Louder Effect. If people aren't responding to the threat, then Just Shout Louder! A classic example was Deutsche Bank's giant Climate Change clicker in Times Square.

. Do incentives work?

Incentives are a two-edged sword. Sometimes they help, sometimes they don't. There's an unresolved decades-long debate between economists and psychologists about the effectiveness of incentives. Many psychologists argue that, although an incentive may have short term benefits, withdrawing it is likely to reduce the actor's motivation to lower than it was before the incentive was offered. In fact, there's empirical evidence both ways. Probably the best answer is that incentives tell receivers a story about themselves. Sometimes it's a story that dignifies the

receiver, sometimes it humiliates them. So, the question we could ask is: what story does our particular incentive tell the receiver? Does it say, "We recognize your extraordinary motivation." Or, does it say, "We doubt you really care, that's why we're paying you."

How do you create great messages? Marketers typically overestimate the power of messages, a syndrome that could be called "message fetish." People are rarely convinced by messages. Usually they are convinced by the inspiring real life examples of their peers. Nevertheless, we always need to communicate, and stories (rather than messages or slogans) are our best tools. Stories should be short, emotional, surprising, concrete and believable. It's a very useful formula.

. Can marketers persuade people to do absolutely anything?

We humans resent unwanted advice, especially when it threatens our comfort zones. Denial and resistance are driven by fear and the worst fears are social fears. What will our friends and family think? What if we fail? How will we look to others? It may seem silly but one of the big barriers to women cycling to work is their fear about how their hair will look. We trivialise these fears to our peril. Behaviour change is therefore rarely achieved by persuasion or marketing but almost always requires modelling how to carry out unfamiliar behaviours with ease, aplomb and dignity.

The role of social marketing.

Social marketing draws on some of the principles of commercial marketing and uses behaviour change theory to influence behaviour for 'social good'. The benefit is for society, not for the organisation doing the marketing. Segmentation of the relevant market allows for interventions to be targeted.

A major example of a social marketing campaign is Change4life, launched in the UK in 2009. It involved the government, media, industry and retailers to create a societal movement to promote healthier behaviours, making new behaviours appear fun and achievable. Ongoing support was

provided to families via post and online social media (e.g. Facebook). In addition, 200,000 at-risk families received support packs, and 44,833 of these families were still interacting six months later. Over one million mothers who joined the campaign said they had made changes to their children's behaviour. Another evaluation (cluster-randomised control trial) of the Change4Life campaign, revealed that while the campaign materials increased awareness of the campaign, they had little impact on the attitudes or behaviour of the study participants. It concluded that, in the area of childhood obesity, campaigns should be more targeted to a smaller range of behaviours and groups of people, use behaviour change theory, and use formal pilot testing.

Social marketing as an approach to changing behaviour has been criticised, as it is hard to promote the immediate benefits of lifestyle choices. Behaviour is not the same as a product (like running shoes), and in social marketing a consumable item is not exchanged between a producer and consumer. Therefore social marketing interventions should not be regarded as the sole means of changing behaviour.

#### . Using technology to change behaviour

The age of technology widens the possibilities for changing behaviour. E-interventions, delivered using the internet, are increasingly common. They are often cited as being cost-effective, but there is a lack of data to assess this. The most effective internet-based interventions at changing behaviour appear to be more extensively based on theory (particularly the theory of planned behaviour) and use a number of techniques. The use of additional communication methods, particularly SMS (short message service) or text messaging to send motivational messages.

Mobile phones are good candidates for the delivery of behavioural interventions. The advancement of mobile technology to include internal sensors of user location, movement, emotion, and social engagement, raises the prospect of continuous and automated tracking of health-related behaviours. Such interventions may be cheaper, more convenient, or less

stigmatising (due to private participation). Also, connectivity allows the sharing of behavioural and health data among health professionals or peers, which may facilitate behaviour change. There is rapid development and interest in Smartphone Apps, however research on their evaluation is still immature. The challenge will be maintaining long term use and effective behaviour change.

Video games are another platform that engages the audience. This entertaining and interactive technology has demonstrated the ability to positively influence behaviour.

Researchers are starting to explore how online technologies can be designed to make them maximally effective. Given the high reach and low cost they have promise in enabling wide access.

#### . Persuasive technologies at the service of sustainable mobility – examples

Persuasive technologies have been successfully utilized in a number of application domains such as health, education and environmental awareness including environmental sustainability to promote greener transportation habits.

Persuasive systems addressing behaviour change in the context of personal mobility in urban environments is an active area of research, and numerous systems and implementations exist, aiming to motivate users towards making more eco-friendly choices; i.e. adopting transportation habits that rely more on the use of public transportation, bicycles and walking, and less on private cars. One of the first attempts was the PerCues mobile app published by Reitberger et al. (2007) which aimed to persuade people to use public transportation instead of their car in order to reduce emissions. The approach was based on displaying bus and pollution information, such as the departure time of the next bus and the decrease in emissions achieved by taking the bus instead of the car.

Another way existing systems use to nudge users is by providing visual feedback in the form of adapting the background graphics of the smartphone when making sustainable choices. A prominent example is the UbiGreen app proposed by Froehlich et al. (2009) that encouraged greener alternatives, including carpooling, public transport and pedestrian modalities by providing

visual feedback when users reduced driving. UbiGreen sensed users' behaviour and fed it back as ambient changes to the background graphics of the user's phone. The Peacox app, published by Bothos et al. (2014), influenced urban travellers to consider the environmental friendliness of travel modes while planning a route. Peacox embeds CO<sub>2</sub> emissions visualizations as well as personal and collaborative challenges aiming to persuade users to reduce the emissions caused by their mobility choices.

Message based persuasive technologies have been implemented in various domains with promising results. Common persuasive strategies instantiated through messages include praise, reminders and suggestion. Messages praising the user are provided in response to a goal being achieved or in response to user data captured by the application. After successfully responding to a prompt by performing a goal, a user might receive a message praising their accomplishment (Bond et al. 2014). Reminders are commonly implemented as periodic messages sent to the user reminding them to check the application. For instance, in (Harries et al. 2013) generic daily or weekly reminders were sent encouraging users to continue using the application for improving their physical activity. Moreover, reminders were sent to user who did not meet their goals in order to maintain the motivation of the user (Hong et al. 2013).

Suggestions entail messages recommending a particular behaviour to be carried out. Suggestion also comes in the form of motivational text that provides tips for continuing a specific behaviour (Fukuoka et al. 2011). In the transportation domain, the most relevant application integrating persuasive messages has been suggested by Bothos et al. (2014) in an application that nudged users to shift to less polluting transportation modes.

Most persuasive applications employ a one-size-fits-all approach to the delivery of persuasive attempts, failing to deliver personalized persuasion that leverages user characteristics and preferences, or to provide personalized tools that assist users in achieving the intended goals. For example, feedback based approaches provide a generic type of feedback (e.g. CO<sub>2</sub> emissions) to all users and goal-setting based approaches provide the same goals to all users. Furthermore, none of the existing applications consider differences in users' susceptibility to

persuasive strategies. However, user-adaptive systems can be more effective and/or usable than non-adaptive systems and personalized persuasive applications can have greater impact in transport behaviour change. It should be taken into account data-driven user profiles containing the mobility patterns of travellers, their personality and mobility type in order to provide adaptive and personalized message based persuasion. The approach should customize the strategies employed by identifying users' susceptibility on specific strategies and continuously should adopt them based on users' response to these strategies.



## 2. General planning of a plan of intervention for behavior change

Numerous frameworks aim to encourage and support the integration of behaviour change theory into the design of interventions. An example of such a framework is shown in the box below.

1	Identify the audience groups and the target behaviour. If faced with a complex behaviour, break it down into its component behaviours and/or adopt a systems thinking approach.
2	Identify relevant behavioural models (use both individual- and societal-level models). Draw up a shortlist of influencing factors.
3	Select the key influencing factors to work on. Use these to design objectives in a draft strategy for the intervention.
4	Identify effective intervention techniques which have worked in the past for the influencing factors selected.
5	Engage the target audience for the intervention in order to understand the target behaviour and the factors influencing it from their perspective.
6	Develop a prototype intervention based on the learning from working with the actors. Cross-check this against appropriate policy frameworks and assessment tools.
7	Pilot the intervention and monitor continuously.
8	Evaluate impacts and processes.
9	Feedback learning from the evaluation.

The differential effects on different population groups should be considered in the design and monitoring of interventions and requires a thorough understanding of the behaviour and the audience. Interventions should be targeted, based on relevant audience characteristics. Engaging the audience, so that they are partners in the process of change, seems effective at bringing about lasting change. ‘Learning through doing’ is considered to play a fundamental part in the



process of change.. It should be remembered that models tend to focus on personal and social factors influencing change. Additional work may be needed to identify influencing factors at the environmental level.

The process of designing a behaviour change intervention first involves understanding the target behaviour and selecting a broad approach, and then designing the specific behaviour change techniques to be used. The ‘behaviour change wheel’ (Figure 1) has been developed as a guide for selecting appropriate interventions.

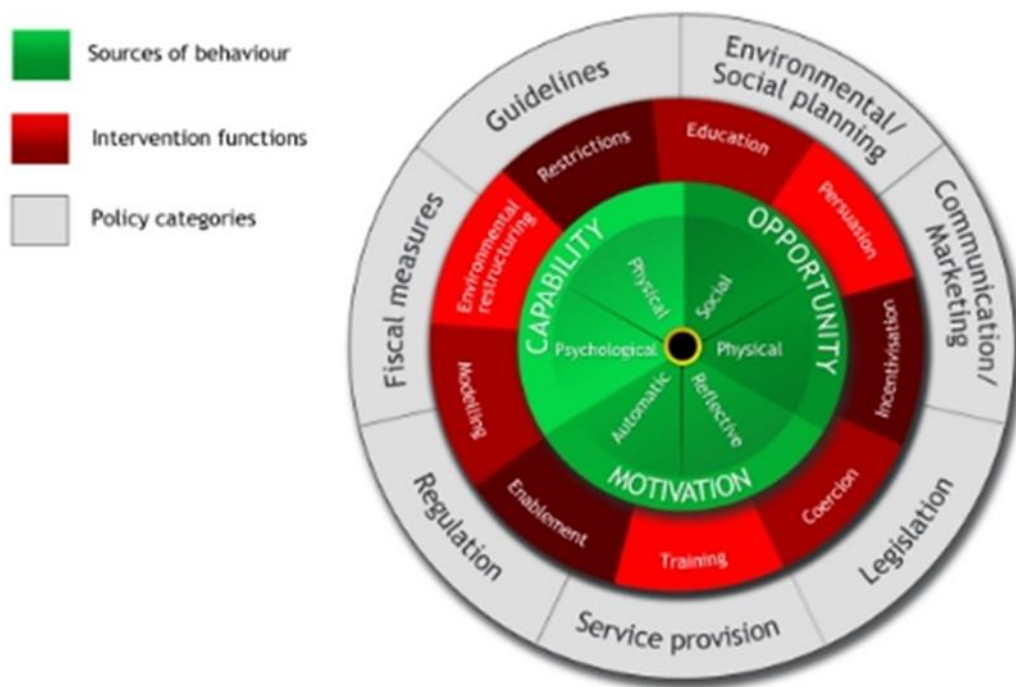


Figure1 The behaviour change wheel

## . Evaluating behaviour change interventions

Despite the recognised importance of behaviour change and the extensive research surrounding this subject, there is no consensus on how certain behaviours are best supported. Models and theories need to be used and reported in more coordinated ways to facilitate evaluation.

Ideally, theory and evaluation will be built in from the outset of planning an intervention. Behaviour change takes time, and evaluation needs to be sufficiently long-term to demonstrate that an intervention has resulted in and maintained behaviour change.

Evaluations will help to establish whether the interventions are working and, ideally, why they are working. They will also inform decisions as to how the intervention can be improved. They should also assess the cost effectiveness of the intervention and thus discern whether or not they represent value for money.<sup>35</sup> It is important for evidence of effectiveness to be shared between researchers, policy makers and practitioners, to avoid duplication

## Conclusions

People change their own behaviours. Our role is to create an enabling environment and provide opportunities for people to become inspired by what their peers have achieved. When we offer people a chance to take a step closer to the lives they dream about (and we make that change feel safe) then they will do the changing.

We are learning that the business of change requires us to work with humans in their social context, respond to their hopes and fears, recognise the role of power, and understand that behaviour sits in a matrix of technologies, infrastructures, institutions, norms and social structures, all of which need to be the open to strategising and potential modification.

In addition to targeting behaviours directly, interventions must help create communities and environments that enable change.

Behaviour change is therefore a multi-disciplinary effort. It involves practices and ways of thinking that no one profession can claim expertise in, like organisational change, infrastructure design, observational and social research, regulation, design thinking, social psychology, and communication and marketing. And, of course, leadership.

Because it's a multi-disciplinary effort, one of the most important roles of a change agent is to be a facilitator of strategising discussions involving individuals in different fields, including members of the target audience itself. That kind of facilitation might just be the most important thing we do.

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## Annexes

Annex 1: Best practices - UBI- GO – an innovative mobility service to facilitate changes in travel behavior and mode choice

Annex 2: Best practices - BestMOB - it explored successful climate impacting (public) mobility programmes via behavioural interventions and translated them into profitable business cases

Annex 3: Best practices - Step-By-Step - Learning from differences in mobility behaviour: a comparative research among European cities

## Annex 1: Best practices - UBI- GO

The Go:Smart project involved the development and field operational test (FOT) of an innovative transport broker service, named UbiGo, for sustainable transport of people in urban environments. The service attempted to bridge the gap between private and public transport by taking on the role of a commercial actor, “a broker of everyday travel”, offering customized transport services to fit the individual traveler’s needs and requirements.

It did this by uniting already existing transport solutions and transport providers, including public transport, taxi, car- and bikesharing, and rental cars, and offering them in a package to customers through a single subscription service. The intended audience for the service was urban households, who were judged to have sufficient access to the existing transport solutions, in particular to carsharing and public transport, and large enough travel needs for the service to be financially competitive with their current solution.

For its users, the UbiGo service offered one-stop access to the range of travel services through a webinterface adapted to smartphones (subsequently referred to as the app). Customers, in the form of households (comprised of any number of individuals including both adults and children, i.e. typically a family), paid a monthly subscription adapted to their transport needs, which included a personalized combination of, and amounts of credit for, the different travel services. During the FOT, the minimum limit for prepaid credit was 1200 SEK/month, or approximately 135 EUR or 185 USD at the time, although the average subscription was approximately 150% of this value. Credit could be topped up or rolled over, and the subscription could be modified on a monthly basis. In order to encourage participation in the FOT, any unused credit was refunded to the participants at the end of the test.

Also, the project could compensate participants for not using a private vehicle during the FOT, i.e. to offset insurance, parking, etc. up to a fixed limit. To access their travel services, the UbiGo traveler logged into the app via a Google- or Facebooklogin, where they could activate tickets/trips, make/check bookings, and access already activated tickets (e.g. for validation purposes). The app also allowed them to check their balance, bonus, and trip history, and get support (in terms of FAQ/customer service). Each participant received a smartcard, used for instance to check out a bicycle from the bikesharing service or unlock a booked car, but also charged with extra credit for the public transport system in case there was any problem using the UbiGo service.

To provide added value, UbiGo also included a customer service phone line open 24 hours per day; a bonus system for “eco-friendly” travel where earned points could be exchanged for goods and services provided by sponsors, and an “improved” travel guarantee, where UbiGo would cover the cost and deal with the paperwork to reclaim the extra expenditure from e.g. the public

transport provider.

Furthermore, the public transport offers unique to UbiGo included daily tickets and a more generous An innovative mobility service to facilitate changes in travel behavior and mode choice zone system with easy up- and downgrades via the app.

The transport broker handled everything so as to create a “seamless” customer experience. The broker procured transport from different transport service providers (the public transport authority, one taxi company, one car rental company, one carsharing company, and one bikesharing company) by becoming a “business client”. By representing a large number of customers, the broker could often negotiate lower prices for the individual trips. The back-office function also handled administration and billing, and kept track of credit that was added or rolled over, extra fees from rental cars and carsharing, subscription changes, rebates, etc.

In addition to the transport broker, transport service providers, and users, additional project stakeholders included service developers (ICT), research institutes, and society represented by the city and the region.

## Annex 2: Best practices - BestMOB

Over the last years there has been a growing commitment of private business to manage the mobility of their employees in a more sustainable way, including changing travel behaviour. Mobility management can reduce a company's costs, can improve its green image and offer its employees attractive mobility solutions. Mobility initiatives can also focus on the individual commuter: they might for example be willing to pay for an app that can save them travel time or motivate them to travel in more sustainable ways.

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There are numerous initiatives through which companies can engage in sustainable mobility solutions and which will provide them multiple beneficiaries. Now it's time for companies to start adapting these initiatives, or consult mobility specialist on company specific solutions. Many of the successful business cases have (already) been initiated by entrepreneurs and companies. These initiatives should be supported and enhanced by public organizations, which through public-private cooperation can provide start-up and campaigning support, targeted funding and regulatory incentives.

Business modelling should be part of the innovation process from the beginning. It helps innovation teams to think about essential elements like customer segments, the value proposition and key partners. For sustainable mobility the focus should be on groups that have the possibility to actually change their travel behaviour. To reach this target group, a personal approach and communication via communities showed to work well in a number of sustainable mobility projects. Based on the best practices that resulted from the state of the art and the potential clients and end-users and their needs, the BestMOB partners developed three new innovative business models. Besides, four existing models were adapted and reengineered with innovative additions and new potential for European rollout.

New business models

**School Competition** Stimulation of organised walking/cycling groups for school kids that are accompanied by one or two parents on their way to school. The business model reduces car



traffic during rush hours, especially before and after school, and replaces the car by slower modes of transport. A competition between schools ('who replaced most trips?') can be started.

**MobyCredits** Commuters can earn credits based on the degree of sustainability of the mode of transport they use and the time at which they travel. Credits can be exchanged for free/reduced items or services at an online shop. A competition element for individuals within the company or between companies, based on the number of credits acquired, can be added.

**Sport Works** Sport Works offers personal lifestyle coaching, that helps employees to live a more healthy lifestyle (e.g. healthy diet, more movement/sports). Travelling in an active way, by bike or foot, will be promoted. This way, wasted travel time can be replaced by active time. Improved health and condition are shown to increase productivity levels, reduce stress and diminish sick-days.

#### Improved business models

**SpitsVrij** SpitsVrij rewarded commuters avoiding travelling by car during peak hours. Although a success, SpitsVrij was fully publicly funded, a model which can not be sustained on the long-term. By attracting advertisers, public expenditure can be reduced.

**Mobility Budget** The Mobility Budget is a type of reimbursement of travel expenses for commuters. In many cases, using the budget is optional and therefore less used. An obligatory Mobility Budget can be applied for better results, as is proven by pilots with students in Germany.

**LiftShare** Lifeshare promotes and provided car sharing opportunities for businesses and organizations. Currently UK-based, its market can be expanded to other European regions by introducing a franchise model in which similar social enterprises that are familiar with the local context can help to roll out the scheme in the respective regions.

**Insurance for Travellers** The insurance for travelling is a trial by the Dutch Railways that covers any additional costs made when delays or disruptions of the railway services result in a missed flight. The service can be extended to other modes of (public) transport and destinations (e.g., business meetings).

### Annex 3: Best practices – Step-By-Step

The uniqueness of the Step-By-Step project is that it tried to combine, or maybe even to bridge the gap between different approaches to analysing mobility behaviour. One approach was strongly quantitative: if you cannot measure it, it is not important. However, these kind of analytical studies lead quite often to general conclusions on why the mobility behaviour is as it is. Implications for policy makers are not that easy to make. On the other hand, the behavioural psychological approach is recognizable for policy makers and connects to a more intuitive approach. However, results and analysis based on a behavioural psychological approach lack a framework to transfer the results from one situation to another. The Step-By-Step approach aimed to get the best of both worlds: transferability and recognisability.

Within the Step-By-Step project mobility data was collected for 15 European cities. A comparative analysis was performed resulting in a typology of cities based on their mobility characteristics. In total 31 cases with a behavioural intervention were analysed. 31 cases in 15 cities. The analysis of case studies played an essential role. Case studies were analysed in depth to identify successful and less successful approaches and strategies. Of course, this sample is not a representative one for all European cities: it was never an objective of this study to cover enough case studies to be able to claim 'representativity for all European cities'. However, 31 cases evaluate and fine-tune their 'individual path toward sustainable development in transport, too'. Within the report per case a description is

given of the approach, objective, results and lessons learned.

An assessment was made of the success of the behavioural intervention. The success factor was based on five steps (process, implementation, (quality of the) evaluation, realisation of objectives and structural impact). The assessment was done by the researchers, based on the evaluation reports and an additional interview with a project representative.

Per case a success rate is derived: a figure between 0 and 10. These ratings were combined with a number of possible explanatory factors. From this analysis the following conclusions can be drawn:

- It cannot be said that a certain policy type is superior to other types. It depends on other specific factors. Or to say it differently: there is no single policy measure which in itself is successful in all situations;
- It cannot be said that a certain city type suits itself better to certain policies. In some cases however, low successfulness ratings were found in car oriented cities and
  
- It seems to be that lower success rates go hand in hand with lower scores for evaluation and

goal fulfilment. Successful cases do have in general a more elaborate monitoring and evaluation program and do reach their targets. Thus, it could be concluded that it is always a helpful approach to include monitoring and evaluation programmes when designing measures.

Behavioural persuasion strategy: mostly used implicitly

Special attention was given to what extent behavioural persuasion strategies were applied in the different cases. We used the framework of Cialdini. Cialdini distinguishes six strategies to influence human behaviour. None of the cases analysed, used these kinds of strategies explicitly. However, based on our analysis, 23 of the 31 cases (74%) used implicitly a certain behavioural persuasion strategy. All kinds of persuasion strategies were used. The most used persuasion strategy was social proof (people tend to do what others do).

Using a behavioural persuasion strategy leads to a higher success rate

No relation was found between a certain persuasion strategy and success. But if no persuasion strategy could be found (26%), success rates were somehow lower. This suggests that it helps to think at before hand about the kind of persuasive strategies to use. It is still the case that in a number of cases the communication takes place in objective elements (attributes) like travel time (the bus/bicycle is quicker), price or things like that. Communication should focus on how people could be convinced to change their mobility behaviour. Therefore the communication needs to be on the underlying actual behavioural motives and how to persuade people to change their behaviour into more sustainable mobility patterns.

Also the analysis showed that an adaptive approach could be helpful: successful cases show different kind of persuasion strategies. It is not one single behavioural persuasion which is the best, but based on actual experiences - monitoring of the progress is essential - applying a set of behavioural persuasion strategies may be the best way to success.

Policy recommendations

Structured along the five steps (implementation, overcoming barriers, monitoring and evaluation, goal fulfilment and continuation) a number of policy recommendation were defined. Also per city type and policy measure specific recommendations were made.

Overall Step by Step conclusions:

- All policy measures can be successful (or unsuccessful), depending on the situation.
- All in all, it can be assumed that economic incentives measures seem to be more successful, in general.
- All cities are (due to structures and history) different from one another, but the success of policy measures does not primarily depend on the specific situation in a city.
- Measures in car oriented cities are sometimes slightly less successful (with regard to achieving more sustainable conditions) than measures in cities which are more public transport or multimodal oriented.
- How measures are implemented and defined has a major impact on successfulness. Successful measures have a sound problem definition, realistic targets, use a specific window of opportunity, have an elaborate monitoring & evaluation program and have thought at before hand on the life after the project.
- Behavioural methodologies/strategies are mostly used implicitly.