

Working Paper 2: Motivations and Barriers to Adopting Sustainable Travel Behaviour

Abstract

This paper investigates different travel behaviour related projects and identifies barriers and motivations for behavioural change towards more sustainable mobility. Since methodologies from other disciplines such as sociology and psychology are becoming more important for travel behaviour research, a main focus is on inter-disciplinary approaches. These concepts seem to constitute fruitful attempts to enrich a useful knowledge base for policy and planning measures. Additionally, results from the authors' previous research are used to compare drivers and constraints for environmentally friendly behaviour.

In general, determinants for behavioural decisions differ between types of travel – in terms of daily and tourist travel – and between transport user groups. Socio-psychological factors like attitudes towards the environment and towards certain modes of transport or the importance of moral obligation and environmental beliefs are main influencing variables for daily travel. Tourist travel decisions are more dependent on individual socio-economic situations. The resulting conflict between individual knowledge about negative sustainability related effects from air travel and conflicting individual unsustainable actions leads to a strategy of collective denial and a psychological gap, where people wait for others to act without changing their own behaviour.

Introduction

The current unsustainable development in the transport sector calls for changes in travel behaviour. So far, attempts to influence individual behaviour towards a more sustainable mobility are often ineffective. An increasing involvement of psychological and sociological theories in transport research is aiming at a deeper understanding of causes and effects of travel behaviour. Although there is a wide public presence and comprehensive knowledge about environmental and sustainability problems, this fact is not adequately reflected in individual travel decisions. Investigating the reasons for this gap can lead to an improvement of efficiency of sustainable mobility measures.

With this background, the paper is focussing on the identification of motives and barriers to adopting sustainable travel behaviour. First, we display aspects and definitions of sustainable travel behaviour. The habitual character of individual travel behaviour is described as a major problem for behavioural changes, followed by a summary of different travel behaviour projects and the barriers and motivations for sustainable mobility. We further include sustainability research from other fields to identify problematic or favouring aspects for behavioural changes. The conclusions try to recommend strategies for research projects and measures to consider motives and barriers of individual travel behaviour.

Sustainable Travel Behaviour

Against the background of increasing transport-caused negative impacts, unravelling the driving forces and parameters of sustainable mobility has become a major task for travel behaviour researchers. Since these aspects are also crucial for our research, working paper 1 of this project (Prillwitz and Barr 2008) contains a general overview of sustainable mobility definitions and describes attributes and influencing factors for sustainable travel behaviour. The underlying concept of sustainability – tracing back to the Brundtland-definition of a sustainable development (WCED 1987) – covers different characteristics from the social, economic and environmental area. Hence, attempts to transfer the concept to the field of transport are often very elaborate. A popular definition for sustainable transport was developed by the European Conference of Ministers of Transport (ECMT 2004). It states that a sustainable transport system a) allows the basic access needs of individuals and societies to be met safely and in a manner consistent with human and ecosystem health, and with equity within and between generations; b) is affordable, operates efficiently, offers choice of transport mode, and supports a vibrant economy; and c) limits emissions and waste within the planet's ability to absorb them, minimizes consumption of non-renewable resources, limits consumption of renewable resources to the sustainable yield level, reuses and recycles its components, and minimizes the use of land and the production of noise.

Following this general framework, some attempts to evaluate travel behaviour and transport related measures rely on a complex system of different indicators. E. g., Basler + Partner (1998) use a set of 13 criteria and 21 indicators, containing factors like emissions of greenhouse gases, noise and air pollution, size of unfragmented areas, coverage of all social costs, prices of transport services, access to regional centres by public transport, and participation of the public in decision-making. Projects focussing on the identification of sustainable travel behaviour use less complex or only single indicators, mostly concentrating on environmental effects or the use of the least sustainable means of transport compared to other transport modes. For daily travel this often results in a distinction between car use and use of alternative means of transport like public transport, bicycle use or walking (e. g. Steg and Gifford 2005, Dickinson and Dickinson 2006). For less frequent travel, the comparison is between air travel and other transport modes (e. g. Høyer 2000). Other approaches develop a more comprehensive index for the sustainability of a household (e. g. Donegan et al. 2007) or calculate an indicator for the ecological impact of travel behaviour like overall annual emissions (e. g. Hunecke et al. 2007). Considering also individual social and psychological factors; some projects use attitudes and lifestyle attributes to categorize different mobility styles (e. g. Anable 2005, Götz et. al 2003). In general, a simplified evaluation of sustainable and non-sustainable behaviour and concentration on some indicators or factors increases the understandability and manageability of the research and reduces uncertainties.

Habits as Barriers for Behavioural Changes

A reversion of current unsustainable developments in the transport sector (e. g. European Commission 2003, Greene and Wegener 1997) towards more sustainable mobility requires considerable changes in individual travel behaviour. Many projects aiming at this goal are either not or only partly successful. One of the main reasons is the habitual character of individual travel behaviour (Møller 2002). In contrast to deliberate decisions, habits are automatic actions under certain conditions, especially within stable contextual frames (Verplanken et al. 1997). Because they reduce necessary mental activity, habits are very functional for the individual, but other persons do not necessarily benefit (Verplanken and Aarts 1999). In other words, habitual behaviour quickens and simplifies acting for a person, but the outcome for others is maybe less beneficial or even disadvantageous than it would have been as a result of a deliberate decision process. For measures trying to influence individual travel decisions, habits are very obstructive: On the one hand, they reduce the perception of travel alternatives and strengthen the focus on the chosen means of transport (Verplanken et al. 1997). On the other hand, they force a biased estimation of other transport modes, resulting in increasing perceived costs for travel alternatives (Kenyon and Lyons 2003). Both effects become more significant with an increasing frequency of use of the chosen travel mode (Harms 2009).

Measures to influence travel behaviour have to take into account its habitual nature and especially the selective and biased perception of alternative means of transport. Essentially, there are two options to break up habits: First, automatic actions can be interrupted and a deliberate consideration process can be started. Second, a change of contextual conditions can also cause breaking habits (Møller 2002). Several approaches can be found in recent travel behaviour research projects (e. g. Bamberg 2006, Harms and Truffer 2005, Fujii and Gärling 2003). In general, measures can try to focus on existing or forthcoming changes. For instance, some projects concentrate on so-called life course events like relocation, job change or family events and try to utilise their potential to weaken or break travel behaviour habits (e. g. Prillwitz et al. 2007, Scheiner 2006). Other studies successfully use interventions to interrupt habitual travel behaviour and induce a deliberate consideration of travel alternatives and increase the moral motivation towards a more sustainable mobility (e. g. Eriksson et al. 2008).

Besides established habits, subjective individual perceptions and interpretation of objective conditions can also influence activity-intention and therefore act as a barrier to behavioural change. The missing individual objectiveness causes a gap between the personal judgement and the actual evaluation of circumstances. This can further lead to a biased subjective perception, resulting in a rejection of a preferred option and choice of a different behaviour (Harms et al. 2007). Hence, an additional consideration of subjective perception and regarding social interaction can improve chances of success for measures aiming at a change of travel behaviour.

Other Motivations and Barriers for Sustainable Travel Behaviour

For an identification of motives and barriers to adopting sustainable travel behaviour, one has to distinguish between different travel purposes respectively the frequency of travel. Analysing the ecological impact of individual mobility behaviour, Hunecke et al. (2007) find psychological variables with a strong significance for everyday travel (see below). Instead, for less frequent tourist travel the same researchers detect a higher relevance of socio-economic driving factors like income and household size (Böhler et al. 2006). Depending on the distance of holiday travel, they define four different travel groups and find strong environmental values across all four groups. Interestingly, these values have no impact on holiday travel behaviour. The reasons can be seen as a lack of information and individual non-consideration of alternative options. Hence, most sustainable behaviour of non- and local travellers is also not a result of individual awareness, but of economic constraints and a lack of interest in travelling. The authors conclude that the described barriers for changes in travel behaviour like the lack of ecological awareness must be considered, resulting in different strategies for different types of travellers. Strategies cannot aim at a transformation of the type of traveller, but should address the different charac-

teristic groups and focus on change of destinations and choice of environmentally friendly modes of transport.

Becken (2007) strengthens these findings with her focus group study of international tourist's perception of impact from air travel on climate change. Tourists clearly distinguish between their holiday travel as something extraordinary and their everyday life, where environmental factors are much more likely to be considered. Becken also detects a reduced willingness for changes towards sustainable holiday travel and a low perception of individual responsibility. These parameters also result from a lack of information, and more detailed information on environmental impacts could increase the awareness of participants when making travel decisions. Despite these statements, tourists already show a sufficient knowledge of environmental issues and climate change, qualifying the expected influence from information and calling for additional measures. Discussing different environmental measures, participants accepted a global air travel tax as a compromise between restricting individual travel and achieving emission reduction goals. In general, tourists' holiday travel behaviour and their perception of necessary changes to prevent climate change show a psychological gap and create an 'example of collective denial, where everyone waits for someone else to do something' (Becken 2007). Therefore, the author concludes that behavioural changes can only be achieved by major societal changes.

According to Gössling and Peeters (2007), ongoing discourses lead to a controversial public understanding of environmental consequences of air travel and create the described 'psychology of denial'. They identify four major air-travel related industry discourses regarding: energy efficiency and share of emissions, economic and social importance, fuel use minimization and technology improvement, and unfair treatment of air transport. The authors show substantial gaps between these discourses and reality, and identify it as the main reason for a lack in public awareness of air travel induced environmental problems. The discourses also support attitudes towards individual non-action and create negative consequences for sustainable development. Overall, there are many barriers for sustainable travel behaviour on less frequent travel purposes like holiday travel. The absence of changes towards a more sustainable mobility and increasing use of unsustainable modes of transport result from a lack of information and public problem awareness, a low perception of individual responsibility, missing links between environmental values and tourist travel behaviour and a general understanding of holiday travel as a highly independent private issue with a great freedom of choice, creating a low willingness to change behaviour. Therefore, motivations towards a more sustainable tourist travel are more or less economic constraints and a lack of interest. Measures to change travel behaviour should address different types of travellers and could give information to increase public awareness of environmental cause-effect-chains, and try to change destinations and mode of transport. One possible focus for these measures could be on the ecotourism market, where social values of potential tourists also spread widely, leaving environmental

beliefs as non-significant factors (e. g. Blamey and Braithwaite 1997). On the long term perspective, major societal changes seem to be necessary.

Regarding sustainable daily travel, a comprehensive study from Anable (2005) displays drivers and constraints for behavioural changes. Depending on different preferences and attitude statements regarding car use, use of alternative modes of transport, and environmental and 'green' behaviour, her cluster analysis of more than 600 interviews delivers a set of four car owning and two non-car owning groups of participants: 'malcontented motorists', 'complacent car addicts', 'die hard drivers', 'aspiring environmentalists' (all car-owning), 'car-less crusaders' and 'reluctant riders' (both non-car owning). Motivations and barriers to change travel behaviour and use alternative modes differed widely between the groups. Many findings from the above cited research can be confirmed, but in contrast to less frequent travel some influence from environmental concerns can be found.

'Die hard drivers' show nearly no intention to change behaviour and have strong constraints to use other modes of transport, like unfavourable attitudes towards all travel alternatives, lack of moral imperative, strong car attachment, or strong behavioural and social norms. Travel behaviour changes of 'complacent car addicts' are also hard to achieve, depending basically on a good quality of the public transport system. But they also have strong barriers for a shift towards alternative modes, containing psychological attachment to the car, lack of moral imperative, or a lack of information about car use costs. 'Malcontented motorists' are more open to change their travel behaviour. For this group, a good quality of public transport, congestion and moral obligation to reduce car use are the main motivational factors, while perceived control, psychological attachment to the car and weak perception of efficacy of individual actions are constraints for changes. From the car owning groups, the 'aspiring environmentalists' are most likely to change, e. g. motivated by a high moral norm, positive attitudes towards public transport and some negative views of the car, strong perception of efficacy and a possible role as an example for others. Possible barriers for a mode switch are an attachment to practical benefits of the car, missing knowledge about where alternatives exist, and sometimes a lack of opportunities to use alternative means of transport.

Both non-car owning groups also show very different barriers and motivations to change their travel behaviour. A high moral norm, strong perceptions of efficacy and control, positive attitudes towards public transport combined with a dislike of the car and positive behavioural and subjective norms are the motives to use alternatives for car-less crusaders. A lack of alternatives and sometimes physical problems are their only constraints for changes in travel behaviour. Despite this, 'reluctant riders' are driven to use alternatives by a lack of car ownership, moderate moral obligations to reduce car use and some positive views on public transport, while weak perceptions of control and fondness of car travel act as barriers. One conclusion is that measures of environmental concern, moral norm and psychological attachment to the car can deliver insights in mode choice behaviour. The identification of different attitude groups regarding sustainable mobility and po-

tential changes of travel behaviour can help to customise policy interventions and focus on groups with an intention to change travel behaviour. Insights in conditions for mobility decisions are necessary, because the same behaviour can take place for different reasons and the same attitudes can lead to different behaviours. Possible interventions should be based less on hard infrastructural measures and more on soft measures like travel information, management and marketing activities.

Hunecke et al. (2007) publish comparable findings for the ecological impact of mobility behaviour. They identify six psychological variables as significant factors for the use of private motorized modes, concluding that mobility-related attitudes are better predictors of travel mode choice than values. Regarding travel behaviour changes, the relevant factors can be classified into two groups: Perceived behavioural control and perceived mobility necessities are variables basing on subjective evaluations of the behavioural scope; car and bicycle attitude, weather resistance and ecological norms (resulting in preferences for environmentally friendly transport modes) are attitude variables that express preferences for the different transport modes. For travelled distances, psychological variables are of minor relevance; here socio-demographic predictors like age and employment situation are the stronger predictors. In general, mobility behaviour is influenced by situational and personal factors. Changes in travel mode choice can be achieved by attitude-based strategies, while reductions of travelled distances are more complicated to obtain, because the individual destination choice depends on the perception of personal necessities and constraints of spatial structure and infrastructure.

In their paper on sustainable transportation and quality of life, Steg and Gifford (2005) present some constraints and motives for changes in travel behaviour. One important barrier for behavioural changes is its frequent association with additional effort or decreasing comfort. The reduction of car use is a specific problem, because the attractiveness of a car bases on many variables associated with comfort, like convenience, independence, flexibility, perceived safety, or privacy. Another barrier is the difference between the short-term perspective of individual users and the long-term perspective of society, creating a social dilemma. The advantages of individual car use make it attractive to continue driving, but the increasing negative effects from traffic and the general need for a sustainable transport system requires a massive reduction of car use. Additionally, users willing to change their behaviour are still confronted with the uncertainty about whether other users will follow. Factors that encourage behavioural changes are problem awareness, perceived responsibility for the problems, trust in others' contributions and personal norms.

From an individual point of view, structural attributes like distances and accessibilities can also act as barriers for changes in travel behaviour. But on the one hand, these aspects are mainly results of individual location decisions and therefore hard to change. Transport related criteria are often not relevant for a person's or household's residential choice (Prillwitz et al. 2007); physical and social neighbourhood characteristics are more impor-

tant (Molin and Timmermans 2003). On the other hand, distances and other aspects like weather conditions, physical abilities and safety issues are often influenced by individual perception. E. g., Rose and Marfurt (2007) show considerable differences in the perceived acceptable riding distance for bicycle use between riders and non-riders. Other perceived barriers for riding to work more often were commitments before or after work, the need to carry materials, car drivers' attitudes, or inadequate locker and shower facilities. Some of these aspects can also be found in Hensher and Reyes' (2000) article. They see the growing phenomenon of 'trip chaining' as a major barrier for travel behaviour changes, especially towards public transport. According to their research results, the amount of trip chaining is influenced by several individual and household characteristics. One solution could be a segmented market strategy, convincing certain user groups that higher utility can be achieved from public transport use; this is may be a basic condition for behavioural changes.

In contrast to findings for less frequent travel purposes, changes in daily mobility are much more influenced by attitudes towards certain means of transport, individual perception and environmental beliefs. Social and cultural influences can act as barriers and motivations for behavioural changes. Similar to results from tourist travel, the main factors for changes towards a more sustainable mobility are the degree of information (in connection with the degree of acceptance of measures), the willingness to change behaviour, and the perception of efficacy.

Motivations and Barriers for Environmental Behaviour

Whilst the current project is focusing on travel behaviour, previous research by the authors concentrates on the general context of environmental behaviour in and around the home. Details of the projects and results have been documented in various articles (e. g. Barr and Gilg 2006; 2007). Personal characteristics of three different domains of environmentally relevant categories – attitudes, purchase behaviour, and recycling – were used to design a set of sustainable lifestyle groups. A survey with 1,600 participating households in Devon, UK, collected information in various environmentally related categories such as details concerning purchasing energy efficient appliances or organic products, habits like turning off lights in unused rooms or reducing water use, and recycling different sorts of waste. By analysing the data with segmentation analyses, individual behaviours were divided into four different lifestyle groups – committed, mainstream, occasional, and non-environmentalists. Results show a majority of mainstream and occasional environmentalists (33 and 40%), followed by committed environmentalists (23.5%). Only a small group of participants (3.5%) practice a non-environmental lifestyle. Figures document that environmental action has become embedded within everyday experiences and lifestyles in and around the home.

Furthermore, the results document the importance of socio-psychological factors as drivers and barriers for environmentally friendly behaviour. Playing both roles, individual values are strong determinants for sustainability related action. While committed environmentalists often hold biospheric and ecocentric values, non-environmentalists are more likely to express anthropocentric and technocentric values. Another significant factor for environmental action is attitudes: Naturally, environmentalists differ from others in their positive attitudes towards the environment and their strong moral obligation to behave accordingly. Moral and environmental beliefs and willingness to sacrifice comfort are further drivers of more sustainable lifestyles. In general, moral obligation, responsibility, social desirability and response efficacy are seen to be the main motivators for environmentally friendly behaviours.

Conclusion

Results from the literature review of current projects underline the necessity to distinguish between different forms of travel with regard to distance and frequency of trips. In the field of daily travel, a variety of socio-psychological variables are the main determinants for decisions pro- and contra-sustainable behaviour. There, the habitual character of daily mobility is seen to be a major barrier for changes towards a more sustainable behaviour. Acting as both, motivators or constraints, other predictors for mobility-related decisions are attitudes towards certain modes of transport and the individual importance of environmental beliefs and moral norms. Further barriers for changes in daily travel are concerns about convenience and flexibility, personal limitations (like health and physiological problems), and different perceptions of relevant conditions (like weather or topography). Findings for environmentally related individual behaviour at home strengthen the role of socio-psychological factors as drivers for behavioural decisions and focal points for measures targeting behavioural change.

For tourist travel decisions, researchers document an important influence from socio-economic driving factors, while environmental values and attitudes do not play a major role. On the contrary, a lack of information about sustainability related effects and strategies of 'collective denial' to relativise negative impact from own behaviour, can be detected. The existing perception of necessary changes to stop climate change and the – nevertheless – unsustainable behaviour create a psychological gap, where people don't draw consequences for themselves, but wait for others to act. Actions on both travel related fields have to take into account the diverse characteristics of different types of travel (daily and tourist travel) and of travellers on both areas. Addressing measures to certain segments of transport users and tourists can be a fruitful approach to achieve behavioural change in a more effective and efficient way.

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