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**Sustainable Travel Behaviour—The Role of Behavioural Research in Facilitating the Reduction of the Carbon Footprint**

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1. **Introduction**

The workshop was attended by about 35 people and benefited from resource papers by Susan Handy & Kevin Krizek, and by Wafaa Saleh & Ravindra Kumar (see chapters 3 and 4 elsewhere in this volume).

Following the discussion of the resource papers, workshop members were polled using index cards in order to identify priority concerns for research into sustainable travel behaviour. These fell into seven main groups, which in order of the frequency of mention were:

* Improving evaluation and survey methods (especially when faced with likely social desirability bias)
* Understanding behavioural phenomena and change mechanisms (notably the role of feedback in different time scales, individual and group)
* Developing policy options with respect to favoured behavioural outcomes
* Understanding motivations and values (relative utility, and going beyond mobility)
* Exploring cohorts and life trajectories
* Identifying the behaviours underlying land-use patterns, notably residential mobility
* Equity concerns

These concerns guided wide-ranging discussions, which we summarise here under four key themes. The workshop wrapped up with a discussion of promising ways forward for research of this kind, including some that may not happen unless the travel behaviour research community lobbies in their defence.

1. **On the Role of Behavioural Research in This Field**

It was agreed that, in this field as in any other, the role of behavioural research is to help understand and predict the behaviour of individual travellers and to identify the factors which can and do influence that behaviour.

It was noted that many researchers first become involved in sustainable travel behaviour because they have a concern for sustainability issues and wish to help influence policy and behaviour in the direction of greater sustainability. That said, it was recognised that researchers need to be careful to maintain a dispassionate and objective stance with respect to the evidence on the scale of any ‘problems’ and the efficacy of any ‘solutions’. To do otherwise would be short sighted and ultimately self-defeating[[1]](#footnote-1). The most effective way for travel behaviour researchers to ‘facilitate reduction of the carbon footprint’ (to quote the workshop title) was thought to be to provide evidenced insights into the factors affecting relevant behaviour in this field.

Provision of such insights and evidence will help policy makers to make appropriate decisions on the options available to them, be they providing transit-oriented developments (TODs), promoting walking and cycling, incentivising the adoption of low-emission vehicles, or introducing road user charges. In the absence of such evidence the achievement of policy objectives may be frustrated by decisions and designs that are sub-optimal, inappropriate and even counterproductive.

1. **On the Timescales and the Range of Behaviours That are Relevant to the Field.**

It was agreed that, when considering the environmental sustainability of travel behaviour, it is essential to extend the focus to include the long-term consequences of individual decisions on issues such as residential location and job choice which are only indirectly connected to travel behaviour *per se*. A useful framework for many of the behavioural outcomes discussed in the resource papers, presented in the final session, indicated the need to understand behaviour on three levels:

* *Strategic/Macro decisions* (e.g., residential location, job choice, commitments to modes – via purchase of a car, a season ticket or membership of a car sharing scheme)
* *Tactical/Meso decisions* (e.g., “do I take the car?”; “where do I work/shop today?”)
* *En-route/Micro decisions* (e.g., driving style, acceleration, speed, parking search)

It was noted that what distinguishes research into environmental sustainability from other areas of interest is a particular focus on behaviours which have the potential to have a significant impact on energy consumption or emissions. Thus, while we may have relatively little interest in choices such as those about trip timing whose effects on energy consumption or emissions are relatively insignificant (except in very congested areas), we will have a greater than usual interest in issues such as:

* major locational decisions (e.g., residential and employment location);
* trip reduction strategies (e.g., use of e-modes, abandonment of activities, trip-chaining, etc.)
* use of low-emission modes (e.g., walking and cycling v. public transport v. multi-occupancy car v. solo car);
* vehicle-access decisions (e.g., purchase v. shared v. “car free”);
* the type of vehicle purchased and used (e.g., size, and battery-electric v. hybrid v. diesel v. petrol); and
* driving style (e.g., eco-driving v. aggressive driving).
1. **On the Complexity of Disinterested Evaluation**

The above discussions highlighted a particular interest in evaluating the antecedents of environmentally-negative or -positive behaviours that might be the indirect or unintended consequences of policy or technological advance. For example, we would be interested in the way that improvements in engine efficiency (whether brought about by technological development or legislation) may be diluted by a tendency of people to trade up to larger engine sizes when the costs of purchasing or using them decreases. Similarly, we would be interested in the extent to which the beneficial effect of trip reduction strategies on energy consumed in the transport sector might be offset by increased consumption of energy in the residential sector (due to increased use of home computers, heating and air conditioning by people who decide to work from home rather than travel to a remote office). This interest in so called “rebound” or “take-back” effects has particular implications for the collection of data and requires a more than usually sophisticated understanding of the processes of behaviour change and of individual decision-making processes. The same can be said of a number of other unintended behavioural responses. A potentially positive example is the “spill-over” of the effects of environmental sustainability policies aimed at a particular target group or territory to other groups or territories where those policies are absent. In such situations, it is important to research how the effects are diffused, for example by a tendency for individuals to make social comparisons and to exchange information via social networks. On the other hand, it is possible to overestimate a change in consumer behaviour resulting from certain types of policy, such as incentives, because some people may be “free-riding” by claiming a benefit for changing something they would have done fully or partly anyway, in the absence of the policy. Evaluation is the more complex because different policies and technological advances interact, possibly with countervailing effects.

1. **On Other Particular Issues Affecting Research in This Field.**

It was noted that since environmentally friendly behaviour is, in certain cultures and among certain groups, becoming recognised as a socially desirable phenomenon, people’s propensity to engage in such behaviours will be affected by the perceived social norms. This requires researchers in the field to pay particular attention to social influences on behaviour. Unfortunately it also means that the researcher has to be wary of the possibility that the reporting of behaviours (by individuals or by interested observers) might be subject to social desirability bias. The possible impact of this bias via differential response rates or by incomplete/aspirational reporting was discussed at some length.

One of the issues to emerge was the difficulty in extrapolating behaviours and behavioural responses observed among an environmentally aware minority onto a wider population. Two examples were discussed; firstly the extent to which the behaviour of residents of first generation TODs is likely to be a good guide to the way that the general population would respond to wider availability of transit, and secondly whether the extent of voluntary response to behaviour change initiatives provides a useful guide to the wider populations’ ability to adapt their behaviour to changed circumstances. It was suggested that the environmentally aware minority could be seen as being in the vanguard of behaviour change but that a key issue is whether the behaviours of an environmentally aware minority are a reliable guide to those of the majority if/when they come to espouse pro-environmental values. Investigation of this question requires a detailed understanding of the implications of the transmission of social norms for attitudes and behaviour, especially as some pro-environmental behaviours are not necessarily driven, or even mainly driven, by pro-environmental values.

On a separate but related point, it was noted that it is difficult to recruit a truly representative sample because willingness to participate in research studies is likely to be correlated with a greater than average concern for societal values.

It was also noted that a substantial proportion of research in this field has been conducted in the context of policy initiatives designed to influence behaviour in the direction of greater environmental sustainability. It was agreed that great care had to be taken in interpreting the reported outcomes of such initiatives because of the natural tendency of ‘successes’ to get greater publicity than ‘failures’. Behavioural researchers seeking to understand why and how a given initiative produced (or failed to produce) a given behavioural outcome are not helped by over-optimistic estimates of what can be achieved. This was one of a number of points that were also discussed in the context of researching the possible pathways to sustainable travel behaviour in lower-income countries that are now motorizing rapidly.

Another issue which particularly affects research in this field is the need for complete and accurate data on the energy consumption and emissions associated with different behaviours. It was noted that, in the absence of appropriate data, estimates are often made on the basis of average figures which might be quite misleading. Although this is not itself a ‘behavioural research’ question it does loom large when seeking to compare the environmental credentials of alternative behaviours.

1. **Wrapping Up: The Most Promising Ways Forward**

Participants in the workshop were asked to identify exciting and promising developments in behavioural research which are likely to be of greatest relevance to research into sustainable travel behaviour. Three main themes emerged; the need to make full use of new technologies for data collection, the need to focus on attitudes and motivations, and the potential lessons to learn from research into health-related behaviours.

New technologies (notably GPS, cell phones and other methods that allow automatic tracking) offer great scope for monitoring travel, activities and time use behaviour and may be particularly useful in the context of trials and policy intervention studies because they can facilitate good experimental design with control groups as well as before and after monitoring. The use of such technologies as a follow up to stated response exercises was seen as a useful way of exploring, and perhaps quantifying, the biases likely to afflict stated response data when the behaviour of interest is so subject to social norms.

Given the importance of attitudes, ‘soft’ motivations and social norms, focus groups and longitudinal (especially panel) surveys will be important methods, respectively, for understanding them and tracking their evolution. The use of focus groups to explore the role of social influences on attitudes and behaviour was seen to be particularly important, and the exploration of segmentation on the basis of attitudes was recommended.

It was noted that many of the issues facing researchers interested in sustainable travel behaviour are also of interest to researchers into health-related behaviours. Not only are some of the behaviours (notably walking and cycling) of interest in both fields, but both fields need to recognise the importance of self-motivated change, social norms and education. It was suggested that travel behaviour researchers could learn from the theory, quantitative/qualitative measurement methods, and experimental approaches used by health researchers.

The workshop concluded with a discussion of what might not get done without a concerted effort on the behalf of the travel behaviour community to justify the effort, the methods used and the necessary funding. To researchers dedicated to providing impartial evidence and insights, the “challenge of the carbon footprint” was seen as formidable, because of its rapid evolution, its fluctuating position on the popular political agenda and its global reach. In particular: adequate experimental design may be a casualty if it is seen as too slow and costly when only quick answers are demanded; scientific respectability may be denied to qualitative indicators despite their potential to help explain the processes at work; and researchers may not gain the trust they deserve when they offer their best and most impartial judgements about the weight of the evidence. Of course, the behavioural dimension of sustainable mobility is not the only domain facing these realities, but workshop members were in no illusion about the e difficulties ahead.

**Acknowledgement**

The workshop chairs sincerely thank the resource paper authors and all of the workshop participants for their valuable insights and intellectually stimulating perspectives that greatly contributed to the success of the workshop and made this report possible.

1. The workshop took place shortly after the ‘Climategate’ affair in which public trust in the objectivity of published results was seriously undermined by the suspicion of biased analysis and unwillingness to provide access to raw data. [↑](#footnote-ref-1)