Looking over the horizon: Transport and reduced CO_2 emissions in the UK by 2030

Robin Hickman[a,*], David Banister[b,1]

[a]*Halcrow Group, UK*
[b]*Transport Studies Unit, Oxford University Centre for the Environment, UK*

Available online 21 June 2007

Abstract

Transport is a major user of carbon-based fuels, and achievement of the targets set at the Kyoto Protocol and elsewhere means that the EU and national governments must reduce CO_2 emissions in all sectors, including transport. This paper reports on a recently completed study for the UK government on the options available to meet a 60% CO_2 reduction target by 2030 in the UK transport sector. The study follows a backcasting study approach, developing a business as usual baseline for transport emissions, and two alternative scenarios to 2030. Different policy measures are assessed and assembled into mutually supporting policy packages (PP). Although 2030 seems a long way ahead, action must be taken now if the targets for CO_2 reduction are to be met. The achievement of a carbon-efficient transport future, combined with holding travel levels at present levels, is likely to be very difficult. A major transformation in the way transport and urban planning is carried out is required. As transport and urban planners, we need to think very differently in tackling the new environmental and liveability imperative.
© 2007 Elsevier Ltd. All rights reserved.

Keywords: Transport; Global warming; Carbon emissions; Futures; Backcasting

1. Introduction

The issues relating to climate change have risen dramatically to the top of the political agenda, and the importance of transport in contributing to reducing levels of CO_2 is clearly evident. Yet the difficulty remains that traffic levels continue to rise and all the projections suggest that more emissions rather than less are likely to arise by 2030 and beyond. We hence need to start to think very differently in tackling the global emissions problem.

The Visioning and Backcasting for UK Transport Policy[2] (VIBAT) project has examined the possibility of reducing UK transport CO_2 emissions by 60% by 2030.

It has examined a range of policy measures (i.e., technological, behavioural and regulatory), and assessed how they can be effectively combined to achieve this level of CO_2 emissions reduction. The intention has been to assess whether such an ambitious target is feasible, to identify the main problems, and to comment on the main decision points.

There are three main stages in this innovative research project (Fig. 1). The first is to set targets for 2030 and to forecast the business as usual situation for all forms of transport in the UK over that period, so that the scale of change can be assessed. The second is to describe the transport system in 2030 that will meet the reduction target. This has taken the form of two alternative visions of the future that will push both the technological and the behavioural options, separately and in combination. The third stage is the backcasting process, where alternative

*Corresponding author. Tel.: +44 208 2333 555.

E-mail address: hickmanro@halcrow.com (R. Hickman).

[1]The Bartlett School of Planning, University College, London, UK.

(footnote continued)

Transport. Full documentation and background reports are available: ⟨http://www.ucl.ac.uk/ucft696/vibat2.html⟩.
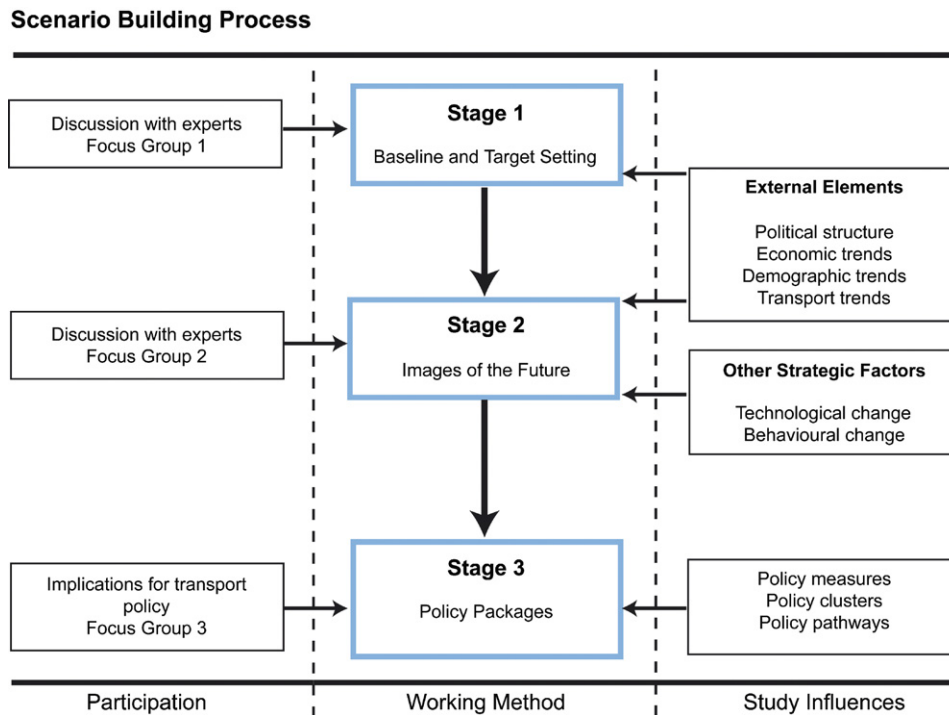
Scenario Building Process

Fig. 1. The VIBAT study approach.

policy packages (PP) are assembled to lead to the images of the future, together with their sequencing in terms of when implementation should take place.

The benefits of scenario building are that packages of policy measures can be developed to address ambitious CO_2 emissions reduction targets. This allows trend-breaking analysis, by highlighting the policy and planning choices to be made, by identifying the key stakeholders that should be included in the process, and by making an assessment of the main decision points that have to be made (the step changes). It also provides a longer-term background against which more detailed analysis can take place. This paper presents the methodological approach followed in the study as well as some of the findings in terms of measures, PP and policy pathways that might help us move towards a more sustainable transport future.

The VIBAT study considers a similar topic to previous studies, such as the OECD project on Environmentally Sustainable Transport, EST (OECD, 2000), Pridmore et al. (2003) and Bristow et al. (2004), in considering the ways of achieving large-scale cuts in carbon emissions. It, however, modifies the usual backcasting study approach to quantify the likely impacts of policy measures and PP.

2. Future studies and the backcasting approach

It is important to look at the longer term future, particularly when dealing with policies relating to sustainable transport, as many interventions require long lead times to be effective, impacts often take time and may have unexpected results, and also different policies combined to work in synergetic ways are likely to be the most effective.

To help us understand these longer term futures, a number of empirical research techniques are available.

Futures studies have been increasingly used in the last few decades to illustrate what might happen to society in adapting to challenging future trends and targets, and they are now making a substantial impact on policy making. The traditional forecasting approach is still dominant in many research studies looking over the shorter term, but there are strong concerns as to the usefulness of forecasting in the study of highly complex, long-term problems where trend-breaking futures are required. Sustainable transport is such a topic. Based on extrapolating existing trends, forecasting is unlikely to generate creative and radical solutions to current policy challenges. Scenario building approaches offer one alternative approach to looking over the longer term, and they can be considered as being complementary to the current range of transport models.

This study has taken and adapted one particular scenario building approach to UK transport policy over a 30-year time horizon. The backcasting study approach has been used widely in Scandinavian research over the last 20 years and also in a number of pan-European projects, such the OECD EST study (OECD, 2000) and the EU-POSSUM project (Banister et al., 2000). The latter was the first to assess European transport policies as to their consistency and feasibility, using a qualitative scenario-based approach based on backcasting.

The term backcasting was first introduced by Robinson (1982) to analyse future energy options in terms of how desirable futures could be attained. The major distinguishing characteristic is: "a concern, not with what futures are likely to happen, but with how desirable futures can be