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Pluralistic backcasting: Integrating multiple visions with policy packages for transport climate policy

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ABSTRACT

Traditionally backcasting studies in the field transport are based on a single normative vision (often with clearly stated targets) and alternative pathways are then developed to reach that vision. This paper expands the discussion on the role and importance of backcasting towards using multiple visions as a part of strategic transport planning process. This is done by presenting a method for pluralistic backcasting, which is defined as a process where multiple visions of the future are developed in a participatory, interdisciplinary process using the Delphi method. Further, the pathways to the alternative visions are constructed with a set of policy packages in a collaborative process with key stakeholders. The pluralistic backcasting approach outlined in the paper presents a set of practical tools to support development and implementation of climate strategies and policy programmes for transport. It presents a novel, policy relevant application in the field of backcasting. The approach is tested with a case study of multiple visions of the future on CO_2 emissions for transport in Finland up to the year 2050, including the identification of required policy packages to achieve the visions.

1. Introduction

Global warming, urbanisation, security issues, the ageing population, and digitalisation are all grand challenges for the transport sector, as transport provides part of the solution but also may increase some of these global pressures. Decisions made in transport tend to be long term, and much of the infrastructure will be in use for the next 50 years (at least). Transport is also heavily regulated and provides a key area for public policy, with many of the decisions taken being seen as controversial. This has meant that in the past policy making has tended to be cautious, and there is considerable lock-in and path dependency to maintain stability. Increasingly though, questions have been raised about whether such an approach (effectively business as usual) is tenable, and current debates are over the switch from the current socio-technical system to a more sustainable one.

Strategic planning and transitions can be supported by interdisciplinary, systemic and integrated research approaches that present alternative future visions and pathways (see e.g. Tuominen, 2009; Tuominen & Ahlqvist, 2010). New methods

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are available that combine these wider systemic perspectives with deeper participation and policy support approaches. Backcasting provides one such approach (Vergragt & Quist, 2011; Quist & Vergragt, 2006; Dreborg, 1996). The backcasting approach works through the visioning and analysing possible futures, and the development of agendas, strategies and pathways about how to get from where we are to where we might want to be. Recently, backcasting has gained a great prominence in transport studies, especially in climate change mitigation activities (Banister & Hickman, 2009, 2013; Höjer, Gullberg, & Pettersson, 2011; Hickman, Ashiru, & Banister, 2009; Hickman & Banister, 2007; OECD, 1997). Backcasting has attracted the attention of transport sector policy makers in many countries, for example in the UK, Sweden and Finland, as well as international agencies such as the OECD and the European Union. Backcasting may provide a sustainable complement to traditional transport planning, as it opens up a wider discussion, and also provides a tool for moving towards alternative futures when dealing with the major challenges of the modern societies (Robinson, 1990). Banister and Hickman (2013) argue that the most effective backcasting studies can actually bridge the gap between research and action. They call this the implementation gap.

The traditional backcasting studies have used a single normative vision (often with clearly stated environmental targets) and alternative pathways are then developed to reach that vision. In this paper, we aim to expand the scientific discussion on the role and importance of backcasting, using multiple visions as a part of strategic transport planning process on climate change mitigation. We do this by presenting a method for pluralistic backcasting. First, multiple visions of the future are developed in a participatory, interdisciplinary process using the Delphi method. Further, the pathways to the alternative visions are constructed with a set of policy packages in a collaborative process with key stakeholders. Multiple visions in backcasting is a novel approach in transport studies, although its potential has already been realised in some applications, for example in case of spatial planning, sustainable consumption and hydrogen futures (e.g. Höjer et al., 2011; Green & Vergragt, 2002; van de Kerkhof, Cuppen, & Hisschemöller, 2009). More specifically, we address the topic through the following research questions:

1. What are the techniques available to integrate participatory pluralistic visioning with analytical policy packaging to support long-term climate change mitigation targets in strategic transport planning?
2. What are the benefits, difficulties and theoretical implications of the integrated approach?
3. How does the integrated method support strategic transport planning?

The pluralistic backcasting approach outlined here presents a set of practical tools to support the development and implementation of climate strategies and policy programmes for transport. The tools may also be applied to other sectors and to integrated policies that cut across the different sectors. Our case study is a research project (ILARI) that aimed to produce multiple visions of the future on CO_2 emissions for transport in Finland up to the year 2050, including the identification of policy packages to achieve the futures set by the visions.

The paper is structured as follows. Theoretical approaches and policy needs to visioning, backcasting and policy packaging in the literature are reviewed in Section 2. Section 3 presents a novel approach for pluralistic backcasting and applies it to the Finnish case study. This includes constructing visions of the future on CO_2 emissions of transport, and policy packages for achieving the futures set by the visions. Finally, we conclude with a discussion on the theoretical and practical implications of the approach in Section 4.

2. Theoretical background

2.1. Backcasting

Scenario building provides a family of methods that can be used in futures studies for developing strategies and pathways. Many of the scenarios are constructed from the past and present towards the future and are hence forward-looking. Backcasting scenarios instead look backwards from the desired future (Robinson, 1990; Hirschorn, 1980). The major concern is not which futures are most likely to occur, but how to attain desirable futures. The two types of scenarios are illustrated as cases a and b in Fig. 1. The purpose of this article is to develop a third option (c), where multiple preferred futures are taken as starting points of the backcasting exercise. Hence, we call it pluralistic backcasting.

In general, three classes of future scenarios have been distinguished (Vergragt & Quist, 2011; Amara, 1981; Börjeson, Höjer, Dreborg, Ekvall, & Finnveden, 2006), answering to the questions: what *will* happen (trend extrapolations, business as usual scenarios, probable scenarios); what *could* happen (forecasting, foresighting, strategic scenarios) and what *should* happen (normative scenarios like those used in backcasting). Normative scenarios can also be called desirable futures or visions of the future. All of the three scenario classes can be made in a forward- and backward-looking way (Table 1).

This paper takes a backcasting approach that builds upon Robinson's (Robinson, 1990) thinking. The backcasting method involves working backwards from a particular desired endpoint to the present and estimating what policy measures would be required to reach that point. Robinson (Robinson, 1990) uses a single end point, but here an approach of multiple future visions is presented, in which the different visions will be achieved, but with divergent pathways (Fig. 1).

Multiple visioning or scenario building in backcasting is a novel approach in transport studies, but in some other sectors it has already been used successfully. Below, we present some examples of such cases, with a strong focus on stakeholder