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A need for new methods in the paradigm shift from mobility to sustainable accessibility

Håkan Johansson ^{a,*}, Kjell Ottar Sandvik ^b, József Zsidákovits ^c, Grzegorz Łutczyk ^d

^aSwedish Transport Administration, 781 89 Borlänge, Sweden

^bNorwegian Public Roads Administration, PO Box 8142 Dep N-0033 Oslo, Norway

^cHungarian Transport Administration, Lövház u. 39, Budapest 1024, Hungary

^dGeneral Directorate for National Roads and Motorways, 00-874 Warsaw, Poland

Abstract

Planning of the transport system is usually based on forecasting of future traffic volumes. The forecast is based on current trends in the society, predictions of future economic growth and costs of transport. In all parts of Europe these trends and models point towards further growth of transport and traffic volumes. The highest growth is predicted in the Eastern part where car ownership is getting closer to the levels in the Western part. Safety factors and seamless mobility can justify improved road network but the forecasts also indicate a need for larger roads with more capacity. These new roads not only induce more traffic and thereby more emissions of GHG but also larger energy use and emissions of GHG during construction, operation and maintenance. In the last report IPCC warns that infrastructure developments that lock societies into GHG-intensive emissions pathways may be difficult or very costly to change. This reinforces the importance of early action for ambitious mitigation.

To reach the climate objectives there is a need for technical solutions in energy efficient vehicles partly or fully dependent on electricity and a replacement of fossil fuels with bio fuels. These solutions however are not enough. There is also a need to change direction in planning and development of society and infrastructure in accordance with behavioral changes. It is a clear paradigm shift from planning for more traffic with cars and trucks towards a more sustainable mobility with accessibility through walking, cycling and public transport with less cars and improved logistics and modal shift instead of more trucks. Under such conditions of paradigm shift forecast is a very unreliable method. So there is a need for other methods.

This paper is a result of the work within the CEDR I4 group on mitigation and adaptation to climate change. Based on examples from Sweden, Norway, Hungary and Poland within the group the paper explores an alternative method for planning. The first

* Corresponding author. Tel.: +46 10 123 59 19.

E-mail address: hakan.johansson@trafikverket.se

step is to describe the current situation, what the trends are and what the drivers are, to get a general picture of the problem. A clear objective is also needed. Since most countries do not have precise GHG objectives for road transport example is given how national objectives can be translated to a road transport objective. Then the gap between the trend and the GHG objectives can be described for road transport. An inventory should be made of possible measures to reduce the GHG emissions. This has been done in many countries and by EU commission which can work as a basis, but update may be necessary and there should be space for new ideas. The measures can be clustered into packages. From them scenarios can be built and tested towards the GHG objectives and other targets. Backcasting from the scenarios that fulfill the objectives can be used to develop an implementation strategy with policy instruments and measures to move in the direction towards the objectives. Due to uncertainty check points are recommended some years in between to adjust the strategy.

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1. Introduction

Planning of the transport system is usually based on forecasting of future traffic volumes. This forecast is based on current trends in the society, predictions of future economic growth and costs of transport. In all parts of Europe the trends and the models point on further growth of transport and traffic volumes. The highest growth is predicted in the Eastern part where the number of cars per capita is getting closer towards levels in the Western part. Safety factors and seamless mobility can justify improved road network but the forecasts also indicate a need for larger roads with more capacity. These new roads not only induce more traffic and thereby more emissions of GHG but also larger energy use and emissions of GHG during construction, operation and maintenance. In the last report IPCC warns that infrastructure developments that lock societies into GHG-intensive emissions pathways may be difficult or very costly to change, and this reinforces the importance of early action for ambitious mitigation.

To reach the climate objectives there is a need for new technical solutions in energy efficient vehicles partly or fully dependent on electricity and a replacement of fossil fuels with bio fuels. These solutions however are not enough. There is also a need to change direction in planning and development of society and infrastructure in accordance with behavioral changes. It is a clear paradigm shift from planning for more traffic with cars and trucks towards a more sustainable mobility with accessibility through walking, cycling and public transport with less cars and improved logistics and modal shift instead of more trucks. Under such conditions of paradigm shift forecast is a very unreliable method. So there is a need for other methods.

This paper is a result of the work within the CEDR I4 group on mitigation and adaptation to climate change. Based on examples from Sweden, Norway, Hungary and Poland within the group the paper will explore a planning method that can work as an alternative or complement to the usual planning based on transport models and a forecast in line with business as usual (BAU). One basis for the paper is an enquiry that was done within the CEDR I4 group that was answered by all countries that belonged to the group then including, Norway, Sweden, Denmark, Ireland, Poland, Hungary, Austria, Switzerland and Italy.

2. Method

An overview of the method that will be described and discussed in the paper is shown in Fig. 1. It starts with identifying objectives. This and subsequent steps are better explained in following chapters. Throughout the work it is recommended to have discussions and workshops with stakeholders and policy-makers to get a wide acceptance of the result and stimulate action.

Even if some of the individual steps in the method is commonly used in many countries it is not so frequent to use them together as an alternative to the commonly used forecasting in transport planning. The questionnaire that was sent out to the 9 European countries in the CEDR I4 group included questions about the work with climate mitigation issues of road transport within the administration and the country. One question was if alternatives to prognosis based planning (forecasting) was used, e.g. base the planning on a vision of the future society in line with

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