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Not planning a sustainable transport system

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ABSTRACT

The overall objective of the Swedish transport policy is to ensure the economically efficient and sustainable provision of transport services for people and business throughout the country. More specifically, the transport sector shall, among other things, contribute to the achievement of environmental quality objectives in which the development of the transport system plays an important role in the achievement of the objectives. The aim of this study is to analyse if current transport planning supports this policy. This is done by analysing two recent cases: the National Infrastructure Plan 2010–2021, and the planning of Bypass Stockholm, a major road investment. Our results show that the plans are in conflict with several of the environmental quality objectives. Another interesting aspect of the planning processes is that the long-term climate goals are not included in the planning processes, neither as a clear goal nor as factor that will influence future transport systems. In this way, the long-term sustainability aspects are not present in the planning. We conclude that the two cases do not contribute to a sustainable transport system. Thus, several changes must be made in the processes, including putting up clear targets for emissions. Also, the methodology for the environmental assessments needs to be further developed and discussed.

1. Introduction

One of the pillars of the Swedish environmental policy is Environmental Policy Integration, suggesting that environmental factors must be integrated into all operational areas (Nilsson and Eckerberg, 2007). An expression for this is the sector responsibility for environmental issues that, among other things, entails that a number of agencies have a responsibility to follow the environmental development within their sectors.

The overall objective of the Swedish transport policy is to ensure the economically efficient and sustainable provision of transport services for people and business throughout the country. More specifically, the transport sector shall, among other things, contribute to the achievement of the environmental quality objectives, reduced climate impact, and other environmental quality objectives in which the development of the transport system plays an important role. The objective of reduced climate impact requires significant reductions of greenhouse gases. In Sweden, the government's target is that emissions should decrease by 40% (of which 2/3 is in Sweden) by 2020 compared with the levels from 1990, and that the net emissions should be zero by 2050 (Sweden Government Offices, 2009). These goals will require powerful economic instruments (*ibid.*). To be in line with the two-degree target for climate change, the transport sector needs to reduce the emissions by 40% in 2020, 80% in 2030, and 95% in 2050, compared with the levels from 1990 according to the Swedish Road Administration (2009a).

The aim of this study is to analyse if current transport planning supports the overall objective of the Swedish transport policy. A second aim is to analyse to what extent environmental factors are integrated into the decision-making processes. A third aim is to study how environmental assessments of major infrastructure plans are performed in practice.

2. Methodology

Two case studies were chosen for the analysis: The National Infrastructure Plan 2010 to 2021 (Swedish Road Administration, 2009b, 2009c) and the planning of Bypass Stockholm (Swedish Road Administration, 2005, 2009d), a major road investment that is also a part of the infrastructure plan. These plans are reviewed and analysed in relation to the transport policy goals and the integration of environmental aspects in the plans. As a criterion for a sustainable transport system, we use in this paper the transport policy goal that the transport system shall contribute to a reduced climate impact in line with the two-degree target and other relevant environmental quality objectives. There are other criterion related to social and economic aspects of a sustainable transport system that could be added, but in this paper we focus on the ecological dimension.

The two cases were chosen because of their significance. The National Infrastructure Plan concerns all investments for the

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national transportation system for a decade. It thus has significant impact on the Swedish transportation system. Bypass Stockholm has been much debated and is one of the largest single transportation investments in Sweden. Because of their significance, the cases may not be representative, but can be expected to use state-of-the-art environmental assessments and planning procedures.

The Bypass Stockholm case is described first and in somewhat more detail. This is because many of the aspects are common.

3. Results

3.1. Bypass Stockholm

3.1.1. Choice of alternatives

The Swedish Road Administration (2009d) proposed in a statement to the Government that permission be granted for Bypass Stockholm, which is a 21-km-long motorway planned west of central Stockholm, including 17 km in tunnels. It is interesting to study what alternatives were considered, and why Bypass Stockholm was recommended. In the road analysis (Swedish Road Administration, 2005), it is stated that its purpose is "…to find the road corridor that best… ties together the north and south parts of Stockholm County, create a bypass for long-distance traffic, improve the availability on access roads, improve the possibilities for a common work and housing market for the region, allow a multi-nuclear region, and give possibilities for development in a region with growth" (authors' translation). It can be noted that none of these goals touch on climate, environment, or sustainable development. It can also be noted that, as already stated, the purpose is to find a road corridor.

In the road analysis, three main alternatives were analysed:

- Bypass Stockholm without congestion charges.
- Diagonal Ulvsunda without congestion charges. This is also a road alternative but is located closer to Stockholm's inner city than Bypass Stockholm.
- The Combination Alternative, which includes congestion charges, public transport investments, and some road construction.

The Combination Alternative was developed by the Road Administration, although it may not be the most competent organisation to develop that alternative because it is not responsible for public transport systems including railroads. The system for congestion charges included in the Combination Alternative is not the system that is used today. The structuring of the Combination Alternative has also met criticism for having chosen expensive and inefficient investments in new tracks (Swedish Society for Nature Conservation, 2009). Both the Swedish EPA (2007) and the Stockholm County administrative board (2006) also concluded that the Combination Alternative was not sufficiently developed.

In the road analysis, the Combination Alternative is later rejected. The motivation is that it is not considered to meet the project goals. Because it was rejected in the road analysis, no cost–benefit analysis of this alternative is presented. Here, several key observations are possible. In the goal formulation, it is already stated that a road corridor should be found. Other solutions for the foreseen transport problems are not of interest. In the Supplementary Report (Swedish Road Administration, 2009d), it is also stated that "the Combination Alternative does not offer sufficient road capacity."

The main purpose of the road analysis was thus, according to the above, to find a road corridor. At the same time, there are the transport policy goals to adhere to. These entail that the transport system must both be effective from a socioeconomic perspective and must also be sustainable in the long-term. In the road analysis, there is no direct evaluation made with regard to the transport policy goals, but several aspects of these are taken up. For example, environment and climate is evaluated for the alternatives and it is concluded that the Combination Alternative is better than Bypass Stockholm. Also related to other goals such as safety, travel times, and gender aspects, the Combination Alternative is preferable (Finnveden and Åkerman, 2009). The Stockholm County administrative board recommended that the Diagonal Ulvsunda alternative should be suggested because it fulfilled the project goals equally as well as Bypass Stockholm, but with less intrusions into sensitive land areas (Stockholm County, 2006). The reason for choosing the Bypass Stockholm alternative is not transparent (Ekenberg et al. , 2009).

A number of conclusions can be drawn from this discussion:

- In the road analysis, the goal was to find a road corridor, not to find the best solution for Stockholm's traffic and transport problems. Thus, there is still a need to analyse alternative solutions for Stockholm's traffic problem.
- The Combination Alternative is rejected with reference to its not meeting the project goals. The choice of project goals is therefore central.
- None of the project goals in the road analysis is focused on environment, climate or sustainable development. If the project goals would have included these issues, then Bypass Stockholm could have been rejected with reference to these.
- Had the transport goals been guiding for the choice of alternatives, then Bypass Stockholm would hardly have been recommended (Finnveden and Åkerman, 2009).

3.1.2. Traffic volumes

New roads do not only lead to traffic moving from one road to another. New roads also generate new traffic (Department of Transport, 1994; Goodwin, 1996; Noland and Lem, 2002; OECD, 1998). There are several mechanisms for why new roads generate new traffic, and one can distinguish between effects in the short-term and in the long-term. In the short-term, new roads can lead to car use being more attractive relative to other transport forms, and to travel itself becoming more attractive relative to alternative activities. In the long term, new roads can lead to new localisations. It can, for example, be attractive to develop new areas if there are better road connections, which then leads to increased traffic volumes.

The traffic prognosis of the Swedish Road Administration (2009d) includes short-term effects on passenger vehicles. It shows that Bypass Stockholm, with an expanded use of congestion charges in Stockholm, will lead to a reduction of traffic in central Stockholm. It is not clear to what extent this is an effect of the new bypass or of the congestion charges. In total, however, the bypass leads to increased traffic volumes and decreased share of public transport. Increased traffic because of new localisation patterns is not included, however. For freight traffic, no consideration is made that new roads generate new traffic.

Thus, conclusions from this section are that:

- Bypass Stockholm leads to increased traffic volumes
- the Road Administration has likely underestimated these increases. This in turn imply that:
  - o congestion is underestimated
  - o travel times are underestimated
  - o accessibility is overestimated
  - o environment impact, including CO_2 emissions, is underestimated
  - o effects of development of new areas on, for example, natural environments and emissions, are not considered fully

3.1.3. Emissions of greenhouse gases

According to the Swedish Road Administration (2009d), Bypass Stockholm will increase the emissions of greenhouse gases. In our estimation, this increase is underestimated. An important reason is that Bypass Stockholm likely leads to higher traffic volumes than what the Road Administration has supposed (see above). Some additional reasons are discussed below.

A failure of earlier analyses of Bypass Stockholm (Swedish Road Administration, 2005) is that these did not include emissions from the