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# Strategic choice of measures – a Swedish method for deciding on infrastructure investments

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## Abstract

Since 2013 the study of strategic choice of measures has been a part of the process for the strategic and economic planning of the transport system in Sweden. The main objective in implementing a new planning process for infrastructure was to ensure safe and cost-efficient solutions which contribute to sustainable development and the fulfilment of the Swedish transport policy.

The method for strategic choice of measures is focused on facilitating collaboration between the actors that have a responsibility in planning the transport system as well as enabling involvement of the general public and other actors. The methodology is divided into four phases.

**Initiate** - Making the decision of starting a study, involving the closest concerned actors and deciding on the main aim of the study as well as the cost and time frame.

**Understand the situation** - Defining the problems needs and deficiencies, setting a scope for the study, describing the current situation and the 'zero option' and agreeing on which goals the measures should reach.

**Test possible solutions** - Identify possible measures with the help of the 'four-step principle' and within all modes of transport and assess the measures to see if they contribute to the goal of the study, is economically sound, does not lead to any negative consequences etc.

**Form a direction and recommend measures** - Recommend measures or a combination of measures and hopefully reach an agreement between the actors.

There are some adjustments to be made to the method, but there seems to be a consensus that the method for strategic choice of measures has led to a better understanding of the different actors' points of views - both the problems and needs within the transport system but also the issues and limitations within their respective organisations. This is something that could benefit the Danish authorities, especially since they have separate authorities for road and railway.

## Introduction

### Background

On 1 January 2013 the Swedish parliament decided on changes in the strategic and economic planning of the transport system as well as for the physical planning of road and railway projects according to the Road Act and the Railway Act. One part of the new planning directive was the study of strategic choice of measures to ensure safe and cost-efficient solutions which take into consideration all transport and travel modes as well as all types of measures. It concerns both efficiency in the society and a contribution to sustainable development. The method is the first step in the planning process. The government states in the bill to the parliament, 2011/12:118, in the chapter on the physical planning of roads and railways, that:

*“A preparatory study with an unbiased multimodal analysis and application of the ‘four-step principle’, should take place before any formal physical planning and design.”*

By now the method for strategic choice of measures has been applied over a hundred times by Trafikverket (Swedish transport administration), municipalities and other actors all over Sweden. The reaction to the method has been both good and bad, and many times adjustments have been made to the original method to fit the specific problem, budget or time frame.

### Aim

The aim of this research is to analyse the positive and negative experiences of the method for strategic choice of measures so as to figure out which parts could be recommended for the Danish planning process.

### Method

#### Handbook

This article is based on the method for strategic choice of measures such as it is described in the handbook *Strategic Choice of Measures – A new step for planning of transportation solutions* developed by Trafikverket, Boverket (The Swedish National Board of Housing, Building and Planning) and SKL (The Association of Local Authorities and Regions) in January 2014.

#### Survey

The other source for this article is a survey that was carried out by ÅF in December 2014 and presented by Anna-Lena Lindström Olsson and Lars Sundblad at the conference *Transportforum* in January 2015. The title of the presentation was *Vad hände sen? (What happened?)*. The survey gathered experiences from participants in eight different studies of strategic choice of measures carried out in the Stockholm area. The aim of the survey was to see if the studies had led to any results and what the participants' attitude towards the method was. The questions posed in the survey were:

- Has the study of strategic choice of measures resulted in a signed agreement between the actors? Why/why not?
- Has the agreement made any impact on your organisation's plans or budget?
- Has the study of strategic choice of measures led to any effects other than the agreement?

In addition to the general survey, interviews were carried out with three persons that had participated in several of the studies. The questions posed during the interviews were:

- Did the study of strategic choice of measures have the result you were expecting?
- Did the study of strategic choice of measures lead to any side effects?

- What is your opinion of the method for strategic choice of measures?
  - Is it a good method?
  - What about it do you like?
  - Which adjustments/improvements to the method are needed?

The conclusions of the study were:

- It is important to be clear when setting the goals for the study and make sure that all actors agree on the goals from the outset. Otherwise you cannot reach an agreement in the end.
- A joint and generous time plan is a key to success.
- The involvement of local opinion groups must be balanced.
- There is a risk that there are too many measures, that they are not concrete enough or that too many measures are planned for implementation in the medium or long term which can lead to the need for new studies before any measures can be realised.
- There is a need for continued cooperation after the agreement, to specify routines, processes and project organisation for implementation of measures.

### Case studies

The authors of this article have participated in several studies of strategic choice of measures and will, in the discussion section, draw from experience and make conclusions based upon these. It should be noted that, even though the studies have varied a lot, the conclusions are based on events that have occurred on more than one occasion. The result of the survey as well as the authors own experiences makes up the base for the discussion.

## Results

### Why?

The main objective in implementing a new planning process for infrastructure was to ensure safe and cost-efficient solutions which contribute to sustainable development and the fulfilment of the Swedish transport policy.

The Swedish transport policy has two main objectives – a functional objective and an impact objective. The functional objective deals with accessibility. The transport system should contribute to a good basic accessibility for all users and to regional development in all parts of the country. The impact objective concerns safety, environment and health. The transport system should be adapted so that nobody will be killed or seriously injured. It should also contribute to the fulfilment of the objectives of the Swedish environmental policy and to improved health.

Transportation seldom has a value of its own. It is the accessibility, the possibility to reach a target point and to deliver goods, which can be satisfied with a transport function. But accessibility also depends on the location of housing, workplaces, schools etc. Several sectors of the society as well as other actors need to contribute to good accessibility and efficient transport solutions. The location of housing, workplaces, activities and service should follow a planned long term spatial structure in order to provide good accessibility to target points and a cost-efficient transport system. Changing the structure of infrastructure and housing takes time and is connected with large investment costs.

When a deficiency or problem in the transport system is identified, solving the problem traditionally becomes the responsibility of the road or railway administrator. However, the solution is not always

reconstruction or new infrastructure. For example, the problem might be the behaviour of the users of the system and the solution might be collaboration between several actions for which several actors are responsible. Many different actors and interests have impacts on and are impacted by the transport system.

### **Important public actors**

**Trafikverket** (Swedish Transport Administration) is the government agency responsible for the long-term planning of the transport system. Trafikverket is also in charge of the state road network and national railway network.

**Regional planning administrations** (of different types) have the responsibilities for carrying out county transport plans, for regional development planning, and in some regions, also for regional planning in accordance with the planning and building law. The regional planning administration is a part of **the county administrative board** in some counties. The county administrative board also has the responsibility for coordinating the interests of the state in different contexts.

**The municipalities** have the responsibility for the development of their respective municipality and for comprehensive land use planning in accordance with the planning and building law.

Compared to the former planning process, the strategic choice of measures enables a dialog between all concerned actors and focuses on the needs, deficiencies and problems rather than a standard solution. The method also enables a better implementation of the ‘four-step principle’, as explained later in the article. The first two steps in the principle are all about measures that will improve the transport system without any changes to the infrastructure. If it is possible the aim is to avoid construction of new infrastructure and thereby avoid high costs and wasting resources.

**The figures below indicate the effective difference between the old and the new planning process, with the old to the left and the new to the right.**



Measures belonging to step 1 and step 2 of the four-step principle are usually the responsibility of other actors than Trafikverket – both public and private actors. This means that the costs for the measures that are recommended at the end of a study of strategic choice of measures are split between several actors.

When Trafikverket, Boverket and SKL were chosen to develop a method for a preparatory study they glanced at the Norwegian ‘Konseptvalg’. The aim of Konseptvalg is to some degree the same as for the study of strategic choice of measures – to identify needs, set goals, include the general public and interested organisations and promote interdisciplinary measures. However, there is a difference in the

reason for the implementation of the methods, as well as when the methods are used, that meant that the Norwegian method could not be implemented in Sweden as it was. In Norway, there were problems with infrastructure projects that had low control of costs and failed to reach the set goals. They implemented Konseptvalg for all infrastructure investments over 500 million NOK primarily as a control of quality. In Sweden, the issue that led to the reformation of the planning process was that the process was too long and not enough infrastructure projects were realised. Also, the strategic choice of measures is the first step in the planning process for any investments in the transport system, big or small. Actually, one of the goals is to solve the problem without having to make large investments (Odhage, 2012).

## When?

A study of strategic choice of measures can be initiated for several different reasons. The most common reasons are:

- A noted deficiency in the existing infrastructure. This could be capacity, safety, accessibility for a specific group of road users, etc.
- A regional public transportation program or regional development program that requires adjustments in the infrastructure network.
- A municipality's master plan or zoning plan which affects capacity, road safety and/or requires new infrastructure.

When the above affects infrastructure for which Trafikverket is responsible for a study of strategic choice of measures is required. Starting 2013, Trafikverket cannot recommend any measures to the national or county plans for the transport system that have not its origin in a study of strategic choice of measures. The method as such can be applied for solving problems that has nothing to do with traffic or transportation.

Also, the result of a study of strategic choice of measures which covers a larger geographical area could be used as input for a master plan or regional development program.

## How?

A study of strategic choice of measures is a process consisting of four phases: initiate, understand the situation, test possible solutions and form a direction and recommend measures to be taken. The progress is not always linear – sometimes there is need to move back to an earlier phase to make adjustments. It is important to document the work continually during the process, making it possible to understand why certain decisions were made.



Studies of strategic choice of measures can differ greatly in geographical size, complexity, time constraints, etc. Therefore, the scope of work, involved actors and documentation has to be adapted to each case. Sometimes there is reason to start the process for a study of strategic choice of measures without having to carry out all phases. For example a problem can be solved just by gathering all involved actors and clarifying everyone's view of the issue in the phase 'understand the situation'.

## Initiate



The initiation phase is meant for gathering resources and competences, deciding the overall aim of the study and coordinating with other planning activities.

The actor that has taken initiative to the study will gather the other actors that are closest concerned with the problem, to decide whether there is interest enough to solve the problem and, if possible, how much it is worth to solve it.

All actors which can be said to have some responsibility or interest in the issues initiating a study of strategic choice of measures has to apply resources to carry out the study, both in the form of money and personnel. The cost of the study should mainly be carried by the actor(s) responsible for the concerned transport system or in collaboration with actors that can benefit from the results. The persons involved in the study should have the expertise and mandate to represent their organisation.

To make sure that all competence and mandate is at hand during the process it can be necessary to split the work between a working group, a steering group and a reference group. It can also be beneficial to have a process leader for complex cases.

The actors should write an agreement on performance and cost of a study of strategic choice of measures based on a project description. The project description should include the background to the study, the situation and the problem at large, the aim of the study, preliminary scope, organisation and time plan and the cost frame for the study. The project description should also include which national, regional and local plans that affect the study area and if there are any on-going planning activities that can affect or be affected by the study.

## Understand the situation



The focus for this phase is to identify and define needs, deficiencies and problems involving the transport system in the area defined in the first phase but also to readjust the scoping, get an understanding for the current situation and what will happen if nothing is done. Finally, the goals that should be achieved by the recommended measures should be agreed upon.

One of the main advantages with the method for strategic choice of measures is the ability to open up the dialogue to many actors, including the public. The interested actors need to be identified and can preferably be sorted by how much interest they have in the study.

The phase 'understand the situation' is perhaps the most important part in which to invite as many interested actors as possible to a workshop. The users of the transportation system are the ones who have the greatest understanding of the deficiencies of the system relative to what they need. However, it is important to keep focus on the needs, deficiencies and problems relative to the function of the transport

system, not the infrastructure itself. Focus should be moved from, for example, 'need for a bicycle path' to 'the traffic conditions for cyclists are unsafe'.

A preliminary scoping was made in the previous phase. It might be relevant to back-track and make adjustments during this phase considering all the new information that has been brought forward. The scoping of the study is important. A too wide scope makes the study too extensive and there is a risk that the initial problems are not tackled. On the other hand, a too narrow scope can prevent from seeing the whole picture and neglecting smart solutions. A too open scope and too flexible process can lead to unrealistic expectations and never reach a conclusion.

During this phase the current situation and the 'zero option' (what happens if nothing is done?) should be described to be able to formulate the problem in a better way and have a reference point with which to compare possible solutions in the next phase.

When the actors all have understood the current situation and the existing problems, the final step of this phase is to agree on which goals should be achieved by the possible solutions. The goals should be formulated as functions of the transport system - just as the needs, deficiencies and problems. The goals should also state a level of ambition and quality for possible solutions.

### Test possible solutions



The focus in this phase is to find the measures that will achieve the goals set up in the previous phase and then to assess and limit them into a feasible amount. All transport and travel modes as well as all types of measures need to be taken into consideration. This is done with the help of the 'four-step principle'.

#### ***The four-step principle***

1. Think differently  
Can the demand for traveling and transportation be influenced, or the way it is carried out?
2. Optimise the use  
Can the existing transport system be used more efficiently?
3. Reconstruction  
Is there a need for adjustments or improvements of the existing infrastructure?
4. New construction  
Is there a need for new infrastructure to complete the transport system?

During this phase one or more workshops with all interested actors – authorities, the general public, local businesses etc. - can be carried out to gather a wide scope of possible solutions. The measures can range within all steps of the four-step principle and all modes of travel and transport as well as be within different actors' field of responsibility.

**Examples of measures within the different steps of the four-step principle**

<p><b>Step 1</b></p> <ul style="list-style-type: none"> <li>• Road user charges to reduce and control road traffic</li> <li>• Parking fees and other measures to control parking</li> <li>• Travel plans for e.g. schools and businesses</li> <li>• Marketing (for increased use of walking, cycling and/or public transport)</li> <li>• Better integration of land use planning and infrastructure planning</li> <li>• Coordinated distribution of goods</li> <li>• Flexible workplaces and increased telecommuting/ working from home</li> </ul>	<p><b>Step 2</b></p> <ul style="list-style-type: none"> <li>• Reallocation of spaces within existing streets and roads, e.g. to create cycle lanes and bus lanes</li> <li>• Signal measures</li> <li>• Improved terminals for goods, combination terminals</li> <li>• European train planning/timetabling with international freight channels</li> <li>• Speed cameras</li> <li>• Environmental measures near roads and railways (noise protection, water protection, etc.)</li> </ul>
<p><b>Step 3</b></p> <ul style="list-style-type: none"> <li>• Widening of existing roads to increase capacity or speed</li> <li>• Secure pedestrian and cyclist crossing, railway</li> <li>• More tracks for night parking along the route where needed</li> </ul>	<p><b>Step 4</b></p> <ul style="list-style-type: none"> <li>• Super cycle paths on appropriate routes</li> <li>• New construction/routing of motorways/major routes</li> <li>• Regional BRT solutions (Bus Rapid Transit)</li> <li>• Double tracks on railway lines</li> </ul>

The workshop will presumably lead to an upheaval of measures. The next step is to assess which measures or combination of measures that will lead to an achievement of the goals of the study. Next, assess which of the remaining measures that fulfils requirements such as timing, coordination with other development, not leading to new problems or large or many negative consequences.

The measures that remain at the end of this process are evaluated based on resource efficiency and sustainable development according to the objectives of the Swedish transport policy and other relevant strategies. The measures or combination of measures are closer analysed including assessment of cost for implementation and maintenance, effects and consequences in relation to the 'zero option' and cost-benefit balance. The measures can range in time from what can be implemented right away to what has to be studied further and/or lacks economic funding.

**Form a direction and recommend measures to be taken**



With all the information gathered in the previous phases the time has come to recommend a course of action. Ideally, an agreement can be signed between the responsible actors, stating which measures is to be implemented when and who is responsible for the planning, implementation, cost and maintenance.

The recommendation at the end of a study of strategic choice of measures can also be that more extensive studies are needed before a decision on any measures can be made.

Before ending a study of strategic choice of measures all interested actors should have an opportunity to read the documentation of the process. The feed-back is valuable input to a future project planning process.



## Discussion

### Swedish experiences

The method for strategic choice of measures has been applied by Trafikverket for a few years and other authorities, such as municipalities and regional transport administrations, has begun to start studies of their own.

#### The handbook

A study of strategic choice of measures can be applied to such a variety of problem, places and situations that the implementation of the method has to be adjusted to each separate case. The handbook from Trafikverket was written when the method was new and basically untried. It might be revised with the gathered knowledge from experience. However, to produce a handbook that can be applied exactly is impossible for a method such as this. In the survey from 2014, the participants said that the methodology and the handbook need to be improved. In the development of a new handbook, a wider range of actors should be a part of the process. Many municipalities want, or is required by Trafikverket, to use the method for strategic choice of measures. The handbook should include better guidance when it comes to the 'initiating' phase. For the municipalities the participation in a study and ability to finance measures is a political issue, one that is little addressed in the handbook.

#### Reaching an agreement

Related to the above is the handbook's lack of direction as to what happens after the recommendation of measures. Reaching an agreement can be a long and time consuming process. Both the survey and the authors own experiences says that when initiating and making a time plan for the study, there is almost never time put aside for that last – but so important – issue of getting a signed agreement. Several, if not all, of the involved actors have to have acceptance from politicians to be able to promise any financial commitment. To work around the problem the 'agreement' can be replaced by a 'declaration of intent' indicating which actor who has responsibility for what, without actually committing to anything.

There are pros and cons with both an agreement and a declaration of intent. In an agreement, where each actor promises to implement what is stated, there is a risk of nothing of value actually being stated in the agreement. The wording of the agreement becomes so vague that the aim of the study is lost. A declaration of intent can be more specific, but since there is no legal obligation for the actors to actually implement what is stated, there is a risk of nothing being done and in the end the aim of the study is not reached.

There are ways to reduce the risk of this problem. Firstly, when deciding on the aim of the study it is important to listen to all actors' expectations and make sure that everyone is in agreement to what is decided. The same goes for when setting the goals for the measures. All involved actors have to understand that they have to contribute to the end result and that they need the mandate to make certain promises. There is a risk otherwise that the recommended measures become a wish list that no one wants to pay for.

It is important to have a continuous collaboration after the study of strategic choice of measures is finished. A plan for implementation of the decided measures should be made up, including routines, processes and project organisation.

#### Sharing the ability to decide and the responsibility to act

The greatest advantage with the method for strategic choice of measures is unanimously that the actors gain a greater understanding for each other's points of views - both the problems and needs within the transport system but also the issues and limitations within their respective organisations.

Previously, the changes in the transport system were largely decided by either Trafikverket or the municipalities. The municipalities would have a list of actions they wished that Trafikverket would implement, or at least pay for. There was no uniform way in which Trafikverket decided which actions should be implemented.

With the method for strategic choice of measures, it is no longer possible for a municipality to claim that Trafikverket should take action to change the transport system without getting involved themselves. Also, with a study of strategic choice of measures, there is a risk that the municipality will become responsible for measures as a result of the study. This way, the municipalities might think twice before screaming after, for instance, a new roundabout. There are those who complain, saying this is a strategy for Trafikverket to get out of spending money. This will happen when the goal of the study can be reached by measures belonging to step 1 or step 2 in the four-step principle. Trafikverket usually cannot finance those kinds of measures, leaving the responsibility to the municipality or some other actor. Others mean that it is simply a way of making the most of the taxpayers' money. Step 1 and step 2 measures are almost always less costly than reconstruction or new construction of infrastructure. Being able to reach the goals of a study by affecting the demand of transportation and improving the efficiency of the existing transport system by using it differently is both economically and environmentally sound.

The opportunity for other than the infrastructure owners to influence the development of the transport system has increased with the implementation of strategic choice of measures. Previously the public and other interested actors were allowed to have a say in the infrastructure planning when the process was so far along as to have an illustrated plan of the project. The only input available by then was basically to like or dislike the plan. With the strategic choice of measures studies, the interested actors have a chance not only to influence the solution, but also to define the problem and voice their needs. The residents, local business owners, road carriers, railway operators, non-governmental organisations, i.e. the users of the transport system, have a chance to decide how the system should work.

There is a balance to consider when involving actors that are not in the business of traffic planning. The users of the transport system have valuable information about the infrastructure and traffic that there is no possible way for the traffic planners to know. They should be able to give their side to the problem and suggest measures. However, it is important to not lose sight of what the main problem is and the overall aim of the study.

The opportunity to be involved in the process usually creates a larger understanding and acceptance from the public, even when the end result might be something they did not want. On the other hand, it also raises hope of measures that might not be possible to implement. It is important to let all actors involved take part of the whole process, making it clear not only why a certain measure was chosen, but also why others were not.

The collaboration between all the actors in the planning of the transport system is the best insurance possible for reaching the best solutions and "Trafikverket no longer has to save the world" (quote from survey 2014).

## Implementation

The Swedish parliament's decision state that no infrastructure project should be financed that has not had its origin in a study of strategic choice of measures. However, there is an overlap between the old and the new planning process. This has led to some studies of strategic choice of measures where the participants already have a certain solution in mind, usually a larger reconstruction or new construction of infrastructure.

## Conclusion

The main objectives of the strategic choice of measures are admirable and to a great extent possible to live up to by using the method. There are flaws, or rather issues that have been noted in practice that has not been addressed in the handbook. This is not surprising when implementing a method that requires such a different way of handling problems and deficiencies in the transport system. No doubt, the method and the handbook will be fine-tuned as the work with strategic choice of measures continues. That it should continue is unquestionable.

The Danish planning process for infrastructure has similarities with Sweden's previous one and the same changes could be made. One difference between the countries is that Denmark has two separate authorities for road and railway, where Sweden has one. Strategic choice of measures could be even more effective in Denmark because of this, linking the two authorities closer together. The collaboration between them is crucial if the objective of trying all measures within all modes of transport is to be fulfilled.

Swedish authorities took inspiration from the Norwegian method, adapting it to the aims and usage in Sweden. The Danish authorities have to do the same if they decide to implement something similar. Answering questions such as what do we wish to improve by implementing a new method? What is the aim of the method? When should it be used?

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