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To cite this article: Erik Johansson, Lena Winslott Hiselius, Till Koglin & Anders Wretstrand (2017) Evaluation of public transport: regional policies and planning practices in Sweden, *Urban, Planning and Transport Research*, 5:1, 59-77, DOI: [10.1080/21650020.2017.1395291](https://doi.org/10.1080/21650020.2017.1395291)

To link to this article: <http://dx.doi.org/10.1080/21650020.2017.1395291>



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Published online: 26 Oct 2017.



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Evaluation of public transport: regional policies and planning practices in Sweden

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ABSTRACT

This paper analyses regional public transport planning in Sweden. The aim is to provide an insight into how policy objectives are translated into action and to investigate how public transport measures are evaluated. The analysis is based on interviews with civil servants in five Swedish regions. Cost-benefit analysis is sparsely used (if ever) and the results further indicate that planning and evaluation of public transport is to a large extent centred around monitoring on-going trends, e.g. patronage and market share. Such information seems policy-relevant, i.e. is commonly asked for by the political level. The informants do ask for more knowledge regarding various effects (mainly social). However, it is less certain whether or not this knowledge would be used for economic evaluation. Regional and local public transport systems are complex, and intrinsically linked to land use and long-term regional ambitions. Instead of asking how public transport planning should be carried out, following CBA analyses, we should perhaps ask how the economic analysis could be tuned so that it becomes relevant for public transport planning. We foresee that the broader role of the public transport system will increase goal conflicts between, and within, authorities.

ARTICLE HISTORY

Received 27 April 2017
Accepted 16 October 2017

KEYWORDS

Transport policy; transport planning; appraisal; evaluation; public transport

1. Introduction

Today's challenges of fossil fuel dependency, global warming, poverty and social exclusion are highly relevant for the transport sector (Cervero, 2013). Cities increasingly plan for a sustainable transport system, which includes increased shares of walking, cycling and public transport (Koglin, 2013; Koglin & Rye, 2014). Public transport is a very much-debated area of interest, and as such has attracted a great deal of attention from various academic disciplines. In terms of transport policy and combined with car-restricting measures, it is often highlighted as a means of reducing levels of car use and achieving sustainable modal shifts (Banister, 2008; Eliasson & Proost, 2015; Isaksson, Antonsson, & Eriksson, 2017; Moriarty, 2016). There is a relatively large body of knowledge about the effects of public transport on certain aspects of societal development, such as accessibility, safety, environment and savings in travel time (De Palma, Lindsey, Quinet, & Vickerman, 2013; Nilsson,

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2011). There is also evidence of public transport's effects, related to health, liveability and economic growth (e.g. Andersson et al., 2012; Lucas, 2012).

Among practitioners and organisations, there are substantial interests in developing new ideas and new techniques so as to improve services to become more viable and sustainable (UITP, 2015). The role of the public transport system could serve not only as a societal service, but also as a vehicle to achieve societal objectives and political goals (Banister, 2005). In this, a greater need for strategic planning has been identified. In Sweden for instance, new legislation was enacted in 2012, partly changing the task of the regional public transport authority (Prop. 2009/10:200). The law places emphasis on the strategic level, as the regional public transport authority has to produce a regular regional transport supply plan (Rye & Wretstrand, 2014).

Besides developing public transport services, there is also an interest in enhancing the methods for analysing its costs and benefits (Riedel & Dziekan, 2012; TIDE, 2015; UITP, 2009). This wide interest indicates prevalent knowledge gaps, but also ongoing ambitions to fill them. The quest for evaluation stems from the fact that public transport is to a large extent financed by public funds. As there are other public sectors calling for funding, it is in a broad sense important to know which choices of investments, measures and activities will generate the greatest benefits. Therefore, there is a need for *ex ante* evaluation of choice options (Van Wee, 2011). Well-informed, sound and balanced decision-making is at the heart of sustainable transport planning (Hrelja et al., 2013). As an example of this, Mackie, Worsley, and Eliasson (2014) describe the role of appraisal in decision-making and note that potential biases stemming from the human cognitive ability ought to be remedied by the use of analysis. Research has identified the lack of studies focusing on the opinions of decision-makers and policy makers about appraisal methods (Annema, Mouter, & Razaei, 2015). In Sweden, Ljungberg (2003, 2010) and Vigren and Ljungberg (2017) is among the few analysing the use of economic appraisal methods within Swedish public transport planning. Since decision-makers could be regarded as end users of appraisals, it is crucial to know whether and to what extent various methods are used and their importance in reality.

To sum up, there are increasing demands on public transport services; they are expected to bring many impacts and benefits to society. There is thus an interest in shedding light on the current planning practices, strategies and objectives of public transport, and how priorities are made. Accordingly, the aim of this case study is to describe public transport appraisal practises by interviewing planners and practitioners at regional public transport authorities in Sweden. Based on the increasing interest in the societal effects of public transport worldwide, the results of this study are of interest beyond the Swedish environment.

Qualitative interviews provide an understanding of how societal benefits of public transport are considered and come into play in the public transport policy and planning practice. The interviews and the analysis are based on three themes, which are bulleted below. The first two are sprung out of the research project (at The Swedish Knowledge Centre for Public Transport) in which this study belongs. The project intended to examine the relation between existing evaluation and planning methods and goals associated with public transport (see Stjernborg and Mattisson (2016) for public transport goals and strategies at local and regional level). The third theme is more loosely connected to the research project but is central to the integration of planning (Hrelja, Pettersson, & Westerdahl, 2016), and we include it in order to understand the complexity of planning (Banister, 2005, 2008).

- How local and regional strategic public transport objectives in Sweden are translated into the actual measures taken;
- How local and regional Swedish public transport services can be evaluated in terms of the overarching strategies of public transport;
- Are there potential areas of conflict?

The results from this study are mostly relevant for similar contexts, and we argue that the idea with a qualitative study is to provide an account for the specific circumstances and draw conclusions from them. The study may furthermore be regarded as an inspiration for analyses in other countries in order to identify possible gaps between evaluation methods and objectives of public transport.

2. Background

The existing literature about transport appraisal is to a large extent focused on cost-benefit analysis (CBA). Mouter, Annema, and van Wee (2013) identify several strands of literature on CBA: one of them aims to study the influence of CBA on transport investment decisions (e.g. Eliasson, Börjesson, Odeck, and Welde (2015)), and another reflects on the usefulness of CBA as a decision-making tool (e.g. Sen, 2000; Mackie, 2010). According to the latter, in more general terms of purpose and usefulness, it is crucial to identify the effects and consequences of transport policies and projects (Mackie et al., 2014). There is a need for evidence and facts so that public funding is spent on activities with the best outcome according to goals and targets. Decisions should be based on reason and knowledge instead of persuasive arguments or personal motives (Sen, 2000).

Reviews of transport appraisal methods have found a great reliance on cost benefit analysis and its strong quantitative characteristics, e.g. Bristow and Nellthorp (2000) and Browne and Ryan (2011). However, elements of more qualitatively assessed impacts also come into play in various national schemes like the WebTAG (Transport Analysis Guidance, UK). Lately, further experiences have been gained, e.g. by using the New Integrated Smart Transport Option (NISTO) evaluation framework (Keseru, Bulckaen, Macharis, & de Kruijff, 2016) and the simultaneous application of multi-criteria analyses (MCA) and the assessment approach of multi-actor (MAMCA) stakeholder preferences (Macharis & Bernardini, 2015). On the other hand, long-term sustainability targets may require a need of a new type of assessment and there is now a wide range of literature related to various assessment methodologies for sustainable transportation (e.g. Bare, 2014; Basaric, Djoric, Jevdjenic, & Jovic, 2015; Beria, Maltese, & Mariotti, 2012). The majority of researchers seem to agree that the most appropriate way to measure the level of sustainability is to use indicators (Banister & Hickman, 2006; TISSUE, 2007), especially when it comes to measures aimed to reduce the use of private cars.

As mentioned earlier, public transport is gaining increasing interest. Research has shown that the impacts and the benefits of public transport are several. These are, for instance, reductions in emissions due to a modal shift to public transport from the car (APTA, 2007), and the use of alternative fuel for buses (Tzeng, Lin, & Opricovic, 2005). Other benefits are related to a decreased number of traffic injuries and health benefits (Chen Kwan & Hisham Hashima, 2016), while other studies suggest how accessibility to public transport can have impacts on land-use and land values with higher property prices and higher density

around bus stops and stations (Cervero & Kang, 2011; Kay, Noland, & DiPetrillo, 2014). From a social perspective, there are effects on diminishing social exclusion (Lucas, 2012), and improved accessibility of disadvantaged groups (Bocarejo & Portilla, 2016; Jaramillo, Lizárraga, & Luis Grindlay, 2012). Public transport is often regarded as essential for other public interests such as housing and business (Andersson et al., 2012; APTA, 2007). Research also points out that integrated public transport provision and coordinated land-use and transport planning are important from a sustainability perspective (National Board of Housing, Building & Planning, 2012; OECD, 2015).

Economic motives for subsidisation of public transport services include reductions of negative external effects (through lower car use) and scale economies (Parry & Small, 2009). In economic terms, the supply of public transport would, if left for the market to decide, be lower than the socially optimal level (De Palma et al., 2013). The level of subsidy varies across countries, regions and modes. In the case of Sweden, the subsidy in local and regional public transport is on average 52% (Transport Analysis, 2016) and in order to ensure an efficient economic use of subsidies there is an increasing interest in analysing the resources used and the effects gained.

In Sweden, the primary national transport policy goal is economic efficiency and sustainability (prop 2008/09:93), and CBA is used as a tool in the national investment planning process. The national transport policy targets are then often broken down at the regional and local level. Swedish cities generally have a vision of a sustainable city with a sustainable transport system as the long-term target. Often, the long-term local and regional policy goals are expressed as environmental and social visions such as 'sustainable cities' and 'liveable cities' (Stjernborg & Mattisson, 2016). These goals seem to frame more specific objectives of public transport, as they relate to the mandatory regional transport supply plan that the PTAs regularly develop. These policy goals and objectives are then decomposed into measurable targets similar to e.g. the NISTO Guidance for target monitoring (NISTO, 2015).

Ljungberg (2003) and Vigren and Ljungberg (2017) present two studies carried out during 2003 and 2016 respectively. By means of a questionnaire to the public transport authorities of each county council, it was discovered that most of the authorities did not use CBA in the planning of the local public transport. Results indicated that a lack of financial resources was not a decisive factor in not using CBA. Instead, there is a lack of knowledge in CBA and that other factors than CBA are important for decision-making. Also the current decision support systems seemed to be sufficient for many PTAs and better align with their organization (Vigren & Ljungberg, 2017). Below, the relevant Swedish governance issues are described.

Formally, Sweden's administrative system includes three levels – the national level (the state), the regional level (counties), and the local level (municipalities). Planning of land use is led by the national parliament and government through policy-making and laws, such as the Planning and Building Act and the Environmental Code (Persson, 2013). There are also other-level actors who influence planning and land use, e.g. the National Board of Housing, Building and Planning or the Transport Administration. The Transport Administration deals with the planning of certain types of transport infrastructure, such as the national road and railway networks (Larsson, 2006).

The actual urban and transport planning on the local level, however, is done by municipalities. This is regulated in The Swedish Planning and Building Act (SFS 2010: 900, §2) where it is stated: 'It is a municipal matter to plan the use of land and water according to this Act' (authors' translation). Therefore, it can be said that the 290 Swedish municipalities

formally control and govern urban and transport planning within their municipal boundaries. Subsequently, one could argue that, according to the Swedish Planning and Building Act, the municipalities in Sweden have a form of ‘planning monopoly’.

The regulations of public transport are established at the national level, and the most recent legislation (SFS, 2010:1065) was enacted in 2012. The law leaves the responsibility of local and regional public transport to the public sector through a basic structure of contracting the operations through procurements. The new legislation means that private operators do, however, have the option to register a deregulated service, should they identify a gap in the publicly provided network. In addition, the new law placed emphasis on the strategic level, as the regional public transport authority (PTA – the so-called Competent Authority) has to produce a regular regional transport supply plan (Rye & Wretstrand, 2014). Thus, in Sweden the provision of local and regional public transport is a regional responsibility, but the exact organization differs between regions (since it is very much up to the local and regional councils to decide). The actual public transport activities – from strategy, tactics to operation – might be organised either as a company owned by the PTA or within the PTAs administration.

As an effect of the new public transport law, new incentive contracts are being developed. These contracts tend to have an incentive share of 25% or more. They also contain a signed co-operation agreement, an MoU describing all important parties/stakeholder that will work together during the contracting period, e.g. the authority, operator(s), municipality(s), Swedish Transport Authority. It emphasises the need for co-operation when it comes to land use and transport planning and operation. The municipality is a key actor here, and also the Swedish Transport Administration, responsible for all transport modes and for supporting a sufficient interregional accessibility (Förordning, 2010:185).

3. Method

In order to explore the practice of evaluations of public transport and how they connect to overarching objectives with public transport, we interviewed practitioners (planners and project managers) within Swedish Public Transport Authorities (PTA). In qualitative research, the emphasis is on the interpretation of the empirical material and on developing an understanding of the complexity of the issues under investigation. The intention of the current qualitative study was to obtain an insight into the processes and evaluations of public transport planning in Sweden. Thus, it can be concluded that the chosen approach rather aims at understanding certain processes than gathering generalizable knowledge (Cloeke et al., 2004; Rubin & Rubin, 2005).

The study provides a snapshot of five Swedish regions, three of them in the southern-most part of the country and two of them in the greater Stockholm area (where one of the regions is Stockholm County itself). In total, nine interviews were conducted. In addition, we studied regional public transport supply plans as a complementary source of information to obtain a formal view of the long-term and short-term goals the PTAs set. The approach to the interviews was explorative rather than hypothesis testing (Brinkmann & Kvale, 2015).

3.1. Selection procedure

In order to capture regions with different contexts and conditions, the selection started with the regions Skåne and Blekinge where Skåne is (in a Swedish context) a densely populated region

and Blekinge is a rural region neighbouring Skåne. Both of the regions have a good transport network, including public transport, but face challenges how to increase public transport ridership. In addition, we selected Halland as another neighbour to Skåne, but also connected to the Gothenburg labour market, making it a region that relies very much on commuting across regional borders. In order to make the material even richer we added Stockholm and Södermanland, where Stockholm region contains a large labour market and Södermanland is of a more rural character seeking to connect with the Stockholm labour market.

The informants within each region were thereafter selected on the strategic level of public transport planning and at the tactical level. The strategists have the role of working with the policy document and work in long-term collaborations with the municipalities and other parties of importance for public transport planning, while the individuals at the tactical level work on a more detailed level together with the municipalities and with the operators of the services. We carried out interviews with people from both of these roles. One difficulty was to reach the 'right' persons in Stockholm because the organisation is large, and with more specialized employees than in, for example, Blekinge where one person might have a wider breadth than each of the corresponding persons in Stockholm. Thus, we attempted to make a group interview at Stockholm, but it turned out to be too hard to gather several persons at the same time, so we settled with two in-depth interviews: one with an informant at the strategy level working with the policy programme and one at the tactic level working primarily with timetabling.

An argument for adding more informants is that people have different perspectives on reality and reflect differently (Alvesson, 2011), and it might have generated a richer insight in possible contradictions (especially within the larger regions Stockholm and Skåne). However, our aim was to understand the role of economic evaluations and a full account of all possible opinions within each organisation would overshoot that aim. Further, all potential informants were relatively new in the organisation since the organisation structure itself is rather fresh (since 2012). That said, all of the informants had several years of experience from different areas within the public transport sector.

The informants are presented in Table 1 and the policy documents used as background information are listed in Table 2.

3.2. Study district

A short description of the regions studied is given below. A selection of current regional public transport statistics is presented in the Appendix 1.

Stockholm with Stockholm County is the largest metropolitan region in Sweden. The public transport system in Stockholm County consists of an extensive metro system, franchised regional trains, urban and regional buses, tramlines, and archipelago boats. The

Table 1. Informant overview (dates of interview within parentheses).

Region	Informants	Strategic level	Tactic level
Blekinge	1, 2	2 (2016-04-04)	1 (2016-04-04)
Halland	3, 4	3 (2016-04-07)	4 (2016-04-28)
Skåne	5, 6	6 (2016-09-21)	5 (2016-06-22)
Stockholm county council	7, 8	7 (2016-10-06)	8 (2016-10-07)
Södermanland PTA	8, 9	9 (2016-10-13)	8 (2016-10-07)

Table 2. Regional public transport supply plan.

Region	Years of coverage
Region Blekinge	2016–2019
Region Halland	2016–2019
Region Skåne	2016
Stockholm county council	2012–2016
Södermanland	2012–2020

services create a high market share, and the system is highly efficient. The county is divided into 26 municipalities, and the second largest city is Södertälje (70 000). In Stockholm the strategic and tactic levels are within the same organisation (Trafikförvaltningen at Stockholms läns landsting, SLL). Thus SLL is both producing the transport supply plan and procuring services.

Södermanland is a county adjacent to the Stockholm region in the northeast. It is much less dense, and has a slightly rural character. Public transport in Södermanland includes regional trains. Bus services are divided into urban and rural traffic. It is mainly the Northeast area, which has strong commuting flows towards Stockholm. The largest city and municipality is Eskilstuna with 60 000 inhabitants in the city. The organisation is similar to Stockholm since the transport supply plan and procurement of services are within the same organisation.

Region Skåne contains the City of Malmö, which forms the third largest metropolitan region in Sweden. Located at the very southern tip of Sweden, Region Skåne has a polycentric structure. Public transport is influenced by the regional and interregional train services (the latter linking Sweden and Denmark), as well as regional and urban bus services. The region is divided into 33 municipalities, and the largest cities are Malmö (300 000), Helsingborg, Lund and Kristianstad. In Skåne it is Region Skåne that produce the transport supply plan whereas Skånetrafiken is taking care of procurements and other tactical issues.

Adjacent to Region Skåne are two smaller regions: Region Blekinge (towards the north east) and Region Halland (towards the north west). Both are linked to the south via inter-regional trains to Malmö and Denmark. Region Blekinge is located off the larger transport links towards the north and is characterized by rural areas and a few smaller towns. Train services are the backbone, but there are also regional bus services, connecting the smaller cities and linking to the urban transport systems. There are five municipalities, and the largest city is Karlskrona (35000). Region Halland is located along the southwest coast of Sweden, thus linking South and West Sweden (with the City of Gothenburg). The eastern, off-coast parts are more sparsely populated. Public transport includes regional and urban bus services. Northern Halland is part of the Gothenburg metropolitan region. There are 6 municipalities, and the largest city is Halmstad (58 000). In both Blekinge and Halland the strategic and tactical level are organisationally separated from each other, as in Skåne.

3.3. Interview procedure

The interviews were semi-structured and we used an interview guide as support. Four of the interviews were conducted face-to-face and the other five were conducted by telephone. They took 45–50 min on average, and all interviews were recorded and thereafter transcribed by the interviewer.

One needs to keep in mind the differences between face-to-face interviews and telephone interviews. One obvious advantage of telephone interviews is to acquire the data needed without travelling several times and taking up the time of the interviewees more than needed. Nevertheless, the fact that the researcher cannot observe the reactions of the interviewee and the absence of personal contact is a disadvantage when conducting telephone interviews. Yet, interviews conducted over the telephone consume less time for the researcher and the interviewee and are in general less expensive, which can be seen as an advantage (Bailey, 1987; Kvale, 1997).

3.4. Research questions and analysis procedure

In this section we elaborate on how we carried out the analysis based on the three themes:

- How local and regional strategic public transport objectives in Sweden are translated into the actual measures taken;
- How local and regional Swedish public transport services can be evaluated in terms of the overarching strategies of public transport;
- Are there potential areas of conflict?

These themes are unified by the main aim of the study, which is to understand appraisal practices among planners. First, we wanted to know how the overall regional public transport ambitions are broken down to specific objects, and eventually get an insight if these processes are able to include a CBA (e.g. when would it be suitable to put forward a CBA and who would ask for it?). We regard this theme as focusing on the ex-ante planning, which is planning of future objects and activities. Second, we wanted to get insights in how single objects are connected to overall ambitions. This theme is focusing more on the ex-post part of the planning and long-term indicators. Third, the theme of 'potential conflicts' was intended to cover other challenges that planners face, such as the integration of planning. If the ambition of a public transport system is to increase the market share to a certain point, then the municipal land-use planning and regional transport planning might have to be integrated into the public transport planning process.

Concerning analysis, we did not use any particular theoretical filters and definitions, but rather an explorative approach where we looked for surprising thoughts and differences/similarities between informants. After transcribing the interviews we opened three new documents (one for each theme) where we put all the passages belonging to each theme. We named the informants in chronological order: informant 1, informant 2, and so on, based on the date of interview. In this way we could analyse one theme at a time and were able to compare the informants.

In practice the analysis phase was present all the way from designing the interview guide, through the interviews, to the actual part where the transcribed responses were 'analysed'. It is therefore important to note that it is difficult as a researcher to play a passive role and not influence any part of the object under examination. The researcher should thus be reflexive about his or her role in the creation of knowledge (Alvesson & Sköldbberg, 2009). In this case, the interviewer approached the interviews with as few preconceptions as possible, i.e. not (consciously) influenced by arguments for or against the CBA for instance.

4. Results

The interviews carried out were structured around the three main themes presented in section 3.3. The results of the interviews are here presented according to these themes together with supporting information from the regional public transport programmes.

4.1. Overarching objectives with public transport

The regional public transport (PTA) supply plans present the *needs* and *objectives* for the public transport system in each region, and are further broken down into measures and targets on tactical and operational level; see Table 3 for an overview. For example, the supply plan of Stockholm states that the public transport system should contribute to the objective of making Stockholm Europe's most attractive metropolitan area (Trafikförvaltningen SLL, 2012). This broad objective is then decomposed into measurable targets. A similar approach is employed in the other regions studied, and often they refer to regional development plans, which set the scene for the role of public transport and other sectors.

In the interviews, the informants were asked to explain their view of how planned activities (measures) connect to these overarching objectives of the regional public transport and vice versa. Some informants stated that it is crucial to emphasise the sequential movement from the objectives to the measures, and the other way round. However, the dominating view was that there is a lack of consistency between the PTAs supply plan and the measures and activities carried out. For instance, an informant from Stockholm mentioned that the executives within the organisation felt the structure to be confusing and that it needs simplification.

When asking the regional transport planners regarding the overarching objectives of the public transport system, two objectives were mainly stated: increasing the market share of public transport in relation to car traffic as a sustainable measure and providing a social service.

In order to increase market share in relation to the use of private cars, strategies focusing on strong links are embraced, and there is, at least in the short run, a tendency to adjust the supply according to demand. The importance of this goal becomes salient through the tendency to implement measures that will benefit as many travellers as possible, and achieve a net gain in patronage: 'many [PTAs] work more and more with the prioritisation of [...] already popular public transport links etcetera' (Informant 9). There is also an important financial aspect of increased ridership. '... for regional trips, it is beneficial to use [rail] transport compared to driving [your own car], so that is where it is possible to make money.' (Informant 1)

The other stated objective of the public transport system is the responsibility to keep a certain level of social service in places, such as countryside routes, where there is a low demand. However, one informant (Informant 4) stated that there is a change in the way public transport is regarded. The informant mentioned that public transport had previously developed from an 'equality perspective' and as being a complement to the car (not being a complete alternative to the car). However, the current role of public transport is to be a suitable mode of transport to as many people as possible, for instance commuters, which may result in disutility for some people when unprofitable services are withdrawn for financial reasons.


Table 3. Targets from regional public transport supply plan.

	Blekinge	Halland	Skåne	Stockholm	Södermanland
Supply	Physical accessibility Frequency of service (specific route) Travel time (specific route) More commuting possibilities More ferry services Budget	Physical accessibility Travel time ratios Ticket revenues Operational costs Recovery of costs Number of stations with improved service Meters of separate bus lanes, bus prioritisation, etc. Market share Satisfaction Number of trips per service and total Perceived safety	Physical accessibility	Physical accessibility Travel time ratios Congestion on board vehicles Information at stops and stations	Physical accessibility Travel time ratios (specific routes) Punctuality Revenues Recovery of costs Supply from commercial operators Travel possibilities between specific locations Market share Satisfaction Number of trips
Travellers	Market share Satisfaction	Market share Satisfaction Number of trips per service and total Perceived safety	Market share Satisfaction Number of trips	Market share Satisfaction	Market share Satisfaction Number of trips
Environment	Noise Emissions	Emissions	Share of non fossil fuel	Noise Emissions	Commuting trips (actual and PT market share) Energy consumption Share of renewable fuel sources Emissions
Other	Infrastructure and urban planning		Geographical accessibility		

Thus, in the interviews we can trace a change in the way the public transport system is viewed, stressing the outcome e.g. environmental issues, land use, and labour market effects rather than the output e.g. frequency of service or number of trips.

... some services have increased by 10 percent and everybody cheers and is very happy, but no one asks what we have actually contributed to. Are these trips positive, or is it only cyclists that suddenly start to... we work much more with these types of questions: what is public transport actually creating? (Informant 6)

That is interesting because it is not primarily important that the public transport trips increase – it is probably a condition that they increase – but it is as important to work with infrastructure, to encourage cycling for example, and that we work together with other areas to reach the social benefits rather than the profits within public transport. (Informant 2)

... you now see that public transport has social values since it creates links between neighbourhoods, encounters [between people]... it is an extended role of public transport in some way. That has perhaps not been much of a bother before. (Informant 7)

These views follow the current management trend, shifting from output measurements to outcome measurements, (Jackson, 2011). Many of the outcome objectives that are mentioned can be related to the ten eco-city dimensions discussed by Kenworthy (2006). For example, emphasising the city centres as human areas for circulation of modes of transport other than the car. These findings are also in line with the policy analyses conducted by Stjernborg and Mattisson (2016).

The increasing focus on outcome measures can also be identified. The informants emphasise the long-term structuring effect of public transport in contrast to a demand-driven (short-term) strategy, resulting in effects on the labour market, land value, real estate prices etc., but also secure a stable passenger base. Regional trunk route planning 'point out the links where [the municipalities] can expect a long-term public transport supply in order to get a structuring effect.' (Informant 3)

The informants also mentioned that there is often a wish at the local level to have a public transport system in place before the actual demand is settled in a new area that is being exploited. The public transport system is regarded both as a marketing factor of the area, but also as an important factor for the use of sustainable transports when new travel habits are established in an area (see e.g. Nordlund & Westin (2013) for a study of travel habits). However, in a situation with budget restraints it can be difficult to motivate public transport supply before demand really exists. The informants stressed that this is an especially challenging discussion: the lack of a clear relationship between the supply of public transport and stated potential effects.

4.2. Evaluation of public transport

The measurable targets defined in the regional public transport supply plans are summarised in Table 3. The targets are listed in four categories: supply, travellers, environment, and others. The PTA specifies these targets at the strategic level in the supply plan, and they are further operationalized at the tactical level. These targets are thus regularly monitored.

All PTAs studied follow up the market share of public transport in relation to other motorised modes, traveller satisfaction and physical accessibility. The targets are influenced by general public transport ambitions in Sweden, such as market share, and specific regional objectives, such as certain upper limit for congestion on vehicles in Stockholm. All PTAs

also have a more or less defined target of cost recovery, even though it is not stated as an explicit target in the transport supply plans.

Table 3 gives an overview of targets that are of interest when the performance of the public transport system is monitored, but also effects that are of interest when future services and investments are analysed. Our definition of a 'target' is that it is a specific objective, towards which efforts are directed. Indicators are used to follow up on these targets.

The interview results correspond well to the picture given in the transport supply plans, indicating the importance of monitoring the targets stated in the follow up (ex-post) and when planning (ex-ante).

On the question of whether their region carries out CBAs in the planning process, the answer is simply 'no'. Consultants are used in those (rare) cases where a CBA is perceived as needed, e.g. in order to apply for funding nationally from the Transport Administration for larger investment projects. The only exception is Stockholm. They have the competence 'in house' to conduct CBAs, but they too use consultants to carry out computations and analyses. Instead, the appraisal is focused on net costs of services, where costs and revenues are estimated based on elasticity calculations. The rationale behind opting for these simple computations is that 'most of our politicians are part-time politicians and they are not always that well-read. It is about using simple pedagogical approaches' (Informant 1). 'You can say that in many cases we don't do more than what is needed [...]. We do simple analyses, and if it is enough, we stick to it' (Informant 5). Of course, this is to some extent in line with the overall transport policy in Sweden, which says (*inter alia*) that the transport system should be 'economically efficient'. However, there is no specification of how to evaluate economic efficiency, and the PTAs are thus not obliged to carry out economic appraisals using CBA in the planning process.

There is, however, an interest in effects that stretch beyond the financial:

Yes, the traffic is making losses in terms of the operation but not in terms of society. It is a field where the industry, I believe, needs to be better and develop even more. [...] there are many other [variables] in this iceberg that I believe we are missing. (Informant 4)

The iceberg mentioned is a metaphor, illustrating that the public transport effects we 'see' are only part of the total iceberg, which may reach far beneath the surface. The informants generally emphasized the need for more research on the effects of public transport and the increasing interest of social impact assessments. It is becoming more evident in the transport supply plans, and one informant requested a formalised framework on how to make such an analysis.

In general, the informants explained that it is more of a continuous process to develop the public transport system and making changes or start new services. For that reason, they do not calculate, or try to calculate, all the benefits and costs related to a single object, but rather work with targets on the network or at societal level to shape the public transport system. This can be interpreted as using 'back casting' in the planning process (Banister, 2005). In this case, the PTAs have some targets in mind (as we see in Table 3) when planning and analysing the value of a measure, letting the overarching goals influence the planning through these targets. This process also indicates a greater interest to assess the effects of the system rather than separate changes and measures. Furthermore, the informants mention that the targets are broken down and followed up for specific contracts or services, alternatively.

4.3. Potential conflicts

Based on the interviews, several potentially conflicting aspects can be identified. These conflicts are, for example, the result of the contradicting commitments of the PTA in providing a social service while there are ambitions to not run services with a very low cost coverage. There are no clear answers to give regarding how ‘profitable’ a bus route must be in order to make the cut, and it probably differs between regions, as their overall rate of subsidies differ.

It is especially controversial to withdraw a service, since its total economic value may exceed what is evident from the patronage. So-called non-use values or option values might be at work, indicating that people put a value on it even though they might never use it (Johnson, Jackson, & Nash, 2013). However, as expressed by one planner, ‘we cannot motivate supply [of public transport] because we feel bad for someone or because it is better for the environment’ (Informant 3). In this view, the main motive for supplying public transport is to support commuting for work and studies. Although the particular transport supply plan recognises sustainability from the aspects of environment, social and economic respectively, the emphasis in terms of monitoring is still on economic factors.

Furthermore, Hrelja et al. (2016) discuss the need for collaboration between organisations so as to achieve shared objectives. Collaboration between organisations and urban and transport planning can, in general, be seen as important in order to develop sustainable transport systems (Koglin, 2015). This is also emphasised as critical by the informants. As stated in section 2, Swedish municipalities are in charge of the built environment. Thus, the PTA has to adapt their planning to land use planning, in order to achieve primary public transport targets. This is a recurring theme in the interviews. The Stockholm region has a target that a certain percentage of housing and property development should be in the vicinity of the main public transport network, according to an informant from Stockholm County. Research has further shown that transit nodes increase land values, which is a motive for building densely in those areas (Vickerman, 2008). On the other hand, a single transport investment has a minor effect on housing in total, whereas the land use policy has a major effect on the type of transport-oriented society (Börjesson, Jonsson, Berglund, & Almström, 2014). For this reason, close collaboration between transport planners (PTA) and land use planners (municipalities) is critical at the early stages and as well as continuously throughout a process. However, there are sometimes difficulties in getting things done, even though there are continuous meetings.

... we make a lot of changes in [bus] routes, which enable us to make a lot of money available, since we operate more effectively, but it also implies that we need to build new bus stops. If we could have used the money we gain from operating more effectively, we could have paid for these stops ourselves. But as we do not build stops – the municipalities do, and they do not have any money – you find yourself in a tricky situation. (Informant 1)

Also, one informant stressed that the municipalities sometimes have ‘postage stamp planning’, i.e. that it is geographically very narrow, which is not encouraging a sustainable transport shift. Neighbouring regions are evidently important to ensure e.g. a well-functioning and attractive regional train service, since railways cross regional borders. But the ‘postage stamp’ metaphor can also be applied to the regional development policies, since there is an implicit competition between regions over people and businesses.

Another important aspect related to PTA collaboration with municipalities is avoiding competition with so-called active modes of transport, i.e. so that new public transport

routes do not attract pedestrians or cyclists but users of motorised modes. Some informants also stressed the planning aspect of 'door-to-door-travel', meaning that there is a need for a common planning platform linking public transport, walking and cycling together.

In summary, we can note that there are at least two types of conflict within public transport. Firstly, the wider role of public transport may be ambiguous and have contradictory ends. Secondly, there are contradictions between the ambitions of different actors. On a local level, the responsibility to provide public transport lies on the PTA, but to successfully operate an efficient service with outcomes according to objectives land use planners must be in agreement. Likewise, on a national level, the Transport Administration must synchronise their investments with the traffic that the PTA wants to operate so as to make the most out of the money spent.

5. Conclusions

In Swedish PTA plans, there are targets given at the strategic and tactical level. Strategic targets are for instance increasing the market share of the general public transport system and tactic targets are for instance timetabling and frequency. These targets are however regarded by transport planners as being poorly related to the stated overarching objectives of the public transport system. There is both a discontinuity when the overarching objectives are broken down on activities and measures, but also in the way activities and measures are carried out and evaluated as contributing to the public transport system. The situation is further complicated by the increasing focus on outcome measures of the regional public transport system as opposed to clearly defined targets and goals of the service.

This situation indicates great challenges in the application of appraisal methods, when seeking to estimate economic efficiency and the contribution of public transport to other objectives. Vigren and Ljungberg (2017) have already shown that CBAs in a formalised manner are rarely used in Sweden by the regional public transport authorities. Instead, our interviews indicate that the transport planners tend to analyse and follow up on single effects like ridership or travel time when proposing a change in a service or the network. The stated reason is that decision makers do not request a formalised CBA since the primary aim is to increase ridership, not economic efficiency. According to the informants in this study, politicians do not always have the knowledge or the time to assimilate the information given through a CBA. Also, public transport objectives seem to be less of measurable targets and more like societal goals and regional strategies. In these cases, it is hard to identify progress empirically and even harder to evaluate how a public transport measure contributes to this goal.

Therefore, our results indicate that planning and evaluation of public transport is to a great extent centred on back casting when monitoring on-going trends, e.g. the market share. In that way, the PTA obtains knowledge of the overall progress of their network(s), which is also the type of knowledge asked for by the political level. Thus, we do not foresee any rapid changes in the appraisal methods used. The informants do, nonetheless, ask for more knowledge regarding the relationships between public transport and various effects (mainly social) in order to motivate investments and transport supply. However, it is less certain whether these relationships would be used in economic appraisals.

Regional and local public transport systems are complex and closely interlinked with the built environment and long-term regional development ambitions. Thus, a broader

discussion of the role of CBA is needed when planning is integrated. Instead of asking how public transport planning should be carried out based on the result of CBAs, we should perhaps ask how the economic evaluation could be tuned so that it becomes relevant for public transport planning when it is integrated with other physical planning. Also, along with broader roles and wider ambitions for the public transport system in Sweden, potential conflicts of interests and motives will arise. Based on the interviews carried out, such conflicts touch upon ethical issues, land use and transport planning, and economic growth and distribution.

We foresee that these conflicts will increase with the continuing focus on the broader role of the public transport system. The relation between land-use and transport planning is critical for public transport in urban regions, where objective of a 'good city' is combined with an economically sound provision of services.

Regarding the Swedish context, presented in section 2, findings might be transferable if fairly similar markets, political economies and fiscal localism prevail. And, given that context, together with the emerging conflicts of stakeholder interests, one possible local option would still be the trial use of novel approaches like the NISTO or MAMCA models. Because of their inclusion of multi-actor appraisal, their pinpointed ambitions are to assess the accessibility, equity and sustainability of future policy instruments and measures, where CBA approaches have failed to meet local and regional stakeholder needs.

Hence, the results and discussion is mostly relevant for similar contexts, and we argue that the idea with this (qualitative) study was to provide an account for the specific circumstances and draw conclusions from them. The study may furthermore be regarded as an inspiration for analyses in other countries in order to identify possible gaps between evaluation methods and objectives of public transport.

Acknowledgements

We wish to thank the two anonymous reviewers for insightful comments, which lead to an improvement of the paper.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by K2 – The Swedish National Knowledge Centre for Public Transport.

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Appendix 1.**Table A1.** Regional public transport statistics.

County	Population		Boardings		Vehicle kilometres available		Passenger kilometres		Costs		
	(inh.)	(inh./km ²)	Train	Bus	Train	Bus	Train	Bus	Train	Bus	Total
			(thousands)		(thousands)		(thousands)		(thousand SEK)		
Stockholm	2,260,795	346.8	107,750	318,000	28,983	125,725	1,891,000	1,835,000	2,395,684	6,317,111	18,333,006
Södermanland	286,712	47.3	2,737	10,274		15,102	158,757	123,287	137,966	457,817	667,139
Blekinge	157,717	53.6	1919	6179	1788	7932	106,696	64,848	142,173	212,854	419,167
Skåne	1,317,548	116.6	44,830	114,030	22,955	73,655	2,066,663	814,176	1,635,042	2,778,213	4,959,247
Halland	318,713	58.4	6645	10,201	3359	15,809	376,928	173,432	299,350	472,495	850,206
Sweden – Total	9,954,420	22.2	207,997	775,198	106,061	602,269	6,399,939	6,778,680	7,782,966	21,228,413	42,917,270

(Source: Transport Analysis, 2016).