

Improvment of the Environment by Purchasing Bus Transport Services

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ABSTRACT

Since 1979 there is a law on the responsibility for local and regional public transport in each county of Sweden. This responsibility is shared by the County Council and the local authorities of the county.

In accordance with this law there is a County Public Transport Authority in each county. In order to improve efficiency and reduce operating costs, The Parliament of Sweden decided in 1985 that local and regional public transportation was to be deregulated. The new law came into force in 1989. The former road passenger licence system was abolished, opening up the possibility for the County Public Transport Authorities to purchase service on the open market. Open bidding has produced price reductions up to 30 %. Purchasing has continued and resulted in price reductions of more than 10 % at each occasion. The financial contributions by the municipalities and the County Councils has decreased from 60 % in 1986 to 46 % in 1985, mainly due to the competition factor.

The regional railway system has also been opened up for competition. Free competition on the regional system has reduced train service prices, up to 30 %.

An extending number of the County Public Transport Authorities participate in the Swedish Transport and Communications Research Board's programme for demonstration and use of alternative fuels in road vehicles in Sweden.

The transport policy is to combine the competition system when the counties are purchasing transport services on the open market with requirements for improvements of the environment. The contract specifications have in many cases demands for bus performance with much better environment qualities than for ordinary buses. The same ambition applies to purchasing regional train services.

The results has been that more than 500 of Sweden's 5 000 buses in regular traffic use some kind of alternative fuels. The table demonstrates buses in operation or ordered August 1996.

Ethanol	Blended Fuels	Biogas	Electric Battery	Electric Hybrid	Natural Gas CNG	Pressure Accumulator	LPG
279	24	46	5	11	178	2	2

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GENERAL

Sweden has a population of about 8.5 million inhabitants, more than 80 % of whom live in the southern half of the country. Only one-sixth of the population live in rural areas.

Sweden is divided into 23 counties, with their own elected County Councils. The main responsibilities of the County Councils are health and medical services. Each county contains a varying number of local authorities. The main responsibilities of the local authorities are housing, building and construction, streets and highways, social services, culture, education, etc. There are 288 local authorities in Sweden.

The national Government, the County Councils and the local authorities all have taxation powers. The largest source of revenue for the local authorities and the counties is income tax.

JOINT RESPONSIBILITY

The Act (1978:438) governing the legal responsibilities of public transport authorities requires that within each county there should be a legal principal responsibility for public transport. In most counties, this responsibility is shared by the County Council and the local authorities.

In most counties, too, the County Councils and local authorities have handled this joint responsibility through the formation of joint companies, known as County Public Transport Authorities. Usually, 50 % of the shares in such a company are owned by the municipalities, and 50 % by the County Council. In Stockholm County the County Council is appointed as the County Public Transport Authority. These County Public Transport Authorities decide on the scale of service. These responsibilities encompass not only bus services but also local and regional rail services and, where applicable, boat and ferry services.

Most counties have introduced fare reforms which make it possible to buy a monthly pass for county-wide travel.

FINANCING

There are two main sources of income for financing public transport in the counties:

- * revenues from fares and
- * supplementary contributions from tax revenues

On average, 46 % of the total funding of public transport consists of the supplementary contributions by municipalities and the County Council from tax revenues.

Supplementary by taxes was 60 % in 1986 but has than decreased, mainly due to the competition factor, to 46 %.

RAILWAYS

The railway network in Sweden is supervised by the Swedish National Rail Administration, which is responsible for the infrastructure. Swedish State Railways (SJ) services the interregional routes, whereas the County Public Transport Authorities are responsible for the county/regional railways. Services on these routes are purchased via bids on the open market and thus can be provided by Swedish Rail or by private contractors.

THE COMPETITION FACTOR

An important change occurred in Swedish public transport in 1989, when local and regional public transport was deregulated. The Parliament of Sweden enacted the reform in 1985 and the new law came into force in 1989. The former road passenger licence system was abolished, opening up possibilities for the County Public Transport Authorities to purchase services on the open market.

The new law also made it possible for bus operators no longer wishing to compete with other operators to claim payment for their transport resources (buses, garages, repair shops). It was believed in 1985 that many bus owners would take the chance of retiring and that their bus companies would be bought by the County Public Transport Authorities. Less than 10 bus operators actually did so, however. Most of these operators were very small companies. Only in two cases the County Public Transport Authority was forced to buy a large quantity of transport resources (about 50 buses at each occasion).

Major changes have resulted in the counties. Some large, private companies have increased their market shares, while some other companies -- both state, privately and municipally owned -- have suffered losses. Several municipally owned bus companies were losers and have been sold to private or state-owned bus companies. The staff have generally obtained new jobs with the new operator.

In all counties of Sweden, the County Public Transport Authorities have advertised on the open market for services, and then purchased them from the operator offering the most attractive bid. During the first years after 1989 only about 50 % of the total market was exposed to free competition. In 1996 75 % of public transport for which the County Public Transport Authorities were responsible was purchased for traffic for the years to come. Public transport in Stockholm and Göteborg, including the metro in Stockholm, local railway traffic and the tramways, was also exposed to free competition. At the end of the 90-ties all public transport inside the counties will be opened up for competition.

Open bidding has produced price reductions from 10 up to 30 %. This was the result after the first bidding period. Those counties which have continued to purchase transport services have after that obtained price reductions of more than 10 %. These reductions have enabled the authorities to increase traffic, reduce taxes or reduce subsidies. Even if the authorities have referred to the importance of quality, price is the most important factor deciding who is to operate transport services. But there are also examples of winners being bus companies which could offer environment-friendly bus transport, by using cleaner diesel fuel than their competitors.

Competition has forced cost savings programme on every operator, enabling them to survive on a free market. Structural changes among the operators mainly involve the larger companies growing still larger, and thus being able to invest and bid for large contracts, also abroad. The Swedish privately owned Linjebuss company was during a number of years the biggest bus company in the Copenhagen area. Linjebuss is a successful bus operator also in Finland, but has also lost contracts in southern Sweden to Danish owned bus companies.

But in many countries the smaller bus companies have however established a common pool in their bidding. Their administration costs are usually low, so they have been the winner in many counties.

The most spectacular occurrence on the Swedish bus market will probably be the effects of the purchase of the formerly state-owned bus company Swebus. The new owner of this company, now being the biggest in Sweden, is the British bus company Stagecoach.

EXAMPLES FROM THE COUNTIES OF STOCKHOLM, HALLAND AND VÄSTERBOTTEN

The County Public Transport Authority in Stockholm County is the County Council, which is the owner of AB Storstockholms Lokaltrafik (SL).

- The SL Group is divided into a provider and a purchaser organisation.

The Parent Company, or purchaser, determines the scope of the traffic, its quality and its development. An increasing number of traffic services have been procured in competition since 1993, which was later than for other counties in Sweden. Within the purchased portions of the traffic, cost reductions amount to as much as 25 %. The services available have expanded by 13 %. Quality has, at a minimum, been retained unchanged. For the owner, Stockholm County Council, this has meant that the contribution to SL has been reduced from almost 70 % of the company's budget to slightly more than 50 %. The reduction of the level of expenses is more than SEK 1 billion. 55 % of the bus traffic is operated by three bus companies, whose contracts have been awarded in open competition.

The County of Halland is situated on the West coast of Sweden, south of Göteborg. The county consists of six municipalities of which the city of Halmstad is the biggest.

There have been two bidding periods, one in 1989 and one at the end of 1992. The latter concerned traffic for 1993 and five years ahead. The first bidding period resulted in price reductions of 10 %, but did not include public transport in Halmstad.

The purchase of transport services for 1993 and later resulted in price reductions of 12 %, including a new bus operator in Halmstad. The loser was Halmstad's own bus company and the winner was Swebus.

But Swebus lost nearly all traffic in the rural area of the county to private operators. A new operator with about 20 % of the vehicle kilometers produced in the county was the company Buss i Väst AB, which is a bus pool of four private operators.

They put in a total of 24 tenders, of which 14 were accepted. A big Danish operator sent in a tender, as well as the public transport operators of the cities of Göteborg and Malmö.

The County of Västerbotten is situated in the north part of Sweden and consists of a rather densely populated area along the coast of the Baltic Sea and almost unpopulated areas in the mountains close to the frontier with Norway. The total area of the county is almost the same as Belgium and Netherlands together, but the number of inhabitants is only 250 000. In 1990 the total amount of bus vehicle kilometers was 22 million at a cost of 280 million SEK = 40 million US Dollars.

In 1992 80 % of the bus transport services were purchased, excluding the public transport of the cities of Umeå and Skellefteå. There were a total of 450 bids for 138 "packages" of traffic, the biggest of which consisted of 1.2 millions bus kilometers per year. The purchasing resulted in great changes among the bus operators. Swebus lost a great deal of its traffic in the rural areas, including the mail distribution services, but was a winner in other areas.

In Västerbotten too, the small private bus operators won by bidding together in a "bus pool".

As this was the first period of bidding in the county of Västerbotten the price reductions this time were only 10 %.

FUTURE TRENDS

There is also a trend towards deregulation of rail traffic, both regional and national. With the new order where the infrastructure is financed and controlled by state, not by Swedish Rail, competition with Swedish Rail is possible also in rail operations.

The regional system has been opened up for competition, and a small bus company has been operating local train services on about 400 km in the south of Sweden and on 150 kilometers in the middle part of the country. After the first purchasing period Swedish rail now is back again as a winning train operator. Free competition has reduced prices for train services by 30 %.

The main lines are also about to be opened for competition. This has reduced the costs for the State of purchasing non profitable train services on the main lines from about 550 million SEK in the 1992/93 fiscal year to 400 million SEK in 1997. The trend of yearly increasing costs has been broken.

DEMONSTRATION PROGRAMMES FOR BIOBASED MOTORFUELS

When the County Public Transport Authorities purchase transport services they are able to decide not only on the public transport services and the timetables but also on the quality of the rolling stock and of the bus fuel. Fleet tests involving ethanol- or biogas-propelled buses are now in progress in many cities in Sweden.

In 1991, the Swedish Parliament appointed the Swedish Transport and Communications Research Board (KFB) to conduct a comprehensive program for alcohols as motor fuels. KFB received an appropriation of US \$ 17 million, spread over four years, to support projects in this field. Priority was given to biomass based alcohols. Biomass from forests is most plentiful in Sweden. At the beginning, emphasis was placed on pure alcohols because of the environmental problems in urban areas, where pure alcohol propulsion promises the greatest improvements for health and the environment. Yet another area emerged during the spring of 1993: Biogas.

An extending number of the County Public Transport Authorities now participate in the Swedish Transport and Communications Research Board's programme for demonstration and use of alternative fuels and electricity in road vehicles in Sweden.

The transport policy is to combine the competition system when the counties are purchasing transport services on the open market with requirements for improvements of the environment. The contract specifications have in many cases demands for bus performance with much better environment qualities than for ordinary buses. The same ambition applies to purchasing regional train services.

The trials which are being carried out in Sweden are described in table 1. As a result of these ventures, more facts are now available concerning production, distribution, usage and environmental effects of these alternatives.

Table 1 Current demonstration and use of alternative fuels and electricity in road vehicles in Sweden 1996.

<u>Alcohols</u>	<u>Type of vehicle</u>
Ethanol	279 buses 4 trucks 50-100 FFV ¹
Combined fuels 15 % ethanol	24 buses 20 trucks
 <u>Gaseous fuels</u>	
Natural gas	approx. 180 buses 17 trucks
 LPG	 2 vehicles 46 buses
 <u>Other</u>	
Electricity	100 electric cars 9 electricity hybrid buses

Source:

KFB-INFORMATION (1996:13) *Introduction of alternative fuels*

At the moment around 10 percent (just over 500) of Sweden's 5 000 buses in regular traffic use some form of alternative fuel. According to the Swedish Public Transport Association, the maintenance of this level of use and the possible expansion of it in the future are dependent on future decisions regarding alternative fuels, e.g. taxes.

The Swedish Transport and Communications Research Board has pointed out that there are several different reasons for promoting an increased use of alternative fuels based on renewable raw materials. Compared with fossil-based fuels, the alternative fuels can help to bring about environmental improvements, increase diversity in the energy system and, when produced domestically, create jobs, which can be very significant from a regional and local perspective. If the fuels are based on domestic raw materials, they can also help to reduce the need to import fossil fuels.

One reason for introducing alternative fuels, which has been emphasised very strongly in recent times, is that a more extensive use of alternative, biobased fuels could help to reduce emissions of CO². This assumes that the use of fossil fuels in the cultivating, processing and distribution of the alternative fuels can be minimised. Engines developed for motor alcohols and other alternative fuels can increase the long-term benefit of introducing alternative fuels by further reducing the consumption of fossil fuels and reducing emissions from the traffic sector.

Use of alternative fuels in heavy vehicles can have positive effects in the short term and medium term in cities and densely-populated areas, by reducing emissions of NO^x and particles.

Based on the background of numerous trials with various alternative fuels the Governmental Commission on Transport and Communications has to decide a strategy on the introduction on a large scale of alternative fuels in Sweden.

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¹ FFV = Flexible Fuel Vehicle – vehicles which can run on ethanol and/or petrol