

CHALMERS



Regulations and means of control to reduce environmental impact of freight transport

A benchmarking study within Sweden and EU

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for

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transport – a benchmarking study

PREFACE

This benchmarking study has been carried out by Joanna Dickinson,
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1 BACKGROUND

What is going on regarding legislation, economic measures etc in order to environmentally adapt the transport sector, and how will these measures affect costs for freight transports in Sweden and EU?

Transek AB has on behalf of CPM¹ (Centrum för Produktrelaterad Miljöanalys) made a brief scanning and investigation of what is going on regarding regulations, measures, legislation, directives etc on national as well as EU level which could increase the costs for freight transports in the future.

In the debate today you can often hear predictions that the industry need to 'be prepared for environmentally generated costs'. The members of the CPM (Centrum för Produktrelaterad Miljöanalys) wish to further analyse what is about to happen in this field.

The aim has been to through bench-marking find out what is going on regarding measures, means of control such as taxes and fees, regulations, directives, other legislation etc within Sweden and the European Union that could have affect the costs of freight transports. Not only taxes but also such means of control and other measures that could have an effect on congestion in the transport system and time losses in the logistic systems have been of interest here.

¹ CPM är ett kompetenscentrum kring livscykelanalyser på Chalmers som har finansiering från Chalmers, Vinnova och ca 10 medlemsföretag, bl a ABB, Akzo Nobel, Bombardier, SCA, Stora Enso och ITT Flygt.

2 METHOD

A number of key persons with expert knowledge about the transport sector were selected and interviewed. The respondents includes representatives for affected authorities, as well as for the freight industry and for logistics research.

Interviews were carried out with the following experts:

- Göran Friberg, Head of Division, Swedish Institute for Transport and Communication Analysis
- Bertil Arvidsson, Head of Unit, Environment Technology Logistics, The Swedish Shipowners' Association
- Kristina Feldhusen, Transport and Energy Section, Swedish Environmental Protection Agency
- Stefan Back, Secretary General and Managing Director, The Swedish International Freight Association
- Henrik Swahn, expert, Swedish Maritime Administration
- Gunnar Eriksson, expert, Swedish Maritime Administration (previously transport expert at the Swedish Ministry for Industry, Employment and Communications).
- Rikard Engström, researcher at the Logistics and Transport Research Group, the School of Business, Economics and Law at Göteborg University
- Lars Hallsten, transport expert, Confederation of Swedish Enterprise

The following main questions were asked:

- What is going on when it comes to taxes, fees, regulations and directives related to the environment and that can have an effect on the costs for transportation of goods within Sweden and EU?
- When are such changes expected to come into force?
- How is the discussion evolving within EU about these issues?
- How is EU and its member states expected to handle the issue of congestion in the transport system in the future?
- Are infrastructure investments planned in the new member states in the Eastern Europe that could affect the costs for transportation of goods within Sweden and EU?

3 RESULTS

In general, all the respondents were quite unanimous in their expressed views. There were no divergent replies in the interviews.

The general opinion is that the part of the prices of consumer products that is related to the transport cost will increase and not decrease in the years to come. This applies independent of transport mode.

The vehicle industry is driven by increased taxes on fossile fuels and rising oil prices due to the steady reduction of available oil resources.

There is within the EU an aspiration for measures that can promote railway and maritime transports and promote a shift in transport mode to these transport modes which are in general regarded as less environmentally negative than road transport and air traffic.

One of the biggest challenges regarding the transport sector is considered to be how to finance it. There are ongoing tendencies to seek more self-financing solutions.

Emissions trading for lower carbon dioxide emissions also within the transport sector is generally expected to come into force. Some time around 2010-2015 is a time frame that was suggested during the interviews. Sweden and the other Nordic countries are expected to raise this issue sooner than the other member states in the EU as the transport sector represents a larger share of the emissions of carbondioxides in these countries. A system for emissions trading could solve some of the issues about internalizing external effects of infrastructure fees, as the price per kilo for carbondioxide is today being interpreted completely different by different researchers and experts. Should carbondioxide be included in an emission trading scheme, it would make it possible to use infrastructure fees to regulate the remaining environmental impacts emanating from the transport sector (nitrogen oxides emissions, sulphur oxides emissions – and other effects).

3.1 Road transport

Kilometre based taxes for heavy goods vehicles is quite certain to come. At EU level a revised version of the EuroVignette² directive is being processed and is probably going to come into force in about the same version that is now being discussed. The new directive will make it possible for member states to charge a kilometre based tax. The probable date for the directive to come into force is expected to be around 2010.

Germany, Switzerland and Austria are member states that have recently shifted from the Eurovignette system to an electronic payment system which also means that the previously used principle of payment per time unit is now replaced by payment per kilometre.

There is an ongoing revision of the EuroVignette directive which opens up for necessary prerequisites to introduce systems for kilometre based taxes. A technical specification of a possible Swedish system for kilometre based taxes needs to be prepared and the potential effects need to be analysed, according to the recent transport bill (Prop. 2005/06:160) from the Swedish government. Should the resulting analysis not show unreasonable effects for regions or industry, the government states it aims to propose the introduction of a kilometre based tax system for heavy goods vehicles. The system would cover heavy goods vehicles registered in Sweden as well as in other countries.

The conclusion is that it may take a while before there exists a working system for kilometre based taxes and before we know exactly how it will look like. But some kind of distance based taxation for heavy goods vehicles seems sure to come.

² The Eurovignette Directive ([1999/62/EC](#)) is a EU directive regulating road taxes. According to the directive heavy goods vehicles weighing 12 tonnes and more are obliged to pay a special fee to be allowed to use certain motorways in the northern part of EU. The system is currently used by Sweden, Germany, Denmark, Holland, Belgium and Luzemburg. A sticky label, called a vignette, is put on the windscreen of each heavy goods vehicle for which the fee has been paid.

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It is expected that there will be a change in disposition of the vehicle tax for heavy goods vehicles, meaning a shift from tax on the vehicles and towards a tax based on travelled distance such as the above mentioned kilometre based tax.

Furthermore, the EU commission is expected to present a proposal on how external costs of heavy goods transports on roads can be internalized. There are big differences in the views expressed by the different member states on this subject and the issue has a high political profile. A proposal from the Commission is expected in perhaps 2-3 years and implementation could be expected in about 5 years, but this is an optimistic guess. It is possible that it may take longer time, and this is to a large extent depending on how the public opinion in Europe will react on climate and weather changes and such. Probably, due to transition regulations etc an implementation won't take place until around 2015.

Regional and local regulations such as congestion charging schemes are likely to become more common in Europe over the coming 10-20 years. It is important that these schemes are differentiated with regard to environmental performance, for example the Euro classification for exhaust emissions for heavy goods vehicles. Such a differentiation will become more common around 2008 or later.

A gradual increase of the diesel tax is possible. The Swedish parliamentary committee on road transport taxations suggested a while ago that should the fuel taxes be based on marginal cost pricing, there is no reason to keep the current system with a different taxation for different fuels. The fuel tax on diesel should be raised in order to adapt the energy tax on diesel to the corresponding energy tax level for gasoline.

New stricter requirements on the environmental performance of vehicles will mean some increased costs for goods transports.

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The cost picture can be affected by how new infrastructure is being financed and if flexible costs are being charged or not to finance infrastructure.

A basic principle of marginal cost pricing is used in EU and this means that fees should not really have a financing function. But it is possible to see that this principle is not sacred, and there is today a financing aspect present in the discussions.

The cost responsibility of the transport sector means that transport policy motivated taxes and fees should correspond to the marginal cost of the public economy and thus correct any distortions of transport patterns. The public economy marginal cost means the cost that one single vehicle give rise to when it is being used. It concerns basically costs for wear and tear of the infrastructure as well as injuries caused by air pollution, noise pollution, traffic accidents and congestions.

Financing taxes and fees are on a contrary expected to affect transport patterns and the transport sector as little as possible.

The new Swedish governmental transport bill proposes that the public economy costs of the transport sector should be a starting point, together with the national transport policy objectives, for the design of different transport policy means of control.

3.2 Maritime transports

An important aspect is that agreements traditionally has given merchant shipping a freedom from regulations and thus makes it a difficult sector to introduce regulations in.

Merchant shipping within Europe, that is with start and destination points in EU ports, is increasing faster than heavy goods transports on road today. The maritime transport sector can be expected to face reduced costs. Italy has applied for permission to subsidize its ro/ro-traffic, that is to stimulate heavy goods lorries to take the ferry along the coast, instead of using the roads. The expense is calculated to 240 millions of euro in 3 years.

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The EU energy directive which deals with taxes on fuel for air traffic and maritime transports was recently passed. The Swedish Maritime Administration and the Swedish Aviation Administration are currently investigating how this will affect the respective transport modes. Either this will mean fuel taxes for domestic transports, or it will be possible to reach bilateral agreements between member states. It has been discussed how to make it possible to distinguish between bunkering intended for transports between different destinations.

The IMO has agreed on requirements for double hulls on ships. These requirements will come into force about 2010 and means a powerful increase of costs for the shipping industry. The system will be based on transponders on all vessels to facilitate the identification and mapping of all ships. Already today, it is required that all vessels weighing 300 tonnes and more have a transponder. This will also be implemented for fishing vessels.

From 2012, all organisms in ballast water are required to be destroyed before any ballast water is emitted from vessels. This is according to an international convention that yet needs to be ratified by enough member states before it can come into force. All countries, and thus all vessels, will be covered by this requirement. There is currently a lot of ongoing activities regarding development of methods that can be helpful in fulfilling this requirement.

Other restrictions and requirements affecting the costs for maritime transports are the prohibitions of toxic first coats of vessels and the halon prohibition which is effective from 2004 and applies to EU registered vessels. These regulations give increased transport costs, but to no big extent, and are not expected to affect the competition against other transport modes within freight transport.

When it comes to exhaust emissions from maritime transports, they are likely to reach and even pass the level of all land based emissions by 2020, according to the recently launched NERA report "Evaluation of the Feasibility of Alternative Market-Based Mechanisms to

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Promote Low-Emission Shipping in European Union Sea Areas“ (www.nera.com) on commission from the EU commission.

Fairway dues for merchant shipping almost only exist in Sweden and are voluntary. The dues are based on emissions of nitrogen oxides and the level of sulphur in the fuel. Sweden also has a system with differentiated port fees, based on environmental performance. In the rest of Europe, such port fees are not common because of the strong competition between ports and the close distances between ports. Hamburg and Bremen are two examples of cities applying port fees, but few vessels participate in the system. The Swedish system has had success, with a 10-30 % reduction of emissions since introducing these fees, and many vessels have installed catalyst equipment. But few countries are today willing to introduce these kinds of fees.

There is now an international agreement within IMO to reduce the sulphur content in fuel to 1,5 % within SECA, Sulphur Control Area. The Baltic and the North Sea are today part of the agreement and more areas are to be included.

An important aspect is that there is hesitation to go far with fees and dues on merchant shipping, because of fear that transports will again shift mode to land transport – road and railway.

There is an international discussion about integrating shipping in emissions trading for carbon dioxide emissions. A similar trading system is being discussed for sulphur and nitrogen oxide emissions. The above mentioned NERA report suggests that Europe should be treated as a single area, including shipping, which could stimulate land-based industry to sponsor reductions of emissions from shipping instead of reducing emissions from plants. The system suggested in NERA is proposed to cover all vessels moving within European borders.

3.3 Aviation

The new EU Energy Directive mentions taxes on fuels for aviation as well as for shipping. The Directive was recently approved. The Swedish Maritime Administration and the Swedish Aviation Administration are currently investigating how this will affect the respective transport modes. Fuel taxes for domestic transports or bilateral agreements between member states are two possible scenarios.

Aviation, as well as shipping, is difficult to regulate within EU. A global approach is needed.

Integration of aviation in emissions trading for carbon dioxide emissions is being discussed on international level. The aviation industry seems to prefer this to measures of controls in EU such as taxes etc.

In Sweden, landing fees based on environmental performance of aircrafts are charged today. This system will probably continue to develop, but probably only within Sweden.

3.4 Railway

The railway faces huge costs today and there is a great need and demand for rationalization and harmonisation of the European railway systems. Progress is slow within EU even if there is ongoing work, for example to harmonize railway security systems. Should this be achieved it would mean great simplifications and thus reduced costs for railway transports.

There is progress being made with regard to updating the train park but this is troublesome as the lifetime of an engine is normally 40-50 years.

In Sweden there is today a system with railway dues based on public economy marginal costs. These are comparatively low. The Swedish

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Railway Administration is expected to propose changes in this system which will probably mean increased fees.

The railways in Europe will face problems with financing infrastructure. Subsidies for European railway investments are could be reduced with as much as 60 % according to a recent proposal in the EU commission.

3.5 The new member states of the EU

The new member states face big changes and have traditionally had a strong railway sector. New investments seem to focus on road infrastructure and these investments will partly be financed by TEN money but are also expected to be financed with help of the EuroVignette Directive.

There are fears that focus is too strong on road investments. Transport policy debate within EU can hopefully create interest for developing the railway systems in the Eastern Europe. Poland and Czech Republic for example could provide freight corridors on railway that can relieve the pressure on heavily loaded transport corridors in Germany for transports from for example Sweden to the Mediterranean countries. This could be of great interest for Swedish industry.

3.6 Other comments

Environmentally hazardous emissions are probably due to decrease and will become less of a problem and a less dramatic issue than the past years. New technology will be of great help here. Carbon dioxide emissions still remain a problem.

It is important that new means of control that are introduced are perceived as aiming on more environmentally friendly solutions, and not only as a new tax. Financing is an increasingly important aspect though.

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Introducing emission trading systems for the transport sector could mean that fuel taxes are redundant, but it all depends on how these trading schemes are designed. Should the assignment of emission rights be too generous, it will not automatically lead to reduced emissions, and fuel taxes will then still be needed.

A final remark concerns the Services Directive that is currently subject for negotiations in EU. The coming directive could lead to voluntary measures insisted on by transport buyers.