

ECONOMIC COMMISSION FOR EUROPE

Informal document WP.24 No. 3 (2008)

INLAND TRANSPORT COMMITTEE

4 August 2008

Working Party on Intermodal Transport and Logistics

Fiftieth session

Geneva, 6-7 October 2008

Item 11 of the provisional agenda

ENGLISH ONLY

**MONITORING OF WEIGHTS AND DIMENSIONS OF LOADING UNITS IN
INTERMODAL TRANSPORT**

Impact of “mega-trucks” on European roads and intermodal transport

European Modular System: Experiences made in Sweden and Finland

Note: The secretariat reproduces in this document the summary of a study undertaken by the Transport and Materials Handling Committee of TFK Transport Research Institute in Sweden, financed by the Swedish Road Haulage Association, Volvo Trucks and Scania. Representatives from these organizations and the Swedish Road Administration have also contributed via a reference group.

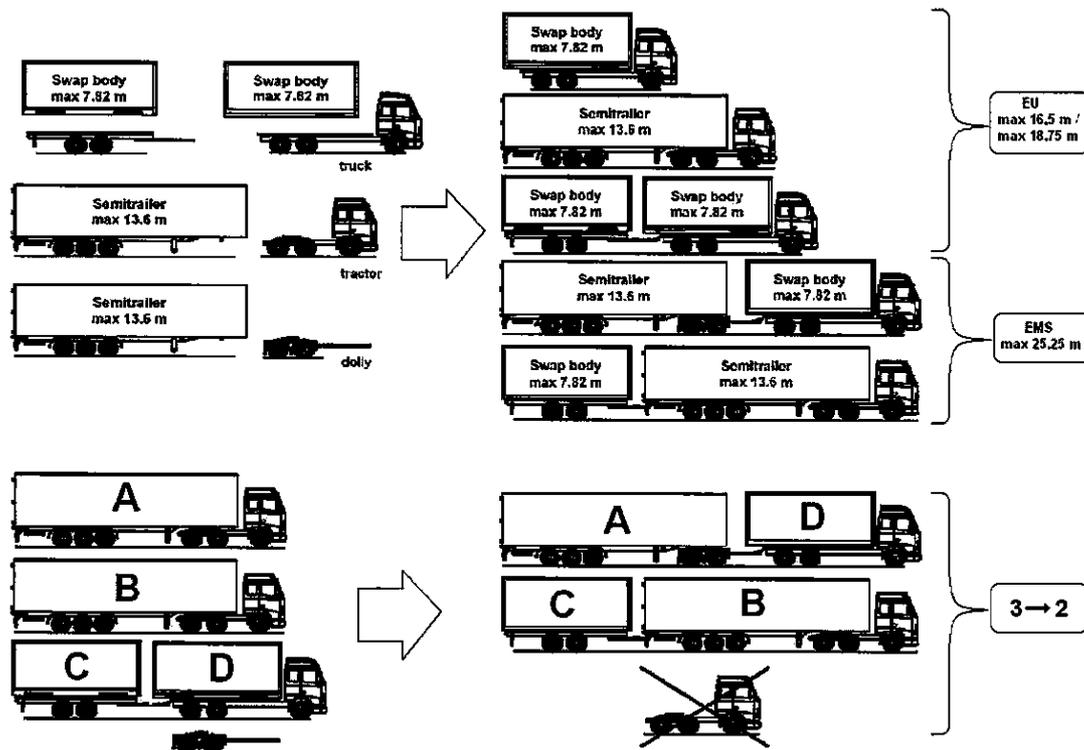
The full text of this study that was made available to the Working Party by the representative of Sweden is available for download at: <http://www.unece.org/trans/wp24/wp24-presentations/24presentations.html>.

Summary

The aim of this study was to evaluate Swedish and Finnish hauliers' experiences of using longer and heavier vehicle combinations according to EMS. In short, it consists of combinations of the longest allowed semi-trailer, 13,6 m, and the longest allowed load carrier according to C-class, maximum 7,82 m. This results in vehicle combinations of 25,25 m and is known as the European Modular System, EMS.

In order to facilitate international transport and assure a fair level of competition, the European Union, EU, has legislated vehicle dimensions in a directive. No member state is allowed to deny use of the vehicles included in the directive. Sweden and Finland traditionally allow longer and heavier freight vehicles. When entering EU the nations wanted to keep their dimensions intact, rather than adopting the EU legislation. A Swedish adoption of the EU legislation would have led to a reduction of vehicle lengths from 24 to 18,75 m and GCW similarly from 60 to 40 tonnes. A report from TFK stated that this would cause an annual increase of transports costs by 20%, corresponding to 6,5 billion SEK. Further, large parts of the north Swedish forestry were in danger of becoming unprofitable. On the other hand, if Sweden and Finland were allowed to keep their then current legislation foreign hauliers had to purchase larger vehicles in order to stay competitive for transports in these countries.

In order to solve this, EU permitted each member state to use combinations of load carriers in the directive according to a modular concept. Sweden and Finland were allowed to combine one long and one short module, while the rest of EU only permits transports with either two short or one long module alternatively. By using EMS, the volume of three EU combinations can be transported by two EMS combinations. See figure below.



The study has been performed by conducting interviews with hauliers and authorities. Statistics and studies regarding the effects of vehicle dimensions on areas such as: traffic safety, environment and transport economy have been examined. The large-scale trial with increased vehicle dimensions in the Netherlands is discussed in a case study.

Results from this study indicate that the following generalized effects regarding increased vehicle dimensions according to EMS can be made:

Area	Most positive	Most negative	Result
Environment	Less fuel consumption per transported cargo unit.	May increase the market share of road transports	+
Economy, micro level	Reduced transports costs	Increased fuel consumption and maintenance per vehicle	+
Economy, macro level	More efficient transports, lower total costs	May need infrastructural adjustment	+
Congestion	Fewer vehicles transporting the same amount of goods	May increase the market share of road transports	+/-
Traffic safety	Fewer vehicles transporting the same amount of goods	Characteristics of the vehicles may increase the accident rate	+/-
Consequences on other transport modes	Facilitates intermodal transports	May increase the market share of road transports	+/-

Trial with increased vehicle dimensions proofs successful

Since 2000, the Netherlands have been carrying out trials with longer and heavier vehicle combinations according to EMS, (LHV's). Areas that have been closely monitored include traffic safety effects, economic and environmental consequences. The final trial involved 77 hauliers and some 150 LHV's. They were given access to the entire Dutch freeway system and each haulier was allowed to select ten routes outside of the freeway system. Worth noticing is that no infrastructural adjustments had to be made in order to carry out the trial.

Results from the trials indicated that, based on the preconditions used in the trials, 8000, corresponding to 7% of all regular heavy freight vehicles could be replaced by 6000 LHV's. This would have the following effects, annually:

- 1,8% reduced transports costs, corresponding to 216 million Euros.
- 4 fewer fatalities and 13 fewer injuries, corresponding to 9 million Euros.
- Positive effects on the environment, corresponding to 24 million Euros.
- 0,7% less congestion, corresponding to 10 million Euros.
- 0,05% increased road freight traffic, corresponding to 266 000 tonnes, and similar decrease of inland waterway by 0,2% and rail transports by 1,4%

The Dutch trials clearly indicate that it is possible to operate with LHV's on a limited road net and achieve a numerous positive effects regarding traffic safety, environment and economy. Further, the consequences on other modes of transports are marginal. Denmark and Norway are also interested in conducting similar trials with LHV's on the freeway system. The issue is debated in Germany and three states conduct trials, while the federal government remains negative towards increased vehicle dimensions.

Statistics indicate that there are currently approximately 1 million heavy freight vehicles performing long distance transports of pallet goods in Europe. These vehicles could be replaced by LHV's and this would, at best, result in 300 000 fewer vehicles.

Swedish experiences

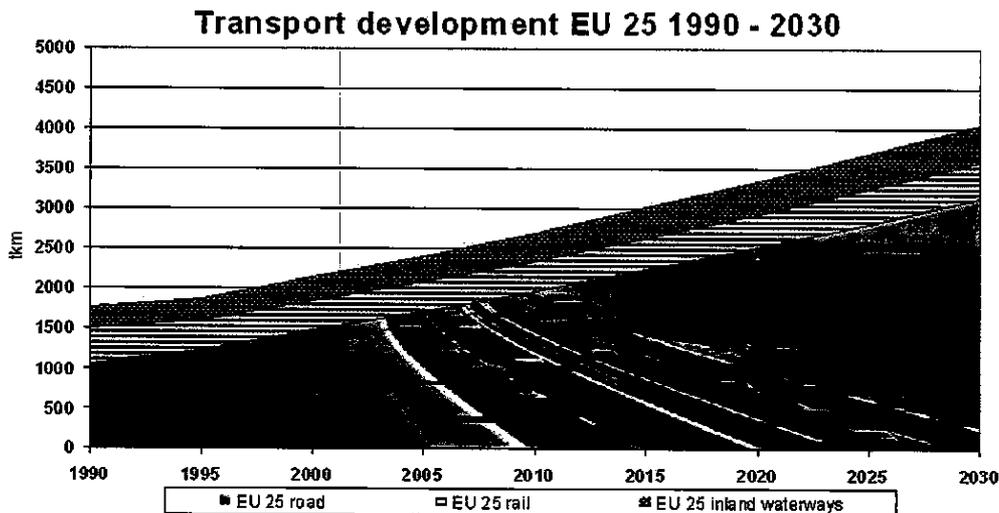
Swedish hauliers have the possibility of using either the traditional 24 m road trains or 25,25 m LHV's according to EMS for national long distance transports. Experiences of using EMS vehicle combinations are mostly positive. LHV's according to EMS implies increased load area and flexibility compared to the 24 m road trains. This study indicates that the following generalizations can be made:

- Hauliers performing **international** transports prefer EMS vehicles, thus using the same vehicles for all operations.
- Hauliers mainly transporting **volume sensitive goods** prefer EMS vehicles, which imply 8% added volume, corresponding to three bottom pallets.
- Similarly, hauliers mainly transporting **relative heavy goods** prefer 24 m road trains, as they weigh less, thus may carry some 2 extra tonnes of cargo without exceeding legislation.

Volume sensitive goods are of higher value per volume unit than heavier goods. These are manufactured products intended for the final customer. EMS vehicle combinations consume more fuel per vehicle and increased need for maintenances. These factors, combined with the characteristics of the cargo, should thus decide the hauliers' choice of vehicle.

Finnish hauliers have similar experiences regarding the use of EMS, due to similar preconditions and tradition as in Sweden. Finnish authorities also allow a 13,6 m full trailer, strictly not included in EMS. For this reason, 25,25 m vehicle combinations are more common in Finland. Both Swedish and Finnish hauliers claim that increased vehicle dimensions in the entire Europe would facilitate their operations.

Increased dimensions, a way to meet the increased demand of transports



According to the EU White Paper "European transport policy for 2010: Time to decide", there is a continuously increasing demand for transports within Europe. Road freight currently accounts for approximately 45% of total transports (tonnes-km) within EU. This White Paper was produced in 2001 with objective to achieve sustainable development for transports and proposed 60 measures. This paper has been updated and if all measures are taken, the amount of road freight is expected to increase by 55%, from year 2000-2020. In the mid-term review of the White Paper, focus was shifted towards improvements of all modes of transports. Increasing the vehicle dimensions according to EMS could be one way to achieve this.

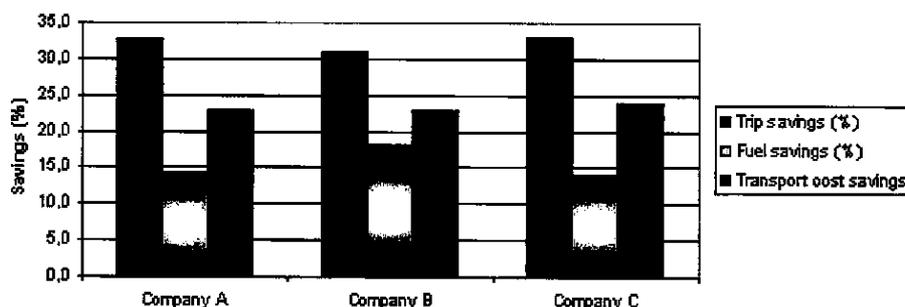
The issue of increased vehicle dimensions raises debate in Europe mainly due to four reasons:

- Are there any infrastructural limitations?
- Will the use of LHV's affect traffic safety negatively?
- Will the use of LHV's disadvantage other transport modes, thus transferring cargo from inland waterways and railways to road transports?
- Are there, hence, any negative environmental effects?

This study however indicates that these fears not necessarily have to be confirmed.

LHV's have positive effects on economy and environment

Several earlier reports have shown that increased vehicle dimensions according to EMS have positive effects on as well environment ("fuel savings") as economy ("transport costs savings"). This is based on the assumption that a decreased number of vehicles are needed for the same amount of transports if the dimensions of those vehicles are increased ("trip savings"). See figure below.



Infrastructure is mostly sufficient

The demand of increased vehicle dimensions is largest for long distance transports of volume-sensitive and high-valuable goods. These transports are mostly performed on larger transport routes, such as multi-lane freeways. Hence it is justified to assume that it is possible to allow LHV's on a limited road net, mostly consisting of larger transport routes. Some adjustments might be necessary, due to variations in infrastructure between Europe and Sweden/Finland.

Traffic safety is not negatively affected by increased vehicle dimensions

This study indicates that increased vehicle dimensions may have positive effects on traffic safety. This is due to larger vehicles lead to fewer vehicles in traffic. The number of vehicles is often considered to be the most significant parameter regarding traffic safety. According to the examined reports, there are no indications that the dimensions of the vehicles have an effect on the cause of the accidents. However, increased GCW affects the outcome of the accident. LHV's are preferably used on large, multi-lane, road, thus reducing the collision rate.

LHV's according to EMS facilitates intermodal transports

Increased vehicle dimensions correspond to more efficient road transports, which may have negative impact on other modes of transport regarding competition in the short perspective. One may however assume that other modes will develop in the long term. The White Paper also states the need of improvements for all kinds of transports. Further, EMS is assumed to facilitate intermodal transports, due to it involves increased use of standardized load carriers, already in wide-spread use within Europe.

To sum this study up; increased vehicle dimensions according to EMS produces a number of positive effects for society, environment and transporting companies.