

# Fewer Trucks Improve the Environment

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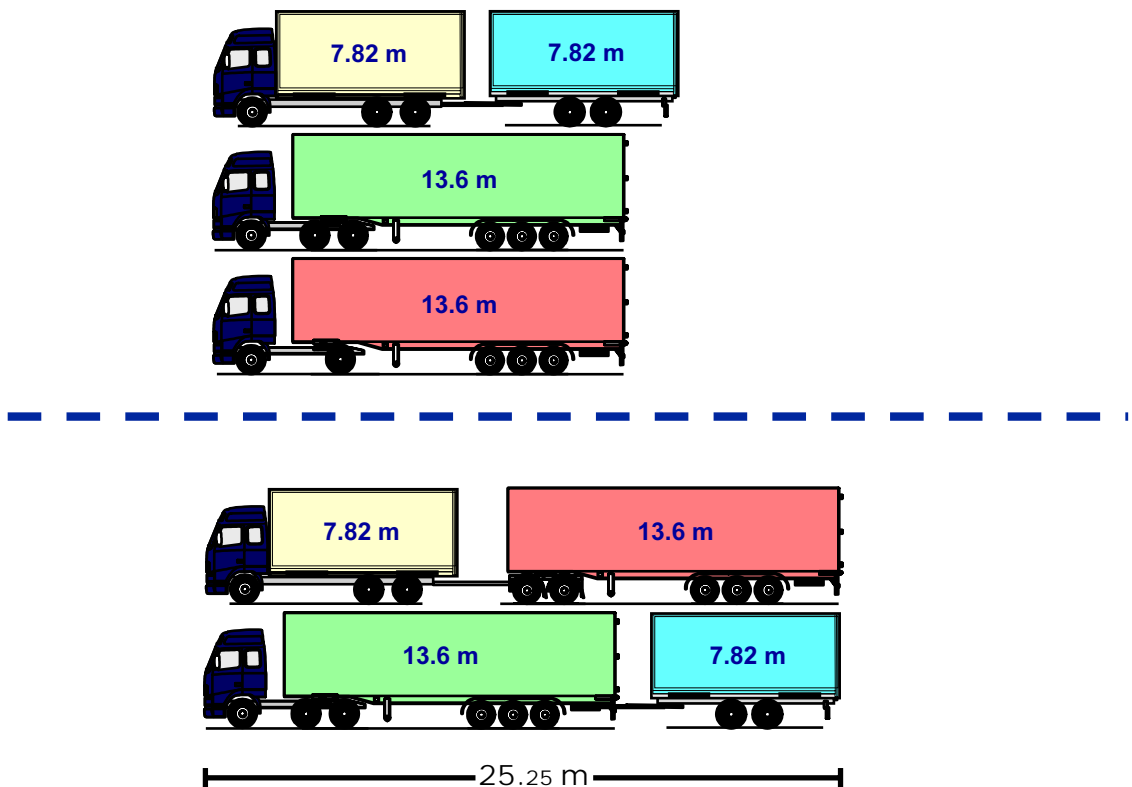


Three Short Become Two Long, if the  
EU Follows the Example Set by  
Sweden and Finland

*Fewer Trucks Improve the Environment*

**Confederation of Swedish Enterprise**

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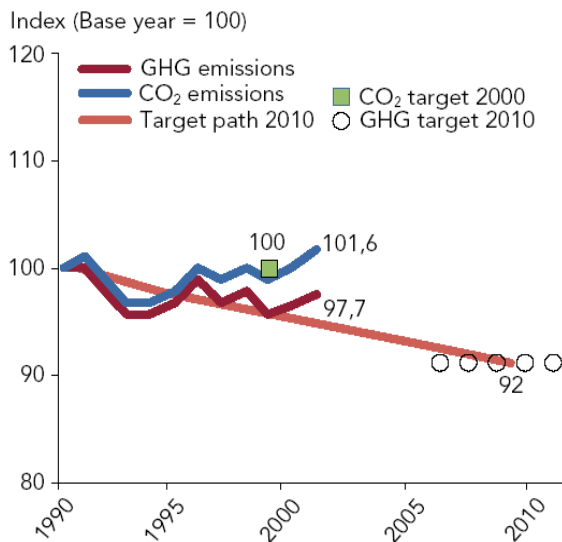
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## 1. Global Warming on the Rise

In 1997, in Kyoto, Japan, the industrialized countries of the world reached an agreement to reduce global greenhouse gas emissions. The Kyoto Protocol was signed and emission targets were set to reduce emissions by 5.2 percent compared to the levels in 1990, by the years 2008-2012. The members of the European Union (EU) agreed to achieve a joint reduction of 8 percent. These countries agreed to take advantage of a rule that allows them to redistribute the emission targets proportionately among themselves. For example, Sweden is permitted an increase of 4 percent, while both Germany and Denmark must reduce emissions by just 20 percent.<sup>1</sup>

All together the EU reduced greenhouse gas emissions by a total of 2,3 percent between 1990 and 2001. In contrast, the transport sector's emissions increased by 21 percent during the same period. As a result of continuous increases in road transportation, the transport sector is currently responsible for 20 percent of EU's total carbon dioxide emissions. If the EU implements all currently planned measures by the year 2010, the expected result will be an emissions reduction of 5,1 percent, which is considerably less than what the EU is committed to achieve.<sup>2</sup>

The International Energy Outlook 2004 predicts that global carbon dioxide emissions will not be reduced in accordance with the Kyoto Protocol, but will instead increase by 55 percent between 2001 and 2025.<sup>3</sup>



<sup>1</sup> For more information, see the Kyoto Protocol's official website <http://unfccc.int/>.

<sup>2</sup> All figures on EU emissions are from the European Environmental Agency's "Greenhouse gas emission trends and projections in Europe 2003". [http://reports.eea.eu.int/environmental\\_issue\\_report\\_2003\\_36-sum/en/summary\\_GHG%202003\\_www.pdf](http://reports.eea.eu.int/environmental_issue_report_2003_36-sum/en/summary_GHG%202003_www.pdf).

<sup>3</sup> [http://www.edie.net/gf.cfm?L=left\\_frame.html&R=http://www.edie.net/news/Archive/8295.cfm](http://www.edie.net/gf.cfm?L=left_frame.html&R=http://www.edie.net/news/Archive/8295.cfm).

## 2. Increasing Truck Transport

The EU's 2001 White Paper on Transport announced 60 measures, which would sever the connection between economic growth and increase in the number of transports. The White Paper advocates shifting transport from road to rail and sea, as well as to internalizing the environmental costs of traffic. In spite of these measures, road transport is projected to increase by 38 percent between the years 1998 and 2010. If no action were taken, the increase would amount to 50 percent.

## 3. Transport Must Become More Efficient

It is clear that the transport sector is responsible for increasing carbon dioxide emissions in the EU, and that within the transport sector, it is specifically passenger cars and freight transport by road that account for the increase in greenhouse gas emissions. The majority of other business sectors has succeeded in reducing emissions.

Reducing the number of trucks on European roads is an essential and fully attainable goal. There are many possible solutions for achieving this goal. We will focus here on the solution that is most feasible for short-term implementation: Phasing out up to every third truck by permitting Swedish-Finnish truck length standards in all of the EU.

Our proposal is fully in line with the agenda being driven by the current Swedish government, as exemplified in the following article by cabinet minister Berit Andnor:

“Another area where we've made real progress is in the dimensions of vehicles. The EU has a regulation that limits the maximum length for trucks in the EU and EEA to 18.75 meters. Sweden and Finland are already exceptions to that rule and are permitted to use trucks that are up to 25.25 meters long and weigh up to 60 tons. The fact that other Nordic countries operate under a different set of rules makes cross-border transport slower and more expensive, due to the necessity to reload trucks. The environmental aspects of this situation are often overlooked in this discussion.

Our cooperation has resulted in concrete recommendations for a trial system allowing vehicles with these increased dimensions on certain roads in Norway and Denmark. We are increasing political pressure in order to reach an agreement of all parties as soon as possible. (...) If we succeed in solving our problems here in the Nordic countries, we can serve as a role model for the EU's internal market and, by extension, for the regional cooperation in the extended EU.”<sup>4</sup>

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<sup>4</sup> Article from Värmlands Folkblad October 30, 2003: Gränstrafiken har underlättats  
[www.regeringen.se/sb/d/1347/a/4526](http://www.regeringen.se/sb/d/1347/a/4526)

## 4. Current Legislation

In the EU and the EEA the maximum length permitted for trucks, including trailers, is 18.75 meters.<sup>5</sup> Since 1997, Sweden and Finland have received exemption from this rule, which allows trucks in these countries to be up to 25.25 meters long based on the so-called modular concept.

As a result, the Nordic countries have different rules for both truck length and maximum weight, where Sweden allows 60 tons, Norway 50 tons, and Denmark 48 tons.<sup>6</sup>

Sweden introduced 24-meter trucks in 1972, primarily as a means of ensuring that the forest industry remains competitive.<sup>7</sup>

## 5. Background to the Swedish Exception

The issue of truck dimensions was addressed during bilateral discussions between the European Communities (EC) and Sweden in the middle of the 1980's. In 1989, Sweden presented an estimate of the costs involved in converting to shorter trucks and the results were overwhelming. Therefore in 1990, in negotiations with EC, which would serve as the basis for the EEA-agreement, Sweden insisted that 24-meter truck combinations continue to be permitted.

In 1992, Sweden requested an exception to existing EC regulations that would allow for 24-meter truck combinations in domestic traffic. The EC's Transport Commissioner disagreed with this request on the basis of unfair competition. The Environment Commissioner, on the other hand, was very interested in the increased dimensions and thought that they should be allowed throughout the EC. The Commission later moved to withdraw this question from the negotiations since the ultimate intention was to change the EC's rules in this area. 24-meter truck combinations would be allowed for the time being and the issue would be re-addressed when and if Sweden decided to apply for EC membership.

In 1993, the Commission established rules for the size and weight of trucks. The Commission promised that member states would be allowed exemptions, if they could guarantee that haulage contractors from other countries would be competing under equal conditions.

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<sup>5</sup> EU-regulation 96/53EG

<sup>6</sup> Ministry for Foreign Affairs, report February 2, 2003

<sup>7</sup> European Legislative Virtual Library,

[http://elvil.sub.su.se/datal/sw/plaza.d/lcentre.d/europe.d%20\(old\)/vcases.d/case2/6a.html](http://elvil.sub.su.se/datal/sw/plaza.d/lcentre.d/europe.d%20(old)/vcases.d/case2/6a.html)

## 6. Why Two Lumber Shipments Almost Became Three

Before the EC election in 1994, some people claimed that the standard for shorter trucks was an additional argument as to why Sweden should abstain from membership in EC. An adherent to this school of thought was Per Gahrton of Sweden's Green Party:

“The EC only permits trucks a net weight of 40 tons and 18.35 meters length, while Sweden allows a net weight of 60 tons and 24 meters in length. Today the annual felling of timber (70 million cubic meters forest) requires 1,888 trucks. EC regulations would require an additional 1,112 tractors for the same volume. A favorable situation for the trucking industry perhaps. But more expensive for the forest industry. And the environment. The emissions of carbon dioxide would increase by 50 percent.”<sup>8</sup>

The Swedish Transport Research Institute (TFK) provided calculations that supported this reasoning. Shorter truck lengths would mean that lumber vehicles could no longer take two lumber packages on their trailers. The boundary for the area that is profitable for lumbering would move closer to the industries along the coast. As a result, the forest industry would try to relocate in order to gain proximity to the larger markets in the south. It would no longer be profitable to carry on forestry practices in certain areas in northern Sweden and the EU would then be forced to disburse large regional subsidies. In addition to the environmental arguments, it was in the financial interest of the EU to permit Sweden and Finland to retain their longer vehicles.<sup>9</sup>

The official Swedish calculations demonstrated that if Swedish trucks were required to adhere to EC standards, truck transport would increase overall by 16 percent, resulting in a nitric oxide increase of 21 percent.<sup>10</sup>

## 7. Pressure for Change in the Rest of the EU

In January 1995, upon entrance to the EC, Sweden modified its road regulations in accordance with their exemption from EU standard dimensions. These regulations allowed trucks from the continent to connect with other trucks, thus forming longer units. This method is the so-called modular system and enables trucks to achieve Swedish maximum length requirements. This modification dispelled the myth that longer Swedish trucks would decrease competition in the industry. For practical purposes, a maximum length of 25.25 meters was chosen which is the equivalent of a tractor with a trailer of 13.5 meters and a 7.82-meter swap body.<sup>11</sup> Finland also referred to this exception in order to retain their right to use longer trucks.

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<sup>8</sup> Gahrton, Per: Handbok för EU-tvivilare

<sup>9</sup> Ibid

<sup>10</sup> European Legislative Virtual Library,  
[http://elvil.sub.su.se/datal/sw/plaza.d/lcentre.d/europe.d%20\(old\)/vcases.d/case2/6a.html](http://elvil.sub.su.se/datal/sw/plaza.d/lcentre.d/europe.d%20(old)/vcases.d/case2/6a.html)

<sup>11</sup> Ibid, and Dagens Industri January 13, 2001

In July 1996, the EU's Council of Ministers agreed to formalize and generalize the exception rule (article 4, paragraph 4), which, in principal, allowed all member states the right to implement Swedish length standards and the Swedish modular system.<sup>12</sup>

At the same time, the Council of Ministers encouraged the Commission to conduct a report which would illustrate "whether it can be justified for longer trucks to be used in countries other than Sweden and Finland, and what the effect would be on international competition in light of the principals for harmonizing and stabilizing the dimensions of road transport vehicles".<sup>13</sup>

At the end of the year 2000, the Commission presented the Green Paper: "Towards a European strategy for the security of energy supply." However, the previously requested report was not included in this document. The Swedish Road Haulage Association response stated that, "allowing longer vehicle combinations in transport throughout EU would lead to reductions in carbon dioxide emissions".<sup>14</sup>

On April 17, 2002, Denmark (Road Safety and Transport Agency) submitted a formal inquiry to the Commission requesting the date on which the report would be available. The Commission responded on May 3, 2002, that they could not see any reason to conduct the report since the member states had not expressed any particular interest in such a report. In another letter dated September 26, 2002, the Danish Road Safety and Transport Agency emphasized the importance of the report previously requested by the Council of Ministers. On October 17, 2002, the Commission replied that they would consider an appropriate time to initiate the study.

The Swedish forest industry is a major force behind the campaign to change truck lengths from EU-standards to Swedish standards. The Swedish forest industry writes in the 2003 annual report: "If larger modular vehicles were permitted throughout Europe, there would be fewer trucks on the roads, resulting in significant reductions in congestion and emissions. That is why the Nordic countries have ardently expressed their wishes for the EU Commission to conduct a study of the effects that the introduction of modular vehicles would have on the entire transport system."<sup>15</sup>

In March 2004, the Danish Traffic Ministry encouraged the Danish government to submit an updated request to the Commission and to look for support for this idea in other Nordic countries, as well as in the Netherlands and possibly Germany.

## **8. Which Countries are Leading the Way?**

The EU member states (those who were members before May 1, 2004), with the exception of Sweden and Finland, have declared that they do not intend to introduce a system of modular

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<sup>12</sup> EU directive 96/53EG

<sup>13</sup> Danish Ministry of Traffic: Modulvogntog, internal study. 2004:03

<sup>14</sup> Swedish Road Haulage Association, commentary on European Commission's Green Paper: Towards a European strategy for the security of energy supply. <http://www.sa-iinfobank.nu/Remissvar/0000E09F-80000001/000D1E3B-004C4D2D?Templates=Printable>

<sup>15</sup> [http://www.krisberedskapsmyndigheten.se/verksamhet/forskning/utveck1\\_trpt.pdf](http://www.krisberedskapsmyndigheten.se/verksamhet/forskning/utveck1_trpt.pdf).



vehicles until a report by the Commission is presented. However, several member states have conducted trial studies with Swedish-Finnish truck lengths. The trials have been gradually expanded, which means that the EU now has a good deal of experience with longer trucks.

## 8.1 The Netherlands

Since January 2000, a trial with the 25.25-meter modular system has been in progress. Four haulage contractors are participating in the trial, which takes place primarily between the freight terminal at Rotterdam's harbor and Waalhaven.

In December 2003, the Dutch Parliament agreed to expand the trial to 300 full-length trucks with a maximum weight of 60 tons. It is mandatory for the trucks to be equipped with anti-lock brakes. Up to 100 haulage contractors are included in this program and these trucks may access the entire Dutch expressway system, which covers 2,250 kilometers. Additionally, these full-length trucks are permitted to drive on roads that are within 20 kilometers of the expressway with the exception of city centers and small towns. The trial was initiated on February 1, 2004, and will continue until November 1, 2006.

## 8.2 Germany

Since 1986, authorities have allowed transport with trucks that are approximately the length of Swedish trucks between Hamburg and Lübeck. The volume has increased annually and the haulage contractors are now encouraging authorities to expand the permit to include Bremerhaven.

## 9. Advantages of Swedish-Finnish Truck Lengths

Allowing 25.25 meter trucks with a total weight of 60 tons throughout the EU would lead to a number of advantages, some of which are directly related to politically stipulated objectives that are currently difficult to achieve:

- **Carbon dioxide emissions are reduced.** Longer vehicle combinations improve fuel efficiency by an average of 20%, which fully corresponds with a reduction of greenhouse gas carbon dioxide. This would facilitate the EU and its member states in reaching the targets set by the Kyoto Protocol.
- **Other harmful emissions are reduced.** EU regulations for truck emissions have become more restrictive, yet emissions of particles, for example, continue to cause serious health problems. Current air quality limits for emissions related to truck traffic are exceeded on a local level. Reducing the number of trucks on the roads would lead to a reduction in these emissions as well.

- **Congestion is reduced.** Two trucks of Swedish-Finnish dimensions can carry a load equivalent to the load carried by three EU-standard trucks. An EU-wide introduction of longer trucks would reduce congestion on the European road network and alleviate the need for extensive investments in road infrastructure related to transport.

The Swedish Transport Research Institute estimates that trucks of Swedish length standards could carry out as much as a third of today's truck transport. Seen in this light, the above advantages are extremely important. We will examine this argument more closely below.

## 9.1 Congestion is Reduced

When the total length of a truck increases from 18.75 to 25.25 meters, the volume of freight per truck increases by approximately 40 m<sup>3</sup>. According to the Swedish Transport Research Institute, this is the equivalent of an increased capacity per truck by 40-60 percent (the Danish Ministry of Traffic reports 37 percent<sup>16</sup>). However, transports will not be reduced at exactly the same rate since the increased capacity is not always used to its full extent.

According to the Swedish Transport Research Institute using longer trucks would reduce the number of trips taken for international truck transport by an average of 32.7 percent compared to current figures.<sup>17</sup> The results vary between 28 and 35 percent depending on which routes the haulage contractors use.

## 9.2 Carbon Dioxide Emissions Are Reduced

Based on a study from the Swedish Transport Research Institute, fuel consumption decreases on average by 14.3 percent for goods transported on trucks of Swedish length, resulting in a corresponding reduction in carbon dioxide emissions. The variations caused by different driving routes are quite moderate ranging from a 12.9 to 15.3 percent decrease in fuel consumption and carbon dioxide emissions.

Calculations are based on the presumption that both the extra length and extra weight are used to their full advantage. In reality, the extra weight (total 60 tons) will seldom be used to its full capacity since a large portion of goods transported by truck are highly processed and have a relatively low weight per cubic meter. Transport that takes advantage of the larger volume available but is of lower weight will actually reduce carbon dioxide emissions even more than the figures quoted here.

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<sup>16</sup> Minister of Traffic: Modulvogn tog, internal report. 2004:03

<sup>17</sup> Transport Research Institute: Improved Performance of European Long Haulage Transport. Report 2002:6E

Previous to Sweden's admission to the EU, the Transport Research Institute calculated that emissions of carbon dioxide would increase by 900,000 tons, or 20percent, if Sweden were not given an exception for using longer trucks.<sup>18</sup>

### **9.3 Other Harmful Emissions Are Reduced**

Emissions of harmful gases are currently being reduced in proportion to the reduction of carbon dioxide emissions for trucks involved in international transport (see above).

Previous to Sweden's admission to the EU, the Swedish Transport Research Institute calculated that if Sweden were not given an exception for using longer trucks, emissions of nitrogen oxide would increase by 14,000 tons, the equivalent of a 25percent increase.<sup>17</sup>

## **10. A Discussion of Counter-Arguments**

The following are the most common arguments presented by those who oppose implementing Swedish length standards for trucks in all of the EU:

- Increased risk of accidents
- Longer trucks 'steal' goods away from rail transport
- Infrastructure needs to be expanded
- Road wear increases

### **10.1 No Increase in Risk of Traffic Accidents**

In a rear-end collision full-length trucks are somewhat more aggressive than shorter trucks. Additionally, the risk of accidents increases slightly when vehicles attempt to overtake longer trucks. The Swedish National Road and Transport Research Institute (VTI) has shown that the difference between accident risks for overtaking a vehicle that is 18 versus 24 meters long, is so small "that the statistics are not significant".<sup>19</sup> A similar study from Finland, where 25.25-meter trucks were compared to 22-meter trucks, also showed that the difference in accident rates was so small that it was not statistically significant.<sup>20</sup>

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<sup>17</sup> Transport Research Institute: Improved Performance of European Long Haulage Transport. Report 2002:6E

<sup>18</sup> European Legislative Virtual Library,  
[http://elvil.sub.su.se/data1/sw/plaza.d/1centre.d/europe.d%20\(old\)/vcases.d/case2/start.html](http://elvil.sub.su.se/data1/sw/plaza.d/1centre.d/europe.d%20(old)/vcases.d/case2/start.html).

<sup>19</sup> VTI report 76:103

<sup>20</sup> VTT: Effects on road safety of increasing the length of articulated lorries.

Both of these factors are neutralized by the fact that the total number of trucks on the road would be greatly reduced by the use of longer trucks. According to the Danish Ministry of Transport, this is extremely significant because it indicates that the safety calculation, taken as a whole, is positive accident rates decrease when there are longer but fewer trucks.

Previous to Sweden's becoming a member of the EU, Hjalmar Strömberg, then Director of the Swedish Ministry of Transport, estimated that fatal traffic accidents would increase by 1.4 percent or 10 people per year, if there were to be an increase in the number of trucks on the roads as a result of lowering the maximum length standards.<sup>21</sup>

The rate of accidents where heavy vehicles are involved could be reduced further with an introduction of a European standard for truck deformation zones. The member states have a great interest in proceeding with the proposal for deformation zones. A deformation zone in the front of a truck can be easily incorporated in the EU directive 97/27, which regulates certain extra equipment for vehicles.

Traffic safety can improve further with the installation of already existing safety techniques. Electronic Braking Systems (EBS) are especially effective for long transports since the delay before air pressure brakes activate is longer the greater the distance is to the rear axel. Adaptive Cruise Control lowers the risk for rear-end collisions and are more pertinent the heavier the vehicle is, while systems which prevent trucks from driving over passenger cars (Front Underrun Protection System, FUPS) are relevant for all trucks.

Electronic Stability Program (ESP) is particularly beneficial for vehicles that have a tendency to overturn. This device is actually more relevant for vehicles with shorter distances between axels but obviously lowers the risk of accidents for trucks of Swedish dimensions as well.

## **10.2 Competitiveness of Rail Transport Unaffected**

An increase in the transport of goods by rail, whose carbon dioxide emissions are significantly lower than the emissions from trucks, would help to halt the greenhouse effect. Based on this theory, the Swedish Left Party demanded in Parliament that standards for maximum truck length be severely reduced in order to increase the competitiveness of the railway system.

However, the harsh reality is that truck traffic is growing steadily. According to the EU Commission it will have increased at a rate of 38 percent between 1998 and 2010. Shortening trucks will only lead to further environmental deterioration. The majority of truck transport within the EU does not compete significantly with the railway, since it deals primarily with the transport of highly processed volume freight.

The proposal to permit the modular system of 25.25-meter vehicles would reduce emissions and is designed for easy reloading between trucks and rail cars. This provides ideal conditions for both business and political authorities to insist on the use of the most environmentally friendly

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<sup>21</sup> Ibid

transport alternatives and for stimulating an increase in the use of combined transport – truck-train-truck. The objective is to view future logistical solutions as chains of transport where all modes of transport will be used and evaluated based on environmental, economic, and sustainability factors.

### **10.3 No Need to Expand Infrastructure**

The argument that it is necessary to increase space for turns and maneuvers is not relevant because neither 25.25-meter trucks nor 18.75-meter trucks are expected to drive in city centers or other crowded areas. Full-length trucks of just over 25.25 meters are already in use on smaller roads in Swedish forests.

In 1998, a vehicle manufacturer developed a 28-meter long prototype, which was as efficient to maneuver as conventional EU-trucks. The maneuverability was attributed to a steering system that used four of the eight axels. We are not advocating such long trucks but believe that the technical solutions can be transferred from this prototype to the 25.25-meter trucks, thus further improving their performance.

Freight from long trucks must be reloaded to smaller vehicles for transport to smaller roads and city centers. This is the existing practice also with 18.75-meter trucks, which means that no new reloading centers would be necessary.

In conclusion, it is not necessary to modify the existing infrastructure for the use of longer trucks. On the contrary, the need for new infrastructure decreases since fewer trucks on the roads would reduce traffic congestion.

### **10.4 No Increase in Road Wear**

It is not a vehicle's total weight that is relevant when assessing the effects trucks have on road wear, and when considering accidents caused by these deteriorated road conditions. It is more essential to consider the weight per axel, as well as total weight passing over the road. The EU's limit of 11.5 tons of axel pressure is, therefore, more relevant when looking at the effects of road wear than limiting total vehicle weight.

The most common 25.25-meter modular truck systems have seven or eight axels compared with 18.75-meter trucks, which have five or six axels. Consequently, the longer modular systems have a lower average weight per axel and the total weight that a road is exposed to is considerably reduced when every third truck is removed from the roads throughout Europe.

The Swedish Transport Research Institute (TFK) asserts that combinations of longer trucks would lead to less wear and tear on the roads compared to today's dominant European truck

combinations. They also state that it is difficult to draw any definite conclusions because “the differences between various combinations are so small that they are almost negligible”.<sup>22</sup>

## 11. Conclusions

This compilation of existing information demonstrates how the introduction of Swedish-Finnish truck lengths would contribute to a reduction in the emissions of the greenhouse gas carbon dioxide as well as other harmful materials. Road congestion would simultaneously decrease, as would the need for new infrastructure. This could be achieved without any increase in the risk for accidents or road wear and tear.

Therefore the issue of extending the Swedish-Finnish exemption should be of interest for both the Swedish and European environmental movements, as well as for those governments of the EU who aim to take a leading role in efforts to improve the environment, either because they find it difficult to fulfill their commitments under the Kyoto Protocol or because they strive to reduce the number of trucks on the roads.

A first step in this process is to demand that the EU Commission immediately issue a report on the projected consequences of permitting all countries to use Swedish-Finnish length trucks, as previously requested by both the Council of Ministers and the Danish government. Conducting such a report should be relatively easy for the Commission since a large part of the work has already been done in the form of studies of the Swedish and Finnish experiences, as well as the experiences from the Dutch and German trials.

The Netherlands and Germany should consider expanding their trials and other member states, which want to be in the lead, should initiate similar trials. These trials should be examined in detail, and the results should be analyzed in relation to the effects on global climate change.

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<sup>22</sup> Transport Research Institute: Improved Performance of European Long Haulage Transport. Report 2002.6E. TFK bases part of their study on Scania’s internal report, “Study of the road wear of extra long vehicle combinations” (C117/41B)