UNITED NATIONS **E**

Economic and Social Council

Distr.
GENERAL

TRANS/WP.24/2002/8
6 February 2002

Original: ENGLISH

ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

Working Party on Combined Transport
(Thirty-seventh session, 18 and 19 April 2002,
agenda item 11)

NEW DEVELOPMENTS IN THE FIELD OF COMBINED TRANSPORT IN UNECE MEMBER COUNTRIES

Comparative Analysis of Energy Consumption and CO_2 Emissions of Road Transport and Combined Transport Road/Rail

Executive Summary

Transmitted by the International Road Transport Union (IRU)

Note: The secretariat reproduces below a communication transmitted by the International Road Transport Union. The full text of the summary will be available at the session.

* * *

1. How much energy does the combined transport road/rail consume compared to pure road transport? And how much CO2 is thereby emitted on typical relations in European freight transport? In this study, the transport of containers, semi-trailers and complete trucks (rolling road) on currently realized transport processes were investigated, using typical load factors and transport distances of 14 European relations. Feeding and delivery as well as shunting and intermodal transfer were considered.

2. Energetically, the container transport is the most favorable transport option. In these in-stances, the rail transport consumes only 50 per cent of the primary energy demand of a road transport per relation. Moving towards a transport of the entire truck, the primary energy demand increases. For the rolling road, the primary energy consumption of combined transport is almost equal to pure road transport.

3. On specific relations, deviations negatively influence the result of the comparison. Such deviations occur frequently for combined transport, particularly if feeding and delivery processes in opposite directions are required. In road transport, deviations are, for instance, due to political, administrative or fiscal restrictions especially on transalpine road transports.

4. The better the load factor, the lower the specific consumption. A low load factor can reduce the advantage of rail transport or even reverse the result. The truck will only be operated when a container transport is required, whereas a train is operated according to a schedule and is thus not necessarily fully loaded. However, the load factor data used in this study is mainly based on actual, commercially interesting routes with high effective load factors up to 90 per cent. Principally, the carbon dioxide comparison is influenced by the same parameters as the primary energy demand. In addition, the electricity mix is of increased importance. Electric rail transport benefits from large shares of electricity produced with almost zero CO2 emissions in some countries (hydropower in Austria and Switzerland, nuclear power in France, but also in Germany and Switzerland). Therefore, the CO2 comparison of combined transport road/rail and pure road transport is generally more favorable than the comparison based on primary energy. In other countries, such as the Czech Republic, the high share of hard coal and lignite leads to a less favorable CO2 result for rail transport. In conclusion, the energetic and CO2 advantages of combined container transport rail/road over road transport in empirically investigated relations was confirmed. This advantage is, however, lower than commonly assumed and published in political statements. The advantage is further reduced when the entire truck is transported on the train, when the load factor of the train is low or when the distances of deviations in feeding and delivery are high. The use of fossil energy carriers for electricity production, especially those with a high carbon content, reduces, the use of renewable energy carriers enhances these advantages. These limitations should be carefully taken into account when a shift of freight transport onto the rail is demanded.
