



EXECUTIVE SUMMARY

DIFFERENT WP8 analyses conditions and options for further differentiation of fixed taxation and distance based charges that Member States levy on road freight transport.

The understanding of reactions of road hauliers to toll differentiation on motorways is the main focus of Task 8.1 and of the present deliverable. The issue is investigated in two different manners:

- ex-ante simulation of impacts of further toll differentiation on the motorway section of the Brenner TEN-T corridor with a substantial proportion of long distance HGV traffic, supported by surveys among road hauliers (on the Brenner and in Germany) and desk analysis of existing parameters;
- ex-post analysis of early evidence from the Swiss and German schemes to levy distance based charges on HGV.

The present deliverable illustrates the following task 8.1 activities:

- Review of road freight elasticity parameters, based on existing published literature. The body of evidence on freight elasticities is relatively small and relatively non homogenous, making it difficult to draw overall conclusions about the price-responsiveness of freight. The literature points towards an order of magnitude somewhere between -0.5 and -1.5 , indicating that the often-held assumption that the demand for road freight is relatively price inelastic is not always a safe assumption to make. For example, there is some evidence to show that, whilst road transport tonnage demand is inelastic, it is elastic when computed in tonne-km, and that long-distance road freight exhibits higher elasticity values than does short distance. Hence, the elasticities reported here can serve as useful cross-checks and supporting evidence when seeking to understand freight user responses to price differentiation. However, elasticities generally provide little information relating to whether travel times are altered, vehicles are changed or vehicles are switched to other routes. For this kind of detail, surveys and models are necessary and it is to these aspects of work that are considered next.
- The aim of the surveys of road hauliers' perceptions and behaviour is to explore operators' reaction to further differentiation of charges (modal and route shift effects, impact on location decisions, effects on fleet: fleet renewal and emissions, etc.). The survey involved 17 transport operators, 8 from Italy and 9 from Poland. The main results are the following:
 - Tolls are not considered by the operators as the main problem or aspect of freight road transport, compared to road congestion and road quality (maintenance); this is probably due to the fact that road tolls account for less than 10% of the total production costs.
 - The extension of toll differentiation on other corridors or on a whole road network could have relevant effects in terms of vehicle class and emissions (fleet renewal), which are also the actions that operators are willing to adopt (probably due to the fact that they are also required to renew fleets for other reasons, for instance operation costs).
 - Differentiation based on time of day/night could have positive effects both on corridors and whole networks; nevertheless, it would have some problems in terms of acceptability from transport operators, as well as from the general population (even though local population was not involved in the survey). Major problems of acceptability are expected also in the case of differentiation by period of the year.
 - The extension of toll differentiation to whole networks seems to be more effective than the introduction of the same policy on selected European corridors. Effects of further extensions of toll differentiation can be expected in the long term, with smaller or less relevant effects in the short term.
- A TEN-T Brenner corridor transport model was developed to perform ex-ante analysis of the impact of differentiated charges on transalpine freight transport. The Brenner corridor is one of the main gates for transalpine traffic for both passengers and freight. Thus, a significant amount of crossing demand contributes to the traffic on the tolled motorway connecting Verona to Innsbruck and beyond (Verona and Innsbruck generate and attract some demand, but a large share of traffic is generated and destined to other zones). At the same time, especially in the



Italian part, the corridor crosses areas where population and activities are intensively located, so that the road corridor is also used for (relatively) short-distance trips within the study area. A national road runs parallel to the motorway and can be considered as an alternative route (of course especially for local trips). A major railway is also available on the corridor and a new rail tunnel is planned within the TENs projects. The model is designed for analysing the impact of road tolls differentiation and deals with several alternative tolling schemes based on elements like travel distance, vehicle type, etc. providing with the impacts on route choice and mode split.

- The Swiss scheme for charging HGV has been analysed, with special reference to impacts of fee differentiation with regard to the emission category on haulage companies. The case study is developed through a desk analysis based on existing statistical figures and a survey among stakeholders: shipping companies, haulage companies, companies of branches with high transport intensity, rail transport operators, road transport associations, truck dealers. The main results are the following:
 - The road freight transport sector is characterised by strong competition. In such an environment, incentives set by differentiated charges have a large impact on the behaviour of the “target group”. Cost reducing measures must be exploited in order to preserve the own competitiveness. In the Swiss case, such cost reducing measures could be observed in purchase and investment decisions as well as in decisions concerning the use of vehicles. The impact on the latter is probably the strongest effect of Heavy Vehicle Fee (HVF) differentiation.
 - The HVF differentiation – as is the HVF itself – is a bigger challenge for small haulage companies than for larger ones. In an environment of strong competition the haulage companies will not be able to fully pass the cost increase caused by new charging regimes on to the shippers. Small companies will have more difficulties to compensate this development with productivity gains.
 - The Swiss case study illustrates the relevance of the interplay between a charging regime and the regulation framework in the same policy field. The regulations concerning the emission standards for new vehicles partly dominated the incentives set by the HVF differentiation. An integrated policy strategy should consider both fields of state intervention in a co-ordinated way. Because a differentiated charge leaves more flexibility for efficient adjustment than regulation (e.g. fixed standards), one could argue that the charge differentiation in favour of less polluting vehicles should more clearly precede regulations than in the case of the Swiss HVF.
 - The impact of charge differentiation does not only depend on the incentives set by the charge but also on other factors (e.g. cost differences, financing restrictions). This fact increases the inefficiency problem, if the spread of the differentiation is not related to the ecological performance of the vehicles but set in political negotiations. Countries leading the way in introducing differentiated user charges may affect neighbouring countries.
- Analysis of data published before and after the introduction of the German Heavy Goods Vehicle (HGV) charging scheme provides an historical background and description of the German HGV toll scheme, and the effects of the tolling system on revenues, load factor of the vehicles, composition of the fleet, route diversion and modal shift have been analysed. The main results are the following:
 - The German HVF scheme is the first step in Germany in the direction of user infrastructure financing. It can be concluded that not all toll aims have been achieved.
 - Revenues are raised according to plan; environmental aims are only partly achieved with a long-term trend of a decreasing number of no-load trips and the increased use of environmentally friendly vehicles.
 - Success concerning other aims, such as modal shift, is not recognisable at all. As a consequence of such reactions, some politicians and lobbyists, but also scientists, call for an extension of tolls to the secondary road network and second to extend toll to all vehicles over 3.5t.
 - In addition, there are phenomena of toll avoidance as well as user reactions in direction of using vehicles under 12t.