

**Deliverable 7.1 Summary of Selected Practise of Charging in the Rail Sector****Executive Summary**

Since the adoption of Directive 2001/14, which requires rail infrastructure charges to be based on the marginal cost principle, the majority of Member States have developed and implemented such systems of rail infrastructure charges. However, the ways in which Member States are basing their systems on marginal cost principles differ from one country to the next and a diversity of approaches has developed.

Whilst concerns regarding user reactions have featured in the debate about rail infrastructure charging systems, they have not been the subject of detailed research. There is, for example, no research to estimate infrastructure charge elasticities and no research into how train operators perceive and interpret different charging structures; i.e. whether they can interpret highly differentiated, complex regimes or whether there may be a necessity to keep things simple. A further apparent gap in the research on rail infrastructure charges relates to the issue of how operators pass on their costs to end-users – that is, passengers and freight forwarders - and how different infrastructure charging regimes impact on charges to end users.

There are likely to be differences between reactions and impacts within the passenger as compared with the freight market. Freight is, in European rail systems, often a marginal activity, which is fitted around the passenger services. Freight may be more flexible, at least for some flows, in that the time windows it operates in are less constrained than for passengers. Furthermore, freight tends to be, and it would appear to increasingly be, more international in its nature than passenger services. This then leads to the necessity for operators to interpret several, sometimes very different, systems of infrastructure charging as they pass through two or more countries.

The diversity of infrastructure charging regimes that exist throughout Europe is, in one sense, a good opportunity to undertake comparative research in this area. That is, Europe provides a real world laboratory, in which the attributes and impacts of one system can be compared and analysed in relation to one or more others. However, it is not only infrastructure charging regimes that differ across different countries; differences in respect of subsidy to the industry, regulation of the industry, market entry and competition serve to cloud the issue somewhat. Hence, there is a rich set of situations to draw on for research purposes, but with this comes a set of varying contexts that need to be controlled for somehow.

Workpackage 7 of the DIFFERENT project intends to develop a better understanding of the ways, in principle and in actuality, in which users react to differentiated charges in the rail sector and propose a methodology for determining appropriate levels of differentiation. Six case studies will be drawn from those Member States that have been most active in the areas of rail charging. The types of differentiation investigated will be linked to the experiences in the case studies.

The research focuses mainly on rail infrastructure charges, rather than on charges to end-users, on the basis that there is less existing research into reactions to rail infrastructure charges and that it is this area that is thought to be more directly relevant to the European Commission. Nevertheless, the latter is also considered, in part because of the link that one might expect there to be between charges faced by and levied by train operators and, secondly, for any insights that may be relevant for rail infrastructure charges.

The objectives of the work are as follows:

- To develop a better understanding of how users and, to a lesser extent, end-users react to differentiated charges in the rail sector – that is how train operators react, in terms of their choices about vehicle type, route, volumes etc, to differentiated rail infrastructure charges and, to a lesser extent, how passengers react to rail passenger fares and freight forwarders react to freight forwarding charges.

- To investigate the limits to the differentiation of charges, in terms of users' capacity to react, geographical issues, equity considerations etc.
- To contribute to a methodology for determining the appropriate degree of differentiation and, specifically, to use this methodology to make recommendations as to the appropriate level of differentiation of charges in the rail sector – balancing the needs to manage traffic levels, minimise external costs and meet revenue requirements.

This deliverable is an interim report. The work reported here has comprised several linked activities. From the outset there was a review and analysis of existing research and policy literature relevant to charge differentiation and the rail sector. A report of this review is set out in section 2. It encompasses material from both academic and other sources. This has been followed up with a series of 'real world' case studies in several European countries. As part of these case studies, interviews have been undertaken with infrastructure managers, regulators and passenger/freight operators in the different countries.

Drawing on the literature and the case studies, consideration has been given to the identification of changes in pattern of operations linked to infrastructure charges, towards developing a greater understanding of responsiveness and broad degree of charge elasticity. This deliverable reports on these activities, and seeks to point ways forward to the next phase of work in the subsequent tasks.

In the case studies, information has been gathered about the main input under study, i.e. infrastructure charge categories and levels. But there is very often a lack even of the basic information about precise infrastructure charge quantities (i.e. train-paths, or train-km) bought for each category. And many of the other elements are viewed by train operators as being commercially sensitive; even the price levels are often not precisely observable, due to yield management techniques introduced in preparation for competition in the rail market.

Hence, a systematic analysis of the impact of infrastructure charge differentiation seems an extremely difficult prospect at this point. Disentangling the impact of charges from the impacts of all of the other significant influences on the rail market, amidst a diversity of charging regimes and contexts, with a limited supply of detailed data, would appear to be highly problematic.

The rail market is comprised of many different sub-markets, and there are potentially different scales of impacts in different sub-markets. In actuality, it appears to be the case that, in many situations, operators have relatively limited scope to adapt their supply policy and their tariffs in response to infrastructure charges. For instance, where services are franchised, e.g. as is the case with regional passenger services in Germany and with nearly all passenger services in Britain, services are quite closely defined by the terms of those franchises. Hence, there is limited scope for operator response to infrastructure charges during the life of the franchise. However, charges may serve to influence the terms of franchises, either through franchising authorities examining the implications of the charges for the services they wish to specify or through the terms of the franchise bids submitted by competing operators. This mechanism for response, being contained within the planning process, is very difficult indeed to tap into.

In some situations, there may be no reaction at all on the part of train operators, due to mechanisms of compensation being in place. For instance, again where services are franchised it is common (and reasonable) for the terms of that franchise to require operators to be compensated by the franchising authority for any changes in infrastructure charges during the course of the franchise. Again, it may be possible to tap into the impacts as they relate to the franchising authority, but this would again be expected to be problematic.

Nevertheless, whilst reactions may be difficult to analyse and, in certain situations, relatively limited in scale, the interviews did uncover which sorts of parameters have been affected. Main reactions observed were in relation to:

- Design and choice of rolling stock;
- Suppression of unnecessary path reservations, when reservation charges were introduced in France.

There was some interesting discussion of the share of train operating costs comprised of infrastructure charge-payments, and the authors have come to the view that the scale and form of reaction to infrastructure charges is likely to depend crucially on these cost shares. The cost shares for the use of infrastructure vary markedly across the interviewees in different countries. In general, the share of infrastructure charge costs as a proportion of train operating costs was reported to range between 10% and 30%. However, in Sweden the cost share was estimated at approximately 5%, whilst in Germany some operators estimated it to be as high as 60%.

Almost all participants indicated elasticities greater than one. There are reasons to doubt whether elasticity in all cases is greater than one, since the interviewed persons represent at the same time the interests of their industry, and therefore it is natural that interviewed persons in such cases tend to exaggerate.

In all of our sets of interviews, freight operators indicated a greater degree of sensitivity to infrastructure charges than did passenger operators. In general, rail freight tends to be privately operated, has experienced more open access competition and receives less government financial support than do passenger services, and together these factors may explain this apparent greater degree of sensitivity. In Britain, for example, there has been significant growth in the rail freight market since infrastructure charges for freight operators were revised – incorporating a marked reduction in their level – in 2001. The extent to which this growth is as a result of this revision is, however, not clear as other changes in the market have occurred simultaneously; nevertheless, it potentially offers an interesting line of further enquiry.

It must be noted that the data situation with respect to user reactions to differentiation of track access charges in rail is very problematic. Certainly, the charges themselves are public (although in freight some are the subject of private contracts), but the necessary data to analyse the reactions of the train operators with respect to output quantity (e.g. train kilometres), costs and adjustment of production processes (choice of path or of type of rolling stock etc.) are extremely unsatisfactory or none existent.

For further systematic analysis in this area, one might, ordinarily, seek to employ some form of econometric or statistical modelling exercise. However, for this, one would require detailed cost and demand statistics at the train operator level, and this would appear not to be available to the project partners.

Given the difficulties outlined, particularly in relation to data, the proposal is that the next phase of work seeks to pursue the following streams of work:

- Case study and qualitative work focused on the Freight market in Britain and on the role of Regional factors in Germany;
- Aggregate analysis, along the lines of that set out in the above paragraph;
- Representation and analysis of the downstream market using Quinet and Meunier's techniques (perhaps in combination with the aggregate analysis); and
- Theoretical and conceptual modelling.

The outcome will certainly be a greater understanding of the user reactions to differentiated charges, though it is likely that the data unavailability will make any indications of elasticity values somewhat approximate and tentative.