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Helsinki Region Congestion Charges

Summary and conclusions

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Abstract

The study, carried out in 2010 in wide-ranging cooperation between different stakeholders in the Helsinki region, provides a follow-up to the Helsinki Region Congestion Charging Study released in 2009. The purpose of the study is to examine whether the objectives set for the transport system in the region could be better achieved through a system that uses congestion charges than a system that does not use any. Separate studies on the impacts of congestion charging on transport, social equity, land use and goods transport were also conducted.

The examination was performed by comparing a transport system including congestion charging (the congestion charging scenario) with the draft version of the Helsinki Region Transport System Plan (the HLJ 2011 draft) which does not include congestion charging. The congestion charging scenario and the HLJ 2011 draft were compared with the 0+ alternative in which the transport system is developed at a lower level of funding than in the other alternatives. The comparison alternative used, the 0+ alternative, was created in the HLJ 2011 draft in the impact assessment at the strategic level.

Based on the comparison of the different alternatives, it can be concluded that a transport system including congestion charging helps achieve the objectives set for the Helsinki region transport system better than a transport system without congestion charging.

SUMMARY AND CONCLUSIONS

The purpose of this study was to explore whether the objectives set for the Helsinki region transport system could be better achieved through a system that uses congestion charges than a system that does not use any.

The examination was performed by comparing a transport system including congestion charging (the congestion charging scenario) with the draft version of the Helsinki Region Transport System Plan (the HLJ 2011 draft) which does not include congestion charging. The congestion charging scenario and the HLJ 2011 draft were further compared with the 0+ base option in which the transport system is developed at a lower level of funding. The 0+ base option used was created in the HLJ 2011 draft for impact assessment at the strategic level.

In the base option, the transport system is developed through investment corresponding to the average level in the 2000s (i.e. some EUR 160 million/year). In the HLJ 2011 draft, the transport system is developed at a considerably higher level of funding as compared to the current situation: investment equals more than two times the present level. The transport system introduced in the congestion charging scenario is based on the HLJ 2011 draft with the difference that funding available for the transport system consists not only of present-level investment but also of congestion charging revenue. Furthermore, the congestion charging scenario includes fewer road projects than the HLJ 2011 draft as congestion charging reduces the need for such projects. In the base option, the average annual costs of transport system development (public transport provision and infrastructure development projects) amount to EUR 340 million, while in the congestion charging scenario the corresponding figure is EUR 550 million and in the HLJ 2011 draft EUR 590 million annually.

Three general objectives were set for congestion charging: improving traffic flow, reducing adverse effects of transport on the environment and providing funding for the development of the transport system. With these objectives in mind, the amount of the charge and the size of the area subject to it were defined. The congestion charging model examined was based on a charge collected in the entire Helsinki region on weekdays. The region was divided into two charging zones: the inner and the other zone. The inner zone consists of the area inside Ring Road III plus the ring road itself along with suburbs in its immediate proximity. The outer zone covers the rest of the region. The charge during peak periods was set at EUR 0.08/km in the inner zone and EUR 0.04/km in the outer zone. During inter-peak periods in the day-time, the charge was EUR 0.04/km in the entire region. Congestion charging revenue was estimated at EUR 250 million in 2020 and EUR 285 million in 2035.

The study is premised on the use of kilometre charges based on satellite tracking. The costs of the congestion charging scheme were not separately estimated in this study. The investment and maintenance costs of the charging scheme have a crucial effect on what type of system can be taken into use. If the congestion charging system seeks to provide funding for the development of the transport system, the implementation and operating costs of the system must not be too high. In this study, the starting point was that costs equal a maximum of 10% of the revenue generated by congestion charging.

The number of inhabitants and jobs in the Helsinki region will see a considerable growth during the next 30 years, which increases traffic volumes and congestion. Congestion, in turn, weakens the internal and external accessibility of the region, as well as its competitiveness. Problems relating to the functioning of the transport system become a bottleneck in the advancement of the region, if measures are not taken to develop the transport system. In the base option, there is a significant rise in the total number of vehicle-kms driven, which results in increased congestion and travel times, and declined traffic speeds.

With the help of investments included in the HLJ 2011 draft, the increase in traffic volumes can be managed quite well during the early part of the period under review. However, the flow of traffic declines considerably by 2035. In the congestion charging scenario, on the other hand, there is no longer regular congestion after the charges have been taken into use, but towards the end of the period under review, regular congestion is back nearly at the current level.

In the base option, there is a trend-like decline in the competitiveness of public transport and its proportion of the trips taken. Targeted development of the HLJ 2011 draft is not enough to redirect the course of the entire region either, and the share of public transport grows smaller - only outside the Helsinki metropolitan area does it increase thanks to the joint ticket system. In the congestion charging scenario, however, the competitiveness of public transport improves and the share of trips taken by public transport becomes larger.

Traffic congestion has adverse effects on goods transport, too. These are the strongest in the base option and the smallest in the congestion charging scenario. For goods transport, congestion charges give rise to additional costs. On the other hand, improved flow of traffic boosts the efficiency of resource use, decreases fuel consumption and facilitates the planning of driving shifts. All in all, benefits to goods transport exceed the costs incurred by congestion charges.

Achievement of the reduction target of greenhouse gas emissions from transport and the direction which air-polluting emissions will take both depend on the development of vehicle and fuel technologies and motor-vehicle traffic volumes. The largest decrease in the number of vehicle-kms driven is seen in the congestion charging scenario, which is why its environmental impacts are the most positive of the alternatives.

The alternatives differ from each other also in terms of their social impacts. The base option provides the weakest opportunities for living without a car, and consequently, the areas for public transport, walking and cycling do not become larger. The total costs of mobility increase due to the dispersed structure and dependency on cars. In the HLJ 2011 draft, the development of public transport improves the accessibility of workplaces and services without a private car. All in all, life without a car becomes a more feasible option - also outside the inner zone, where areas for public transport, walking and cycling become larger. In the congestion charging scenario, vigorous development of public transport improves the accessibility of workplaces and services without a private car. Therefore, life without a car becomes more attractive, and walking, cycling and the use of public transport increase. Furthermore, due to smaller car traffic volumes, the urban environment becomes more pleasant than in the other

alternatives. Congestion charges entail higher costs for drivers but do not make the transport system less equitable or weaken the basic mobility of any population group to a significant extent because the rise in mobility costs is reasonable, and the daily price ceiling reduces any adverse effects. As a result of decisive measures to develop public transport, opportunities for mobility become better among people with low income.

In the base option, the development of the urban structure is divided into internal growth in the existing suburbs on the one hand, and the construction of single-family housing in sparsely populated areas, on the other. Land use intensifies in suburbs that are convenient for the current public transport network. The present-from public transport system, based on the development of bus transport, is not attractive enough to encourage more consolidated land use. The HLJ 2011 draft constitutes a systematic regional development package in which short and long-term measures complement each other. The coverage of areas for walking and cycling grow in the HLJ 2011 draft and in the congestion charging scenario, if land use progresses according to the targets. The congestion charging scenario promotes consolidation of the urban structure by increasing demand in the area where land use is efficient, and by slowing down the expansion of the region.

The trend in traffic safety is influenced particularly by how the amount of kilometres taken by car, on foot and by bicycle develops. Accidents on the roads and streets involving personal injury grow in the base option by 20% by the year 2020, and by 32% by the year 2035 while in the HLJ 2011 draft, the increase in the number of accidents is slightly smaller (18% and 28%, respectively). Congestion charges have a considerable impact on traffic safety. In the congestion charging scenario, the number of accidents increases only by 4% by the year 2020, and by 17% by the year 2035. The congestion charging scenario is the only alternative in which the number of accidents involving personal injury decreases per inhabitant.

The impacts of each alternative were assessed in terms of the HLJ vision and priority targets concretising it. The results of the impact assessment suggest that, as compared to the present situation, the congestion charging scenario clearly supports the vision set for the Helsinki region transport system in all areas. The HLJ 2011 draft, on the other hand, was found to support the vision in some respects, particularly at the early stages of the period under review, while the base option was not found to support achievement of the vision from any perspective.

Therefore, based on the comparison of the different alternatives, it can be concluded that a transport system including congestion charging helps achieve the objectives set for the Helsinki region transport system better than a transport system without congestion charging.