
Preface

Kenneth Button, Peter Nijkamp and Erik Verhoef

Transport affects the local and global environments in many ways. For a number of pollutants, the transport sector is the most important contributor to environmental externalities. Within member countries of the Organization for Economic Co-operation and Development, about 60% of the NO_x emissions, 80% of the CO emissions, 50% of the hydrocarbon emissions, 25% of the CO₂ emissions, and 50% of the lead emissions (virtually 100% in urban areas) originate from transport activities. Safety and noise are also often mentioned as important environmental external costs of transport.

Notwithstanding the central role that transport plays in modern societies, it is increasingly recognized that current and predicted trends in personal mobility and freight transport, on local, regional and global levels, pose severe threats to the environment, and more stringent regulation of transport seems inevitable if policy goals related to global environmental sustainability are to be pursued. The European Union's most recent 'Green Paper' on transport leaves little ambiguity in this respect when stating that '... given the severity of the problems, action cannot be put off [...and...] adjusting the structure of existing tax systems by bringing charges closer to the point of use is likely to generate significant benefits' (EC, 1995). Indeed, economic instruments, advocated by transport economists as an efficient means of regulating transport externalities since the days of Pigou (1920), now appear to have gained momentum also outside the academic world.

Such economic instruments are therefore a Leitmotif in this special issue, which is dedicated to the complex interactions between transport, society and the environment, with a special focus on the global environment. This special issue presents a collection of papers which, we think, provides a broad view of the work being conducted in this field. All of the papers, except that of Uri and Boyd, were presented at a conference on 'Transport and the Global Environment', which was held under the auspices of the VSB Foundation* in Amsterdam during February 1995.

The issue starts with a contribution from Dodgson, who sets the scene by discussing some relevant trends and the resulting major impacts of transport on the global environment. He then proceeds to discuss some of the major issues in the complex relationship between transport and the global environment, such as the valuation of long-term global environmental externalities (notably global warming and biodiversity), an assessment of the expected long-term impacts of a number of policy options, and a discussion of the political acceptability of fiscal measures.

The next contribution, by Nijkamp, Rienstra and Vleugel, also takes a long-term perspective. The paper discusses a scenario methodology (the 'spider model') for the evaluation of spatial, institutional, economic and socio-psychological developments in light of the tension between transport and environmental sustainability. Desired and expected scenarios are constructed through the assessment of expert opinions, and they

* The VSB Foundation is a Dutch funding organization supporting new and creative projects of general public interest in science, education, culture and the arts.

lead the authors to conclude that there are many roads for achieving a sustainable transport system but, whatever road is chosen, it will be hard to follow.

A number of contributions then follow studying the application of economic instruments to the regulation of transport externalities. Button and Rothengatter set out the basic nature of the problem and discuss current knowledge of the link between the physical sciences and relevant economic theory. Their paper focuses on the question of 'quasi-internalization' in the context of a global externality, namely global warming through CO₂ emissions.

Peirson and Vickerman present a model for predicting the effects of imposing efficient pricing on passenger travel in the UK, and, in an urban model, in London. Changes in demand for a number of modes are calculated, and the implied infrastructural investment needs are also considered. The authors are rather pessimistic about the impact of efficient pricing on emissions by transport, because long-term changes in their model primarily depend on the growth of income.

Next, Goddard considers the possibilities for an alternative economic instrument in the regulation of transport externalities, which is likely to provoke less social resistance than regulatory taxes. Looking at Mexico City, his paper studies the applicability of tradeable permits for controlling vehicle emissions and congestion. He concludes that the current 'No Driving Day' programme operating in the city can be modified to allow the implementation of a tradeable vehicle use programme, with an expectedly significant favourable impact on the cost-effectiveness of regulation.

The fourth paper on economic instruments is by Opschoor and Jones. Their analysis leads to a framework for developing climate-related economic instruments in transport. These may result in substantial economic savings, especially if approached internationally, and if distributional and institutional problems can be overcome.

These latter elements also play an important role in the paper by Rietveld, who takes a political economy perspective on environmental policies in transport. In particular, Rietveld presents a politico-economic model for analysing the social and political feasibility of environmentally friendly transport policies. Some theoretical considerations are discussed, and empirical illustrations are given for various aspects determining voters' attitudes and behaviour *vis à vis* transport policies.

The final paper in this issue, by Uri and Boyd, assesses the likely impact of a proposed reduction in fuel tax in the USA.

To conclude, this special issue brings together a number of interesting contributions to the literature on the important topic of transport and the global environment, and will therefore, we hope, be of interest to both scientists and policy-makers in this field.

Acknowledgement

The conference to which the papers collected in this special issue were presented was part of the VSB-fonds project 'Transport and Environment'. Financial support from the Stichting VSB-fonds is gratefully acknowledged.

References

- EC (Commission of the European Communities) (1995) *Green Paper Towards Fair and Efficient Pricing in Transport: Policy Options for Internalising the External Costs of Transport in the European Union*, Directorate-General for Transport, Brussels.
- Pigou, A.C. (1920) *Wealth and Welfare*, Macmillan, London.