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Environmentally Sustainable Transport in Germany

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Abstract

The study reported in this paper is part of an OECD project with several case studies in different countries. The purpose of the project was to look for possible ways to reduce the environmental impact of transport to a level which is compatible with sustainability. The participants in the case studies agreed upon quantifying criteria for carbon dioxide, nitrogen oxides and volatile organic compounds, which should describe environmentally sustainable transport (EST), and each case study constructed a business-as-usual scenario and three EST scenarios, considering the period from 1990 to 2030. Each EST scenario should meet the criteria in a backcasting effort, EST1 looking for solely technical solutions, EST2 restricting and shifting transport volumes while ignoring technological progress, and EST3 combining components of both strategies. In the German case study criteria were additionally quantified for particulate matter, noise and land-take for transport purposes. The German EST1 scenario is based on hybrid electric hypercars, hydrogen for public transport, freight and aviation, and electricity from renewable sources. In the EST2 scenario total transport activity for passenger and freight transport had to be reduced by 40% and 25% respectively, compared to 1990 in order to meet the criteria. In the EST3 scenario, while highly energy efficient conventional propulsion systems and engines were used, total passenger transport decreased only slightly and freight transport even increased. Implementation measures were then defined on the basis of the EST3 scenario. Emission regulation, fuel tax, and road pricing for heavy duty vehicles were the key features in order to achieve EST in this case study. They were complemented by additional sets of measures, designed to prevent urban sprawl, diminish freight traffic growth, increase liveability of towns, improve the infrastructure and service conditions of alternative modes as well as provide energy supply by regenerative sources.

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