Policy, not market alone, must dictate future transport emissions

**Existing technologies** could reduce emissions of CO₂ and air pollutants from land transport by almost a third. But, reductions will not be delivered through markets alone, according to a recent assessment, particularly for CO₂. The researchers argue that strong policy interventions will be essential to mitigating climate change caused by emissions from land transport.

The study, conducted under the EU ATTICA project¹, explored in detail past, present and future emissions from land transport (road, rail and inland shipping), including their impacts on air quality and climate change.

CO₂ emissions from land transport have grown steadily since the early twentieth century and are continuing to increase despite improvements in fuel efficiency. Road transport is particularly problematic, contributing nearly a fifth of the total CO₂ emitted from fossil fuel combustion and cement manufacture. Under most climate change forecasting scenarios, the contribution of the transport sector will continue to grow until at least the year 2050, unless there is a significant break in the trend. In addition, road construction and vehicle and fuel production add significantly to the burden – producing an average-size car may add an extra 12 per cent to the emissions from driving it.

In the past vehicle exhaust emission control has successfully reduced the emissions of short-lived air pollutants, such as nitrogen oxides, carbon monoxide, volatile organic compounds and particulate matter, which has helped improve air quality and reduce health impacts in industrialised countries. The parallel reduction of particles and nitrogen oxides from diesel engines is still a challenge. Emissions of these pollutants have been growing significantly in developing countries causing health problems for many. In addition, the consequently formed ozone and soot contribute to global warming on short timescales.

Emissions of these air pollutants are expected to further drop in future, around the world, but emissions of CO₂ and halocarbons (particularly HFCs from mobile air conditioners, which replace the ozone-depleting CFCs) are expected to continue growing and their global warming impact will become a major challenge in the future.

According to the study, meeting climate change mitigation objectives will require a combination of approaches aimed at tripling fuel efficiency, reducing carbon contents of fuels and reducing total transport volumes. The researchers suggest that 20-30 per cent reductions in carbon emissions could be achieved through improvements in fuel efficiency by reducing vehicle power and weight and applying existing technologies, such as hybridised powertrains. However, the researchers say many customers will be unwilling to choose smaller cars unless they are required by law, or unless incentives exist.

Biofuels could lead to CO₂ reductions, but any environmental advantage of biofuels over petroleum-based fuels varies depending on how they are produced. The best of first generation biofuels have net savings of about 20 per cent CO₂ equivalents relative to well-to-wheel emissions from petroleum based fuels. Improvements in electric car technologies are also expected to have an impact on future climate change scenarios.

Although the predicted impact of all foreseeable technological developments will slow growth in transport emissions, growth will still occur at anywhere between 40 per cent and 130 per cent until 2050 compared to the year 2000, according to current trends and realistic projections. Therefore policy interventions are needed to reduce the volume of traffic on the roads and achieve the absolute reduction in emissions that is required to meet climate change mitigation objectives and improve air quality.

1. ATTICA (European Assessment of Transport Impacts on Climate Change and Ozone Depletion) was supported by the European Commission under the Sixth Framework Programme. See: [www.pa.op.dlr.de/attica](http://www.pa.op.dlr.de/attica)


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