



Primary particle emissions and secondary aerosol precursors from road transport on regional scale

U. Kummer, T. Pregger, H. Pfeiffer and R. Friedrich

Institute of Energy Economics and the Rational Use of Energy (IER), University of Stuttgart, Germany (uk@ier.uni-stuttgart.de / Phone: +49 711-7806124)

Emissions caused by road transport still contribute considerably to air pollution. Primary particles from vehicles have been the focus of attention in recent air quality discussions, as emission targets are exceeded all over Europe. Although stringent emission standards have led to a decrease in NO_x, the NO₂ to NO_x ratio is shifting to an increase in nitrogen dioxide which could prove problematic in the light of the EU air quality directive in 2010. In order to account for air quality assessment and effectiveness of abatement measures on local or regional scale it is crucial to model emissions in a high spatial resolution.

IER presents a model to calculate highly detailed spatial road transport emissions on regional scale. PM₁₀, PM_{2.5} and NO_x exhaust emissions caused by hot and cold start driving conditions are considered. Recent scientific findings concerning PM₁₀ and PM_{2.5} from non-exhaust sources such as tyre and brake wear as well as resuspension of road dust are also included. Tools developed at IER are used to model the European road system with highways and rural roads in detail and thus account for a spatial distribution to line sources. Trend scenarios will be developed up to 2010 to assess effects on emissions from expected changes in vehicle fleet composition and respective mileage shares. Hence, future trends and developments in the road transport sector can be evaluated and possible implications for air quality legislation can be indicated.

The paper presented will discuss the model's structure and sensitivities as well as first results. It will also give an outlook on future model extensions concerning the non-road/off-road sector.