

Green energy in urban transport

India is one of the fastest growing major economies of the world. It imports three quarters of its oil demand, making transport sector major contributor of green house gas (GHG) emissions. Around 40% of oil consumption in India comes from transport sector and over 90% of energy demand is from road transport sector. This has led to serious increase in CO₂ emission and concentration of air pollutants in India. According to Inter-governmental Panel on Climate Change (IPCC), transport can play a crucial role for mitigation of global greenhouse gas emissions. Therefore, assessment of appropriate mitigation policies is required for emission reduction and cost benefit potential.

To examine the impact of mitigation policies on transport sector, our study focuses both macro and micro level analysis. For the macro level, the impact of growth in road transport infrastructure, energy use, transport GDP and Gross capital formation on CO₂ emission from transport sector in India is analysed. The GHG emission and energy consumption is estimated at the country level from different categories of vehicles including private, public and inter-para transit running on different fuel mix. GHG emission and energy consumption for target year 2030 is estimated at the micro-level for the city of Mumbai which is one of the highest CO₂ emitting cities of India, Mumbai. Mitigation scenarios are suggested for the emission and cost reduction for the target year. These scenarios are designed using the current policies of Indian Government regarding electric vehicle, fuel efficiency and fuel shift to alternate fuel vehicle. The scenarios are also designed using the result from consumer preference (survey) analysis where future probability of electric vehicle diffusion is studied.

The study is expected to establish relationship between growth in transport sector and CO₂ emission and analyse suitable mitigation strategies based on cost and emission reduction effectiveness using marginal abatement cost curve.