

Sustainable Low Carbon Transport: Future Scenarios and Policies for India

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Poster presentation (Summary):

The transport sector accounts for about 19% of the total global energy use and is the second largest sector in terms of GHG emissions, contributing to about 23% of the global emissions. It also stands as the fastest growing sector in terms of CO₂ emissions, thus acting as a significant contributor towards climate change. With the demand only projected to continue to rise in future, it is important to mitigate the emissions from the sector. There are important co-benefits (like energy security, CO₂ reduction, improvement in local air quality, etc) to be gained by transiting towards a low carbon pathway and literature emphasizes on aligning the global climate stabilization target with national sustainable development goals and sectoral plans in order to move towards the same.

The present study focuses on assessing the long-term energy consumption and emissions from passenger transport sector in India and the AIM/Enduse model is used to explore India's passenger transport scenarios till 2050. Two scenarios, namely (i) a conventional business as usual (BAU) scenario, and (ii) Sustainable low carbon transport (SLCT) scenario which optimally aligns India's economy to the global climate change stabilization target, are assessed.

The BAU scenario assumes an average GDP growth rate of 8% between 2010-2035, benchmarking with Planning Commission Integrated Energy Policy report and takes into account existing policies (such as fuel policy, JNNURM) and projects (like high speed rail, metro) that are under construction or planned till 2050. The SLCT Scenario environmental concerns gain higher importance on global, national and local policy agenda. Various demand and supply side sustainable measures that can be categorized into Avoid (lessen demand), shift (investment in mass transit systems) and improve (vehicle efficiencies, penetration of electric vehicles) framework are considered for the scenario. A carbon tax pegged with the 2 degree global stabilization target is used in addition to above mentioned measures.

Our analysis suggests that owing to various SLCT measures, there is a shift from 4-wheeler towards rail. The energy as well as the carbon intensities decrease, which result in provision of several co-benefits such as energy security and an improvement in air quality. Decarbonization happens as the energy and carbon intensities decline over time due to efficiency and technological improvements, penetration of cleaner vehicle technologies, diversification into cleaner fuels and other SLCT measures. This, in turn, results in decoupling of economic growth with energy consumption and emissions.