
WORKING PAPER 220/2022

**MEDIUM-TERM PROJECTIONS OF VEHICLE
OWNERSHIP, ENERGY DEMAND AND VEHICULAR
EMISSIONS IN INDIA**

B. Ajay Krishna



MADRAS SCHOOL OF ECONOMICS
Gandhi Mandapam Road
Chennai 600 025
India

May 2022

*Medium-term Projections of Vehicle Ownership,
Energy Demand and Vehicular Emissions in
India*

B. Ajay Krishna

Ph.D. Scholar, Madras School of Economics

ajay@mse.ac.in

WORKING PAPER 220/2022

May 2022

Price : Rs. 35

**MADRAS SCHOOL OF ECONOMICS
Gandhi Mandapam Road
Chennai 600 025
India**

Phone: 2230 0304/2230 0307/2235 2157

Fax: 2235 4847/2235 2155

Email : info@mse.ac.in

Website: www.mse.ac.in

Medium-term Projections of Vehicle Ownership, Energy Demand and Vehicular Emissions in India

B. Ajay Krishna

Abstract

Rapid growth of private vehicle ownership in emerging economies like India has serious implications on its existing transport infrastructure, future energy demands and emission reduction targets. While vehicle ownership in India is considerably low compared to advanced economies, an expected economic growth, along with rising population and inability of public transport to meet the travel demands would lead to increase in future private vehicle stock, subsequent fuel demand and resulting vehicular emissions. This study contributes to the literature by projecting various medium-term future scenarios of vehicle stock, fuel demand and vehicular emission projections based on multiple economic growth rate and electric vehicle (EV) adoption scenarios. A non-linear Gompertz function has been estimated to describe the association between economic growth and vehicle ownership using time series data ranging from 1960 to 2019. Using an incremental addition to the vehicle stock based on past vehicle registration, study forecasts 107-145 million new vehicles will be added to existing stock by 2030. Subsequently, private transport fuel demand is predicted to peak around 60 million metric tons per annum during this period. Correspondingly, CO₂ emission from private vehicle use is estimated to peak at 174 million tons per annum. Further, appropriate transport policy measures and investment spheres in terms of road network requirement have been explored which would facilitate reducing private vehicles dependency and regulate vehicular emissions.

Keywords: *Vehicle Ownership; Carbon Emissions; Fuel Demand; Gompertz Function; Transport Policy*

JEL Codes: *Q47, Q54, R48, R49*

MSE Working Papers

Recent Issues

- * Working Paper 211/2021
Are India's farm debt waivers a political tool that impacts government finances?
Sowmya Dhanaraj, Vidya Mahambare and Pragati
- * Working Paper 212/2021
Rural Urban Differentials in Health Insurance Demand
Brijesh C Purohit
- * Working Paper 213/2022
Potential Inequities in Covid -19 vaccinations
Brijesh C Purohit
- * Working Paper 214/2022
Predicting Power of Ticker Search Volume in Indian Stock Market
Ishani Chaudhuri and Parthajit Kayal
- * Working Paper 215/2022
How Much Does Volatility Influence Stock Market Returns? – Empirical Evidence from India
Malvika Saraf and Parthajit Kayal
- * Working Paper 216/2022
Multiple Dimensions of Cyclicalities in Investing
Thillaikkoothan Palanichamy and Parthajit Kayal
- * Working Paper 217/2022
Socio-Economic Factors and Conflicts in North-Eastern Region of India
Nabeel Asharaf and Brinda Viswanathan
- * Working Paper 218/2022
Political Concentration, Religious Diversity and Human Development: Evidence from Indian
Shrabani Mukherjee and Vivek Sharadadevi Jadhav
- * Working Paper 219/2022
Outcome of FPTP in Diversified Society: Evidence on Disproportionality from Loksabha Constituencies
Vivek Jadhav

* Working papers are downloadable from MSE website <http://www.mse.ac.in>
\$ Restricted circulation