

## Determinants of Emission and Energy Intensities in Indian Organized Manufacturing Sector

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*The emission and energy consumption in absolute form is not considered as a better measurement of emission intensity and energy intensity respectively. This paper estimates the factors which influence emission and energy intensity in the Indian manufacturing sector. For estimating these variables, the panel data analysis has been deployed across three manufacturing industry groups, viz., overall manufacturing sector, high emission-intensive industries and low emission-intensive industries. The random effect model highlights that an increase in energy intensity and material intensity leads to higher emission intensity. The study also reveals that the manufacturing sector does not support the Environmental Kuznets Curve hypothesis. Further, high emission-intensive industries are capital-intensive industries while less emission-intensive industries are labour-intensive industries. This raises the question about the technology used by the manufacturing sector, especially high emission-intensive industries.*

### I Introduction

India has emerged as an important economic power across the globe. This was mainly on account of the liberalization of Indian economy and growing contribution of the services and industrial sectors to its GDP. The consequence of a growing economy translates into growing demand for energy, particularly commercial energy. Energy is crucial to the production process and its abundant supply can create favourable conditions for growth, whereas energy scarcity adversely affects both production and productivity. Commercial energy consumption in India has increased by more than thrice during the last three decades<sup>1</sup>. The industrial sector is a major consumer of commercial energy accounting for approximately 40 per cent of total commercial energy consumption, whereas it contributes merely 20 per cent to economic growth (Kumar 2003).

Industry sector is made up of a diverse range of processes and manufactured products. This sector requires more energy and currently accounts for more than one-third of India's total energy use. Manufacturing sector is the single largest user of commercial energy in Indian industry (Kumar 2003). In the last decade,

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<sup>1</sup> The total energy consumption of India was 143.13 million tonnes of oil equivalent (MTOE) for the year 1971 and that became 457.49 MTOE in 2010 according to IEA data base.