

Optimizing Energy for Growth: Factor and Fuel Substitution Pathways for Sustainable Development in India

Tanzeem Hasnat

*Lal Bahadur Shastri Institute of Management
New Delhi, India*

Email: tanzeemhasnat@lbsim.ac.in

Abstract: The study investigates sustainability of energy use in India by exploring factor substitutability by building a Transcendental Logarithmic (translog) Production Function. Using data from 1991 to 2023, the study examines how energy and non-energy inputs interact, with a focus on the possibility for capital, labour, coal, and oil to be substituted. According to the findings, India's production systems are flexible in terms of switching between different energy and non energy inputs. This has policy ramifications for reducing the country's dependency on fossil fuels and encouraging the use of sustainable energy sources.

Keywords: Inter Factor Substitutability; Energy; Sustainability; Translog Production Function