

**VARIATION IN CARBON INTENSITY ACROSS STATES OF INDIA:
AN EMPIRICAL ASSESSMENT**

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ABSTRACT

Variation of Carbon Intensity across Indian States: An Empirical Assessment

Climate change has become the most significant environment and development challenge to human society where the process of global climate protection depends largely on our scientific awareness, political wills, economic interests, society's level of acceptance and a *low carbon development path* is, undoubtedly, the critical choice of future human development. With the issue of climate change becoming significant both for developed and developing nations, a new concept of *carbon intensity* has been evolved which is defined as *carbon dioxide emission per unit of gross domestic product*. The motivation to study the '*The Variation of carbon Intensity across Indian States*' is mainly in terms of Indian Government's announcement to reduce its carbon intensity to 20% to 25% at 2005 levels with the aim to assess various indicators involved in achieving the path of *low carbon development*. Objective of the study is to assess the main drivers of *carbon dioxide emissions* at State level in India using the *kaya identity*. The *kaya identity* states that total emission level can be expressed as the product of four inputs: population, per capita GSDP and carbon intensity of GSDP which is accounted from the CO₂ emissions data as obtained from the State level estimation of CO₂ emission (Tapas Ghoshal & Bhattacharyya)

The Kaya Identity can also be written as:

$$F = P * (G/P) * (F/G) = P.g.h.....1$$

Transforming this identity into natural logarithmic form is essential in understanding the implication of decomposition analysis. The variation of carbon intensity across India States is captured by subdividing India into 19 regions. A rising tendency of the *kaya* factors is observed over the period of 20 decades, where population size effects CO₂ emissions positively, however per capita GSDP does not imply higher growth rate of CO₂ emissions, with carbon intensity of GSDP showing a rising trend in most of the states with higher level of CO₂ emissions.