DEVELOPING A COMPOSITE INDEX TO MODEL THE GDP–ENVIRONMENT NEXUS: AN SVM-BASED APPROACH

HARSHINI G

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Chennai - 600025

ABSTRACT

Economic growth and environmental sustainability are widely recognized as interconnected, with development activities both affecting and being affected by environmental outcomes. As countries increasingly prioritize sustainable development, it is important to examine how environmental changes and movements influence economic performance. This study aims to develop an index that captures the relationship between environmental indicators and economic growth, measured through GDP. The analysis focuses on countries included in the Morgan Stanley Capital International World Index for developed economies and the Morgan Stanley Capital International Emerging Markets Index for developing economies, as these classifications cover most of the major nations globally. An adapted version of the Green Solow Model is employed to study the impact of both environmental and developmental factors on GDP. To analyze this, panel data regression models are used and it has been found that environmental indicators affect GDP significantly. Following this, a new metric called the Environmental Impact Index is developed using machine learning tools that are capable of identifying nonlinear relationships among variables. To provide a global relative perspective, the developed Environmental Impact Index is used alongside the Environmental Performance Index to rank countries and assess gaps in environmental policy impacts.