

Anshuman Gupta · Narendra N. Dalei  
*Editors*

# Energy, Environment and Globalization


Recent Trends, Opportunities and  
Challenges in India

 Springer

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## Chapter 7

# Empirical Relation Between Energy Use and Human Development: Evidence from BRICS Nations



Hiranmoy Roy and Narendra N. Dalei

### 7.1 Introduction

There is a paradigm shift in the measurement of economic development, which earlier represented by GDP is now better represented by Human Development Index (HDI), since GDP does not include the quality of life aspect in it.

The search for an alternative to GDP as a measure of economic development was first propounded by UNDP in its first Human Development Report published in 1990, which including directly the quality of life aspect and based on arithmetic mean approach, which was subsequently revised by using the geometric mean approach in the year 2010 (UNDP 2010). While GDP represents only one aspect, i.e., income, HDI is a representative of all aspects that include not only income (economic) but also social, cultural and political aspect.

Energy use has a significant role in predicting human development (Sweidan and Alwakad 2016). Empirical evidence shows that greater energy use is impacting HDI positively. Given the energy consumption level, HDI is an increasing function of time whereas energy consumption needs to be declined to achieve a target level of HDI (Steinberger and Roberts 2009). Conducting a study on 120 countries, Martínez and Ebenhack (2008) observed that there is a strong association between energy and HDI in poor countries whereas HDI is an increasing function of energy consumption in industrially developed countries. Socioeconomic, cultural, environmental and political aspect of HDI enhances human development due to the fact that these are all being impacted positively by clean and reliable energy (UNDP 2007). However, a global consensus with respect to sustainable energy that can help in mitigating

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