

Comparative Analysis of Environmental Performance in G8 and G20 Countries

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Abstract

Environmental performance has increasingly become a crucial issue for developing countries. The concept of economic and ecological efficiency, more popularly known as “eco-efficiency”, provides the practical approach to the more encompassing notion of sustainable environmental performance. Yet, there is ambiguity in operations management field with regard to conceptualizing, analyzing and comparing the eco-efficiencies of countries from a macro-level perspective. This study mainly aims to ravel out this obstacle by offering a new quantitative benchmarking framework for assessing sustainable environmental performance with combining testable factors. Accordingly, it presents the cross-country comparison by using data envelopment analysis (DEA) technique between G8 and G20 countries over the period 2005-2012. The Malmquist productivity index (MPI) is also used to analyze the patterns of efficiency change for the study years. Eco-efficiencies of these countries are analyzed based on the (i) energy consumption, as input, (ii) CO₂ emission, as undesirable output, as well as (iii) GDP and (iv) foreign direct investment (FDI) as outputs. Additionally, the impacts of sustainable and clean energy on the environmental performance are analyzed to provide comprehensive understanding of green systems. Several improvement suggestions have been provided to environmental policy makers regarding the inefficiency causes as well as the ways of optimizing eco-efficiency.

Keywords

Eco-efficiency, Environmental Performance, Sustainability, Data Envelopment Analysis

Biography

Mehmet Şahin Gök is an Assistant Professor at Gebze Institute of Technology, Department of Business Administration. He got her Bachelor's degree from Koceli University, Department of Industrial Engineering and PhD from Gebze Institute of Technology, Operations Management department. He was a visiting scholar at University of Minnesota, Operation and Management Science department during 2009-2010. His research interests include Efficiency Analysis, Environmental Management, Healthcare Analysis and Operations Management. His research studies have been published in several international journals including European Journal of Health Economics, The Service Industries Journal, Health Policy, International Review of Economics and Management, European Journal of Business and Social Sciences, Journal of Global Strategic Management and METU Studies in Development.