

Measurement of Operational and Environmental Performance of the Coal-Fired Power Plants in India by Using Data Envelopment Analysis

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Abstract : In this study, the performance analyses of the twenty five coal-fired power plants (CFPPs) used for electricity generation are carried out through various data envelopment analysis (DEA) models. Three efficiency indices are defined and pursued. During the calculation of the operational performance, energy and non-energy variables are used as input, and net electricity produced is used as desired output. CO₂ emitted to the environment is used as the undesired output in the computation of the pure environmental performance while in Model-3 CO₂ emissions is considered as detrimental input in the calculation of operational and environmental performance. Empirical results show that most of the plants are operating in increasing returns to scale region and Mettur plant is efficient one with regards to energy use and environment. The result also indicates that the undesirable output effect is insignificant in the research sample. The present study will provide clues to plant operators towards raising the operational and environmental performance of CFPPs.

Keywords : coal fired power plants, environmental performance, data envelopment analysis, operational performance

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