A DYNAMIC OPTIMIZATION MODEL TO DESIGN A LARGE-SCALE HYBRID RENEWABLE ENERGY NETWORK FOR THE CLEANER ENERGY MIX

Kwon Gi Mun, Technology and Operations Management, College of Business Administration, California State Polytechnic University, 3801 West Temple Ave., Pomona, CA 91768, 909-869-2460, kmun@cpp.edu

Raza Rafique, School of Management and Marketing, Kean University, 1000 Morris Avenue, Union, New Jersey 07083, 908-737-5326, rrafique@kean.edu

ABSTRACT

This study is motivated by the challenges faced by weak economies in addressing their energy deficiency. A strategic development of a renewable energy system is proposed as opportunities to alleviate the connected energy and economy issues. The optimization model designs a renewable energy supply network with the objective to minimize the energy gap under budget and resource availability constraints. The analysis highlights that the cost for the optimum development of a renewable energy system can significantly vary over the planning horizon. It starts as a centralized system and evolves into a decentralized system in which facilities and power supply locally.

Keywords: Hybrid renewable energy system, Sustainability, Biofuel, Solar, Linear Optimization