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Carla Rúa Gómez, Santiago Arango-Aramburo, Erik R. Larsen



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CONSTRUCTION OF A CHILEAN ENERGY MATRIX PORTRAYING ENERGY SOURCE SUBSTITUTION: A SYSTEM DYNAMICS APPROACH

Carla Rúa Gómez

Facultad de Minas
Universidad Nacional de Colombia-Medellin,
Medellin, Colombia

&

Institute of Management
Università della Svizzera italiana
Lugano, Switzerland
carla.carolina.rua.gomez@usi.ch

Santiago Arango-Aramburo*

Facultad de Minas
Universidad Nacional de Colombia Medellin,
Medellin, Colombia
saarango@unal.edu.co

Erik R. Larsen

Department of Management
Aarhus University
Aarhus, Denmark,
erik.larsen@mgmt.au.dk

Abstract

The energy matrix is a useful tool for understanding the trends of production and consumption in a country and for evaluating long-term energy policies. This paper presents a behavioral simulation model of the evolution of Chile's energy matrix. The model is developed and calibrated by considering a dynamic substitution of energy sources. Chile's stated policy is to become less dependent on imported fossil fuels, to increase security of supply and improve the environment. The simulation experiments show that the energy matrix is very robust with regards to external fuel prices and changes in investment cost. Thus, in order to be able to observe changes in the composition of the energy matrix, there is a need for strong intervention by the regulator, or the government, to provide incentives for renewables.

Keywords

Energy planning, System Dynamics, energy matrix, Chilean energy sector

*Corresponding author. Carrera 80 # 65 – 223, Bloque M8a 211. Faculty of Mines, Medellín, Colombia. Tel.: +57 3148558854.

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