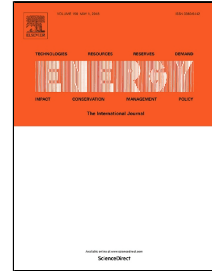


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Relational Analysis of the oil and gas sector of Mexico: Implications for Mexico's Energy Reform.

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Abstract

10 This paper describes a novel tool-kit to analyze energy systems in relation to the
bio-economic and environmental performance of society. It is illustrated with
data from the oil and gas sector of Mexico. The approach combines relational
analysis (as developed in theoretical biology) and Multi-Scale Integrated
Assessment of Societal and Ecosystem Metabolism (MuSIASEM). It integrates
15 two non-equivalent views of the functioning of the oil and gas system starting
from the identification and description of the relations between functional and
structural elements. The metabolic pattern of the energy system is described as
a sequential pathway generated by different functional elements (e.g., extraction,
refining, transportation), each of which is made up of different structural
20 elements (e.g., plants adopting different extraction techniques, diverse types of
refineries, different methods of transportation), and operating at a given level of
openness (imports and exports). The relations found over the elements of the
energy system are described both in functional terms (what/why) and in spatial
terms (where/how). The policy relevance of the information generated is
discussed in relation to the Mexican Energy Reform.

25 *Keywords:* MuSIASEM, energy system, integrated assessment, relational analysis,
Mexico's Energy Reform, oil and gas sector.

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