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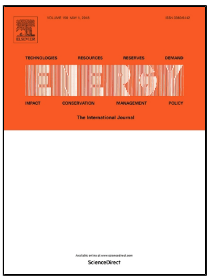

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Rafael González-López, Mario Giampietro

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

Rafael González-López[a,*], Mario Giampietro[a,b]

[a]*Institute of Environmental Science and Technology (ICTA), Autonomous University of Barcelona (UAB),08193 Bellaterra, Spain.*
[b]*ICREA, Pg. Lluís Companys 23, 08010 Barcelona, Spain.*

Abstract

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 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 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.

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

*corresponding author

Email addresses: Rafael.Gonzalez@uab.cat (Rafael González-López), Mario.Giampietro@uab.cat (Mario Giampietro)