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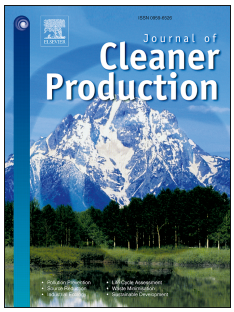

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UNRAVELLING THE POTENTIAL OF ENERGY EFFICIENCY IN THE COLOMBIAN OIL INDUSTRY

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Keywords

- Oil sector
- Energy Efficiency
- Cost of Energy savings
- Cost of CO_2 savings
- Greenhouse gas emissions reduction
- Chain analysis

ABSTRACT

The oil and gas sector represents 39% of the world's total industrial final energy consumption, and contributes to around 37% of total greenhouse gas (GHG) emissions. This study investigates the potential for improvements in energy efficiency, and their implications for CO_2 abatement, in the Colombian oil industry value chain. It also assesses the potential cost of conserved energy and mitigated $CO_{2\text{-eq}}$. A bottom-up approach was used to identify energy efficiency measures based on an assessment of specific operational data at the process unit level. In total, 20 measures and technologies were identified and applied in 48 cases throughout the chain, representing energy savings of 15.8 PJ and GHG savings of 0.75 Mt $CO_{2\text{-eq}}$ per year. This accounts for 25% and 19% of the total energy consumption and GHG emissions, respectively. Ninety-six percent of the total energy savings come from measures that are already cost-effective and could be implemented in the short term. The results of this study offer a better understanding of the critical stages for energy and GHG savings potentials, as well as investment cost and revenue from a full value chain perspective, based on operational data processing.

Nomenclature

EEM:	Energy efficiency measure
CCE:	Cost of conserved energy
$CCO_{2\text{-eq}}$:	Cost of mitigated greenhouse gases
CSC:	Cost-supply curve
GHG:	Greenhouse gases
O&G:	Oil and gas
toe:	Tonne of oil equivalent