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Mexico's Low Carbon Futures: An integrated assessment for energy planning and climate change mitigation by 2050

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HIGHLIGHTS

- Adopts Mexico 2050 Calculator as platform for comparing four 2050 low-carbon energy scenarios.
- Integrates energy and carbon dynamics across all sectors and carries-out a sensitivity analysis.
- Assessment showed industrial efficiency, cities and transport have most GHG mitigation impact.
- From the supply side, highest impact is shared between agricultural waste management and forests.
- We recommend a higher emphasis than current be given to demand-based energy policy-solutions.

Abstract

This paper shows an integrated assessment for energy planning and climate change mitigation in Mexico, as an international case study. The Mexico 2050 Calculator was used to run a number of low carbon future scenarios by 2050. The calculator consists of a whole-systems model, which combines the main sectors of the Mexican economy into a single visual tool. By integrating energy and carbon dynamics across all sectors and carrying out a sensitivity analysis of the entire model, we compare four low carbon energy scenarios to assess current energy policy strategies in the country. The methodology proposed in this paper can also be applied to any other nation, particularly to those with similar models already available. Our findings show the relative impact of each sector and their various interactions for achieving Mexico's ratified climate commitments. The paper also includes policy recommendations and highlights the need for scaling-up energy efficiency policy efforts in industry and transport, for having a higher focus on agricultural and land use policies, and for promoting integrated renewable energy policies.

Keywords: energy policy; climate change mitigation; Mexico 2050 Calculator; NDCs.

1. Introduction

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