

# Energy transition in Brazil: Is there a role for multilevel governance in a centralized energy regime?

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## ABSTRACT

Energy transition requires systematic changes, not only to energy technologies but also to the broader political, social, environmental, and economic assemblages that are built around energy production and consumption. Changes in the energy supply and the shift toward renewable energy resources cannot be comprehensively understood without considering the implications of spatial and policy dimensions. This study examined the subnational energy transition in Sao Paulo state, Brazil, and discusses the role of policies and governance in energy transition. The historical series of energy production and consumption of Sao Paulo state were analyzed from 1980 to 2019, and the institutional frameworks that promoted energy transition were also explored. The results show that the effective final consumption of each energy source in the analyzed period (40 years) increased. Despite the increasing proportion of renewable energies (particularly ethanol), fossil fuel consumption grew in this period, which shows a tendency of addition rather than a thorough energy transition. Furthermore, energy governance remains largely dependent on a centralized approach in Brazil. Although there is a growing debate regarding the role of decentralized solutions, energy policy and regulation are still not considered to be the responsibilities of local governments. Cross-sectoral cooperation focused on territorially oriented solutions can improve spatial order by integrating local level capabilities into multilevel governance for energy transition.

Keywords : Energy transitionGovernanceMultilevel-governanceSub-nationalEnergy policyEnergy diversificationRenewable energy