A diagnostics of changes in Residential Energy Consumption in Cameroon and main influence factors using LMDI

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Abstract

Studies show that energy consumption in Cameroon is dominated by the residential sector which accounts for more than 60% of national total. This has made the residential sector a good candidate for studies relating to sustainability, energy security and emission control. Using 1990-2015 data, this paper performs a diagnostics on residential energy consumption in Cameroon, then adopts LMDI to study factors that influence residential energy consumption in Cameroon. Furthermore, to comparatively evaluate the extent of decoupling of residential energy consumption from its key driving factors during the study period, decoupling analysis is performed. Results of the study show that (1) Residential energy consumption in Cameroon witnessed a 43% growth during the period under consideration. The growth encompasses biofuel, LPG and electricity consumption which grew 46%, 270% and 224% respectively, kerosene is the only energy source which witnessed a drop (62%) (2) population and income growth are the main factors contributing to growth in residential energy consumption in Cameroon while energy intensity and energy mix are main inhibiting factors (3) Energy intensity and switching towards more efficient energy sources played a key role towards decoupling from the key drivers of residential energy consumption during the period for which this study is carried out (4) the extent of decoupling has been mainly weak except during 2005-2007 when strong decoupling relationship is exhibited. These findings provide important reference for formulation of energy policy while taking into consideration Cameroon's role as signatory to some important international commitments notably INDC and REDD.

Key Words

Residential
Energy consumption
Decomposition analysis
Decoupling
Cameroon

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Inter-fuel Substitution Possibilities in Cameroon-based on trans-log production function

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ABSTRACT

This study examines inter-factor substitution between petroleum, electricity and biofuel as fuel types and their technical progress in the Cameroonian economy using 1990-2015 time series data. We adopt the translog production function with capital and labor as other factors of production and make a number of findings with policy implications for Cameroon's energy economy. Firstly, all the fuel types have positive influence on economic growth, with petroleum having comparatively little effect. Secondly, all the fuel types are substitutes and petroleum exhibits perfect substitution with electricity and biofuel. Petroleum has maintained superior technical advantage over other fuel types, but the advantage over electricity has waned. These findings lead to justification of the current subsidy on electricity, but further action is required need to promote electricity if the adverse economic and environmental effects of imported petroleum is to be reduced. Furthermore, the Cameroonian government should consider directing resources towards R&D to spur technological advancement in the exploration of the country's rich renewable energy potentials. Finally, since labor and capital as factors of production are substitutes to the various fuel types, in a short to medium term, capital investment and labor intensiveness may be explored as options for promoting economic growth in the midst of petroleum supply disruptions and financial stress on the nation..

KEY WORDS

Inter-fuel substitution
Translog production function
Output elasticity
petroleum
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