Energy subsidies dynamics of energy technology innovation, energy poverty alleviation and social well-being

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Abstract

Energy subsidies are the government's deliberate policy actions to lower the cost of energy production, increase the revenues of energy producers, or reduce the price consumers pay for energy. These subsidies have been implemented by several nations with varying degrees of success and failure, often falling short of the declared objective of fostering economic, social, and technological advancement at the national level. Budgetary savings from the removal of energy subsidies and the resulting upsurge in energy prices may induce the adoption of innovative technologies in a country. The economic impact of energy subsidies has been analyzed for many countries in the literature. However, this issue with energy technology innovation, energy poverty reduction and social well-being using panel and household level data analysis is rarely investigated for energy poor-countries. Therefore, this study firstly intended to discover the effect of energy subsidies on energy technology innovation in the 25 highest energy subsidy-providing countries for the period of 2010-2020, employing advanced econometric approaches. Secondly, using national Household Income and Expenditure Survey (HIES) data of Bangladesh for the years 2005, 2010, and 2016, this study explores the mediating role of energy subsidies in alleviation of energy poverty and social well-being. The results confirm that energy subsidies and energy technology innovation are significantly cointegrated, and the removal of energy subsidies stimulates technological innovation, which induces the adoption of a renewable energy technology. Secondly, the mediation analysis using household level data of Bangladesh, confirm that energy subsidies and energy poverty are significantly linked, and energy subsidies improve social well-being by mediating effects of energy poverty. Additionally, the richer households realize better social well-being having less energy poverty, gaining more than other households from energy subsidies. The policy relevance of this study is to push for further innovation in energy subsidy reforms in energy-poor countries for combating energy poverty and ensuring clean, sustainable, and affordable energy for all in line with the aims of the sustainable development goal (SDG)-7.

Keywords: energy price; energy subsidies; energy poverty; price-gap; social well-being.