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## Energy subsidy reform and energy sustainability in Malaysia<sup>☆</sup>

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### ABSTRACT

The 12th Sustainable Development Goals (SDGs) highlighted the importance of ensuring sustainable consumption and production patterns. Researchers have found that energy subsidies may encourage overconsumption, misuse, and moral hazard problems. Hence, there is a need to rationalize inefficient energy subsidies. Consequently, the Malaysian government has been implementing a subsidy reformation program to improve energy efficiency and reduce fiscal burdens. This study aims to identify and compare the impacts of energy subsidies and oil prices on energy consumption across the agricultural, industrial and service sectors in Malaysia. It is critical for policymakers to better understand the role of energy subsidies in influencing energy consumption, especially the magnitude to which energy subsidies influence energy consumption, in order to structure a subsidy reform strategy which effectively addresses the energy overconsumption issue.

In this study, a time series dataset covering the years of 1978 through 2018 is analyzed. The ARDL approach and Granger causality test were employed to determine meaningful statistical evidence and revealed four important findings. Firstly, energy subsidies have a positive relationship with energy consumption. Secondly, oil prices have a negative relationship with energy consumption and energy subsidies significantly interact with oil prices to affect energy consumption. This significant positive moderating effect suggests that energy subsidies may counteract the negative impact of oil prices on energy consumption. Thirdly, output has the greatest (positive) impact on energy consumption. And finally, energy subsidies drive higher outputs in the agricultural sector.

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## 1. Introduction

Energy sustainability refers to the provision of adequate, reliable, and affordable energy which meets economic, social and environmental requirements (Grigoroudis et al., 2019; Ghobakhloo and Fathi, 2021; Husaini and Lean, 2022a). Energy sustainability is a hotly debated topic in the current literature. Many studies have explored the potential determinants of the supply side of energy sustainability (Ito, 2017; Inglesi-Lotz and Dogan, 2018; Kang et al., 2019). These studies postulate that greater renewable energy consumption will promote energy sustainability. However, establishing renewable energy

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