

## **The linkage between natural gas consumption and industrial output: New evidence based on time series analysis**

### **Abstract**

This study is the first to examine the impacts of industrial gas consumption on industrial output in Malaysia due to its significance in the industrial sector. The present study aims to provide valuable insights into sustainable development and carbon emission reduction. The augmented distributed lag (ARDL) approach was employed to explore the relationships between gas consumption, foreign direct investment (FDI), financial development, capital, labor, trade openness, and industrial yield. Gas consumption, FDI, and capital significantly affect industrial output in the short and long runs. Nonetheless, the impacts of labor and financial development were only observed in the long term, while trade openness produced no notable influence on industrial output. The results could lead to critical policy implications as natural gas consumption is associated with lower carbon dioxide (CO<sub>2</sub>) emissions than non-renewable energy sources, such as oil and coal. Consequently, promoting increased gas utilization in the industrial sector could serve as a crucial driver for sustainable development and environmental protection by simultaneously reducing environmental damage and enhancing output. The current study provided valuable quantitative knowledge for policymakers, industry stakeholders, and any parties intending to advance sustainable economic growth while addressing environmental challenges. © 2023 Elsevier Ltd

### **Keywords**

ARDL; Employment; Industrial gas consumption; Industrial output; Malaysia