Fragile foundations: Why renewable energy (Not GDP) drives Somalia's food security

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Abstract

Somalia has a massive problem of food insecurity. Food insecurity in Somalia has persisted since 1991 and has worsened over time. The government of Somalia collapsed in 1991, and this collapse led to two principal factors in the food crisis: lack of infrastructure and heightened displacement. This study investigates the impact of renewable energy consumption, Gross Domestic Product (GDP), Gross Fixed Capital Formation, and food security in Somalia using an Autoregressive Distributed Lag (ARDL) model covering 1990–2022. This study reveals that renewable energy consumption and gross fixed capital formation have a positive impact on food security in Somalia. This finding indicates that a country's renewable energy utilisation and gross fixed capital formation enhance food security, whereas GDP negatively and significantly affects it. Somalia's low GDP significantly affects food insecurity. The error correction model (ECM) reveals a negative relationship among renewable energy consumption, GDP, and food insecurity in Somalia's short-run test. However, gross fixed capital formation does not impact food insecurity. This study's contribution to knowledge relates to exploring the specific situation of renewable energy and food insecurity in Somalia. This location has been less explored in

previous works concerning renewable energy and food insecurity in a country. This study offers recommendations that address food insecurity in Somalia. Transitioning away from reliance on fossil fuels to renewable energy remains paramount for improving food security and reducing climate change. Copyright © 2026. Published by Elsevier B.V.

Author keywords

ARDL; Food security; GDP per capita; Renewable energy consumption; Somalia

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