

ECONOMIC AND ENVIRONMENTAL IMPACTS OF BIOFUELS PROMOTION IN NIGERIA – A RECURSIVE DYNAMIC GTAP MODEL APPROACH (2007-2026)

Emmanuel O. Falobi*, Olugbenga A. Falode and Adeola F. Adenikinju

Department of Minerals, Petroleum, Energy Economics & Law (DMPEEL), University of Ibadan, Ibadan. Oyo State. 200284. Nigeria.

Abstract

Nigeria's quest for environmentally friendly cleaner energy and the need to improve the quality of automotive fossil-based fuels conforms with global initiative to mitigate climate change effect. This necessitated the enactment of the Nigerian Biofuel Policy and Incentives (2007)¹. The Policy initiative had set a bioethanol target of 1.27 billion litres per year to achieve a blend of 10% ethanol (E-10) in gasoline by 2010 using cassava and sugar cane as feedstocks. Globally, computable general equilibrium (CGE) models have been extensively employed to study the impacts of climate change and biofuel policy initiatives. However, there is a gap in the literature on the economic and environmental impacts of biofuel promotion in Nigeria. Hence, this study mainly examines the economy-wide impacts of biofuels policy in Nigeria. We employ a recursive-dynamic CGE-GTAP model approach calibrated to a revised 2010 Nigeria's Social Accounting Matrix (SAM) database (Nwafor, *et al.*, 2010), to capture direct and indirect feedbacks of the policy. Policy simulations on impacts of greenhouse gas (GHG) emissions and energy security will be implemented with RunGTAP for the period 2007 – 2026. Model closures will be specified with relevant shocks for the exogenous variables to be determined. Sequel to the foregoing, domestic promotion of renewable energy use in place of fossil-fuel will not only reduce gasoline imports and mitigate GHG emissions but also, create green jobs.

Keywords: Biofuel promotion; Recursive-Dynamic GTAP Model; energy security; GHG emissions; Nigeria.

¹ The Nigerian Biofuel Policy and Incentives (2007) specifically sets out to “reduce dependence on finite fossil-fuel source and imported gasoline, improve energy security, reduce environmental pollution (mitigate GHG emissions in the transport-fuel sector), and creating a commercially viable industry capable of precipitating sustainable domestic jobs.”