

Analysis of Sustainable Cassava Biofuel Production in Nigeria

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Abstract

Nigeria's biofuels policy advocates the adoption of cassava as feedstock for a 10%-biofuel substitution option in Nigerian transport fuel demand. This policy option is expected to address energy security and environmental consequences of using fossil fuels as the sole source of transport energy in the country. This paper appraised the technological and economic factors necessary for achieving Nigeria's cassava-based biofuel initiative at different substitution levels of 5, 10, and 15% by the Year 2020. A multi-stage energy forecasting and project analysis framework adapted from Coate's structure for technology assessment, as well as engineering economy methodology was used for the study. Technological analysis entailed determining petrol consumption projection, R&D capability, input feedstock requirements, environmental considerations and land requirement for feedstock crop production while engineering economy analysis evaluated the economic viability of the project. The results showed that petrol consumption in Nigeria and bioethanol substitution requirements were in the range of 18,285.7 – 19,142.84 thousand tons and 914.28 (5% low demand) – 2871.43 (15% high demand) thousand tons, respectively by 2020. Cassava feedstock and landmass requirements for bioethanol production were in the range of 4.64 – 14.53 million tons and 4.08 – 12.80 thousand sq. km, respectively while carbon dioxide savings were between 1.87 – 5.89 million tons by 2020. The recovery price for cassava bioethanol was estimated to be US\$ 0.74/litre. Petrol being subsidised presently is harmful to the environment though it 'oils' the economy. Nigeria currently subsidizes petroleum products to the tune of 28% of 2011 budget. The government plans to remove this by 2012. Thus we conclude that weighing both economic and environmental benefits of bioethanol substitution in petrol consumption in Nigeria, the study showed that bioethanol production from cassava feedstock would be both

technically and economically viable, provided subsidy, which depends on political will on the side of the government, is introduced for the first ten years of its implementation.

Keywords: [Sustainable](#), [Policy](#), [Cassava](#), [Biofuel](#), [Subsidy](#), [Nigeria](#)

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