

BIOFUEL TECHNOLOGY AND ITS SUSTAINABLE DEVELOPMENT IN NIGERIA

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Abstract

The article reviews establishment of a thriving Biofuel industry utilizing agricultural products as a means of improving the quality of automotive fossil-based Fuels in Nigeria. The paper further highlights the current status of the use and possible application of Biofuel in Nigeria through the introduction of *Jatropha* plant for Biodiesel production. Rapid Research and Development investments flowing into *Jatropha* cultivation, processing and conversion into Biodiesel through the adoption of modern techniques which could lead to Biomass increase and food yields was also discussed. Primary issues favouring *Jatropha* over other crops which are its non food nature, reported ability to grow on marginal lands and the special ability to grow with limited rainfall was reported. The drivers behind the rush to Biofuels production and its sustainability were also enumerated in the paper. Detailed explanation of the potential benefits of Biofuel was given in relation to improved energy security, economic gains, rural development, greater energy efficiency, reduced Green House Gases (GHG) emissions compared to standard Fuels, the expansion of the agricultural frontier and deforestation to mention a few. Negative impacts of Bio-Fuels in terms of food security, higher economic costs compared to conventional Fuels as a result of large scale development of Biofuel technology, spread of genetically modified organism resulting in contamination of local crop varieties with its attendant destruction of biodiversity. The study concludes by pointing out that Biofuels could help mitigate climate change and reduce dependence on oil. Furthermore, the exploitable bio-energy potential of the Sub-Saharan African region is reported to be significant despite concerns over food security and land ownership in crop production. Finally, Biofuels production represents an opportunity for the African region to increase energy supply security and to give a boost to rural economies by opening markets for agricultural surpluses, creating jobs and reducing carbon emissions. But on the negative note, the recent increases in food prices have been attributed worldwide to increases in Biofuel production as farmers have switched to crops for Biofuel, which have threatened food security in the region and worldwide generally.

INTRODUCTION

Biofuels are products that can be processed into liquid Fuels for either transport or heating purposes. Global production of Biofuels has doubled in the last five years and will likely double again in the next four years, according to the UN framework (Any Reference(s)?). Burgeoning demand for Biodiesel derived from plant oils has grown significantly over the last decade (Chand et. al. 2008). The advantages of Biodiesel compared to fossil diesel Fuel include: biodegradability, it is biorenewable, has low sulfur content and toxicity, its low volatility/flammability, and storage properties and salutary atmospheric CO₂ balance for production (Srivastava and Prasad, 2004).

Among the countries that have enacted new pro-Biofuel policies in recent years are Argentina, Australia, Canada, China, Colombia, Ecuador, India, Indonesia, Malawi,