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BIO-ECONOMIC AND ENVIRONMENTAL MODELING OF BIOFUELS ADOPTION IN THE PETROLEUM SECTOR IN NIGERIA

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Introduction

- Biofuels are liquid or gaseous forms of fuels from biomass sources.
- Biofuels are acknowledged as the primary source of heating and cooking in most countries.
- Basic biofuels include: fuelwood, cow dung, charcoal, palm kernel shell, sawdust, and bio-wastes from a variety of sources – forestry, agriculture etc.
- Technological development led to the emergence of biofuels such as bio-ethanol, bio-diesel, methane etc
- Biofuels are increasingly making inroads into the energy sector globally.



Introduction

- Biofuels are now accepted as alternatives to conventional fuels
 - Biofuels acceptance and adoption is premised on:
 - Diminishing and unstable supply
 - Rising prices
 - Adverse impact on the environment and human health
 - Related Socio-economics concerns and
 - Climate change
- Associated with fossil fuels exploration and utilization



The Issues for Nigeria

- The insecurity of supply of fossil fuels
- Ever increasing costs
- Global warming evidences
 - Desertification
 - Weather variability
- Carbon emission
- Air pollution –
 - Gas flaring at the exploration platforms
 - Incomplete combustion automobile and generators
- Prevalence of Rural poverty
- Poor Infrastructure
- Under-utilization of arable lands
- Declining revenue from oil



All pointing to the fact that there is need for alternative



Petrol Dollar not trickling Down





Serious Energy Crises



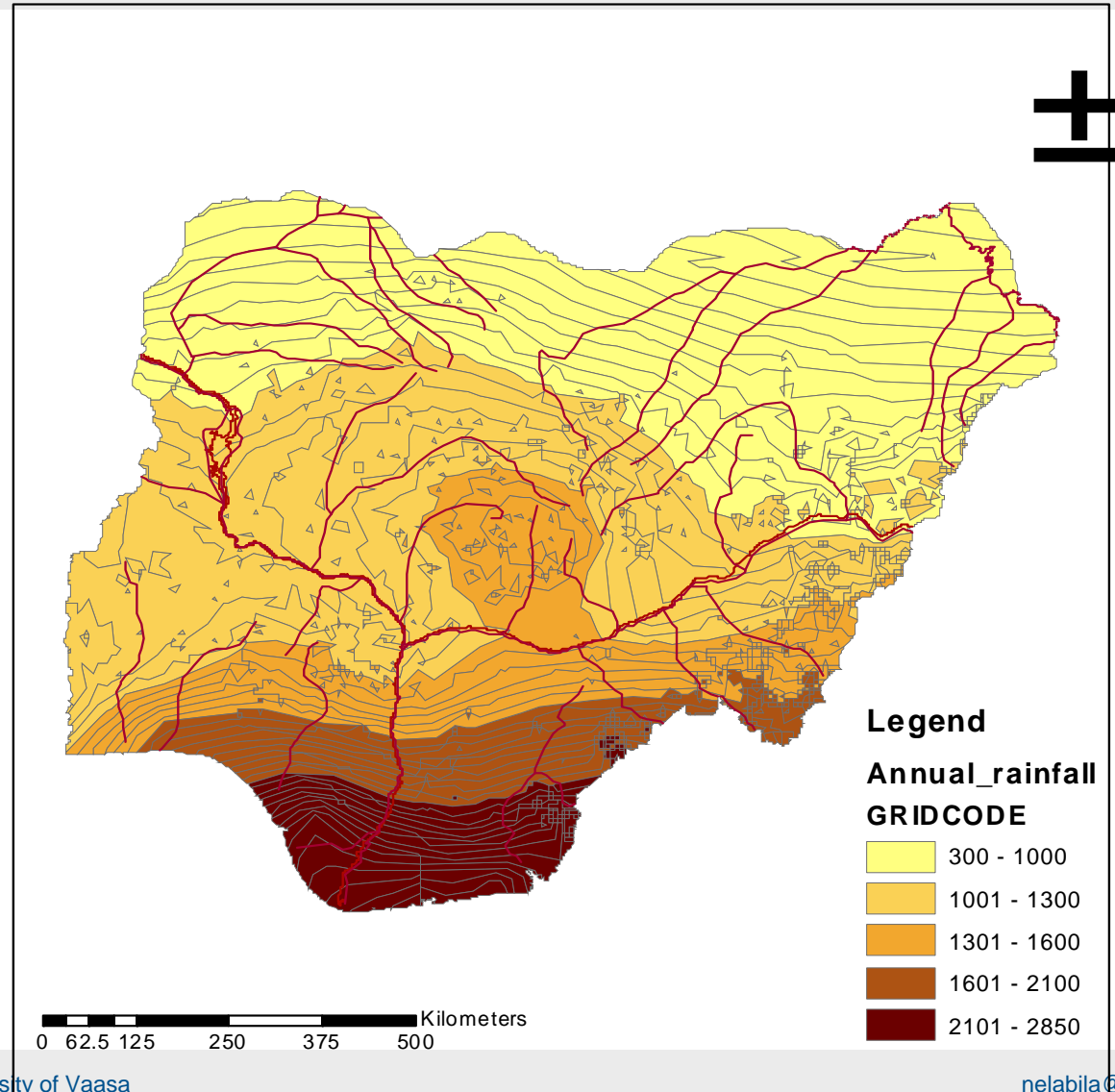


But Opportunities Abound

- High Potential for Energy Crops production for Biofuels
- Oil-palm
- Sugarcane
- Sweet-corn,
- Soybean,
- Sesame,
- Jatropha
- Cassava and
- Algae -



Favourable Rainfall Distribution





Biomass Resources





Study Objectives

- The study will assess the impact of the adoption of Biofuels in the energy sector in Nigeria.
 - Describe the prevailing trend in petroleum and biofuels exploitation in Nigeria
 - Estimate petroleum consumption and the capacity for biofuels substitution
 - Assess the socio-economic impact of biofuels adoption and production on human livelihoods and other sectors.
 - Model the environmental impact of biofuels production and utilization.
 - Assess land use changes envisage from biofuels adoption.
 - Develop a framework for mainstreaming biofuels into the petroleum sector in Nigeria.



Methodology

The study will employ both theoretical and empirical approaches in modeling biofuels adoption.

- Data will be sourced from both primary and secondary sources.
- Theoretical modeling will utilize national level secondary data.
- Empirical analysis and modeling will utilize primary data from survey of selected energy/biofuel crops production zone of Nigeria.
- Environmental and Economics Scenarios Analysis



Quantitative Premise for Scenario Analysis

- **Excel based energy-costing tool:** for estimating regional and national energy consumption in Nigeria and filling the data gap for other analyses.
- **Sustainable Livelihood Framework (SLA):** for a theoretical estimation of the socio-economic and welfare related impacts of the adoption of biofuel using data from ongoing biofuel out-grower schemes and industrial adoption of biofuel.
- **GIS Mapping:** for spatial analysis, depicting the geographical spread of the biofuel capacity across Nigeria and for projecting trends base on current land use and population data.
- **Goal Programming or Linear Programming:** for modeling and testing various energy consumption scenarios in attaining socio-economic and welfare targets for Nigeria and for developing a sustainable energy policy for the country



Expected results

The result of the study will:

- Provide current and projected trends in petroleum exploitation, consumption and capacity for biofuel substitution.
- Predict possible socio-economic impacts of biofuel adoption.
- Predict possible environmental impacts of production and utilization of biofuels
- Show possible change in land use trend from biofuel adoption.
- Provide a detailed blueprint for mainstreaming biofuels into the petroleum sector in Nigeria.



Scenarios Analysis

- Economic

From Poverty to Wealth

- Environmental

From Dire Environmental Situation to a Healthy Environment

- Social

From Insecurity and Labour Dispute to a Peaceful and Stable Economy



Comments & Questions

Thank you for listening.