

NIGERIA ENERGY POLICY ANALYSIS: Modelling Nigeria's Energy Policy Response Dynamics

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ABSTRACT

Nigeria is a major Oil Producer and member of the Organization of Petroleum Exporting Countries (OPEC). The country's economy is mostly dependent on Crude Oil, which is produced in the Niger Delta region. The challenges of the long term neglect of these Oil Producing Areas, is succinctly reported by Tom O'Neill, "**Curse of the Black Gold: Hope and Betrayal in the Niger Delta**," in the February 2007 edition of National Geographic. 40% of oil produced in the Niger Delta region is exported to the USA. Again about 40% of the electricity generated at the U.S. power plants utilizes Oil from Nigeria, because of its low sulphur content. Former Vice President and Nobel Peace Laureate, Mr. Al Gore recently proposed to replace fossil fuel with renewable energy to generate electricity in the USA in ten years <<http://tinyurl.com/66sk9d>>. If Mr. Gore's bold scheme were to succeed, most of the developed nations (among them Nigeria's Oil importers) would follow suit thereby leave Nigeria greatly exposed to the risk of lessening oil revenue. This project is focussed on modelling Nigeria's Energy Policy Response Dynamics, taking into account the ramifications of Mr. Gore's ambitious energy policy proposal; the impacts of highly unstable world oil prices; as well as the depleting levels of production as a result of the conflicts in the Niger Delta Region of the country.

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1. Purpose:

Al Gore's audacious energy policy proposal implies the proliferation of wind-, solar- and geothermal energy to replace oil use for power generation. Since Mr. Gore began his campaign, many global leaders, especially from those countries with little or no oil reserves but with heavy dependence on it for their energy requirements, are taking a closer look at their fossil fuel replacement plans. New energy policies with strategic implementation plans are being developed more urgently than ever. Indeed, in many parts of USA, Europe and Asia, many new Wind and Solar Power plants have sprung up and are beginning to make some noticeable contributions to the national grids.

It is against this backdrop that Nigeria, facing the imminent danger of gross reduction in income from oil, should for instance emulate the Emirates' (Dubai's) laudable diversification efforts from primary dependence on oil as the core national revenue source, for example, as making Nigeria as the centre of Knowledge society of the 21st century in Africa with the use of the newly launched Nigerian domestic satellite for export of education and healthcare services to nearby countries.

This work is intended to provide the tools and models for scenario analysis to aid Nigeria's Energy Policy Review, and by extension, to provide a starting point for architecting an integrated national development planning model.

2. Potential Consequences of Dwindling Revenue from Nigeria's Oil (Backlash of Al Gore's Energy Policy Proposal):

2.1 Niger Delta Region:

The situation in the Niger Delta deteriorated to the point where the present Government in recognition of the need to act timely included the region for special attention and intervention/development focus. In the event that sufficient programs of intervention are not put in place to markedly change the quality of life of the people in the Niger Delta before the oil revenue drops to levels that would no longer sustain these programs, the consequences may be disastrous. The people of the Niger Delta, in these circumstances, would remain 'up in arms', demanding compensation for the long term neglect.

2.2 Nigeria' Economy:

The heavy dependence on oil as a source of revenue exposes the vulnerability of the Nigerian economy to global energy dynamics. Before the discovery of oil, Nigeria's economy was sustained by Agriculture (over 70% in the 1960s and early 1970s). The country is equally blessed with commercial deposits of several solid minerals. The policy implications of this work should motivate the government to act early before it is too late to take action to address these impending risks of exposure. The fact that Nigeria still lacks the basic infrastructures such as good Roads, Healthcare, Reliable Power, and Clean water compounds the potential problems.

3. Proposed Methodologies:

Threshold 21 (T21) of Millennium Institute (MI) can contribute to this project in various ways: it can be taught and used at school to comprehend how to face complex issues. It can be used to promote holistic and comprehensive thinking (by linking society, economy and environment), etc. T21 is a comprehensive simulation model, which includes society, economy and environment. T21 is based on System Dynamics (SD), a practical methodology to analyze complex systems. The SD makes participants (particularly young would-be decision-makers) to understand the intricacies of independency of various world phenomena with cause-and-effect analysis and hence with their manipulation of simulation models for "what if" experimentation on various policy analysis with critical thinking.

In the education sector, T21 can speed-up learning about policy planning and interrelations between social, economic and environmental issues at the country level. Moreover, SD, by proposing a framework for

understanding complex issues, can enhance the learning process in policy planning as well as in all related knowledge areas.

In the Government and NGOs sector, T21 represents a very good tool for understanding the implications of policy planning. It also helps in analyzing the cause and effect relationship that generates the outcomes of the simulation, so that negative effects can be reduced while the positive ones can be amplified through the implementation of an optimized mix of policies.

Beneficiaries: young people and students. T21 is transparent, flexible and enhances discussion and confrontation. It is based on the System Dynamics methodology, which is now used in many Universities and research institutions to allow students and researchers to fully comprehend complex issues in various different fields. T21 is also a simplification of the reality, therefore students and young people can focus on the few mechanisms that determine the development of the country without being overwhelmed by complexity. In addition the SD methodology is intuitive, easy to understand and utilize. Certainly, T21 is not a “black box.”

Instruments: T21 can be used as a tool for teaching how to face and therefore understand complex issues. In addition, T21 can also be a game and it is actually played by the users through policy testing. The model can be used to teach SD and to train modelers, but at the same time is also the tool used to practice with the methodology and national issues. Courses and trainings can be organized for professors or facilitators of the project (administrators of the shared simulation model over the net) and 2 versions of the model can be created: a simplified learning version and a complete T21 application.

Supporting objectives: the utilization of T21 can involve the creation of a regional center for the development of the model and for continuous training of local experts. The utilization of T21 and of the SD methodology could also have positive effects on the economy of the region/country. SD is also used to manage business.

Goals of the project: T21 with its holistic approach can help identifying interrelated issues of key importance for the country. The model also suggests ways to solve those issues by showing which are the main factors affecting each sphere (society, economy and environment). In addition users will be stimulated to think about national development issues and therefore globalization.

4. Expected benefits:

This project aims at creating knowledge through the establishment of e-courses based on a network that will link many universities, health centers, governments and NGOs along with the creation of Global University System (GUS)/Nigeria. Side objectives on the project include the enhancement of the economic activity of the region, technical training and promotion of holistic thinking.

The Nigerian Economy has for long been allowed to be exposed to the risk of overdependence on a single source of revenue-oil. Al Gore’s Energy Policy proposal was a welcome signal to evoke the need to consider the implications of the global trend towards renewable energy resources, not only for electricity but indeed more recently, the impact of the oil price spikes that crippled the major automakers sounded the alarm about vulnerability to Oil. The Airlines were no lesser victims. Automakers have recently emboldened their R & D departments to forge ahead with hybrid designs and have gone ahead to launch albeit partially complete models into the market under the pressure of oil price uncertainty. The time is now for Nigeria to act.

The potential benefits of this project also lie in the development of a policy framework for managing the conflicts in the Niger Delta region. In particular, by providing the tools for assessing the impacts of policy changes on the reduction of conflicts among local stakeholders in the Niger Delta region, the project will be beneficial to the government authorities for Strategic planning and implementation of intervention programs.

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