Full Length Research Paper

Barriers to the development of renewable energy in Nigeria

Efurumibe, E.L.

Physics Department, College of Natural and Physical Sciences, Michael Okpara University of Agriculture, Umudike, Abia State, Nigeria. efurumibeezinna@yahoo.com

Accepted 16 July 2012

The development of renewable energy in Nigeria has not been steady. It has been faced with a lot of challenges some of which include: inconsistent government policy towards renewable energy sources of energy, lack of manpower/technical know-how to handle renewable resources, high upfront capital cost of renewable energy materials, etc. All these and more have hampered the development of renewable energy in Nigeria. In this paper, these problems were discussed and suggestion given on ways to check these problems, in order to facilitate the growth of renewable energy in Nigeria.

Keywords: Renewable, Energy, Development, Nigeria,

INTRODUCTION

Renewable Energy development in Nigeria had been sporadic in the absence of a comprehensive framework to plan, coordinate and implement a national policy and strategy. Moreover, there were no clear and consistent institutional champions to address barriers and create expanded opportunities for renewables. Recently, several ad hoc initiatives had been undertaken by various actors. Such actors include: the ECN, the FME, The One Sky Network, etc. The FME has initiated The Renewable Energy Master Plan Project for Nigeria. The One Sky Network has been organizing workshops and seminars in order to sensitize Nigerians on the benefits of Renewable Energy and thus promoting the use of renewable energy in Nigeria. The ECN has a few technology-driven pilot projects on solar PVs, two wind power demonstration projects located in Sokoto, and a small hydro plant that has been operating in Jos for several years. Nevertheless vast opportunities for small hydro remain untouched. Recently several state governments have embarked on solar projects for rural water supply, residential lighting and lighting of clinics, schools and community centers. These and several other contemplated initiatives suffer from the specific barriers discussed in section2 (Good, 2005). Good (2005) did a lot of work in this regard and almost all the barriers discussed below are found in his work

BARRIERS

The following barriers are identified as a bottle neck to the development of renewable energy in Nigeria:

(i) Legal, Policy and Regulatory Framework

Achieving adequate energy supply where renewables play a role necessitates the creation of appropriate policy framework of legal, fiscal and regulatory instruments that would attract domestic and international investments. Clear rules, legislation, roles and responsibilities of various stakeholders along every stage of the energy flow from supply to end-use are key elements of the overall policy framework needed to promote renewable energy technologies. Such policy, legal and institutional frameworks are at their beginning stage in Nigeria and are being developed under the reform program.

(ii) Non-existing Structure for Power Purchase Agreements

Currently there is no Power Purchase Agreements plan for renewable energy generation to the national grid. A system of rational expectations between renewable electricity producers and the grid operators are imperative for the growth in grid-based renewables. The Power Purchase Agreements set the terms by which power is marketed and/or exchanged. It determines the delivery location, power characteristics, price, quality, schedule, and terms of agreement and punishments for breach of contract. Legally binding long-term Power Purchase Agreements are a must since they provide
comfort for the developers of renewable as well as lenders, and would also encourage the expansion of renewable electricity development through investments.

(iii) Institutional Framework

In Nigeria, coordination between government Ministries and agencies responsible for rural development and renewable energy development is weak and rather complex. Unlike oil and gas, no agency has a clear mandate to oversee the development of renewable energy. The lack of a clear agency robs the sector of a driving force for its growth and development. The new Electricity Law is expected to facilitate the establishment of a Rural Electrification Agency and a Rural Electrification Fund. These developments will facilitate renewable energy development. As mentioned earlier, the Energy Commission of Nigeria (ECN) is involved in strategic national planning for renewable energy. At some point in the near future the expectation is that these various initiatives will converge, to achieve the desired objectives.

(iv) Affordability

Even though renewable energy sources have low operational and maintenance costs, most renewable energy technologies have high up-front capital cost compared to their conventional energy alternatives. Apart from the higher capital costs most renewable energy technologies face the barrier of being perceived as untested technologies. Given these twin barriers to renewable energy technologies, investors face higher risks and uncertainties when making investment decisions. Therefore in a capital constrained economy like Nigeria, where there are many competing demands for available scarce capital resources, the promoters of Renewable energy technology face the problems of high transaction costs and restricted access to capital.

On the other hand the end users of renewable energy technology, especially the poor, face problems of access to credits. Lack of access to micro financing, high interest rates, poor business development skills by renewable energy system vendors and unsupportive climate for investments are some of the primary barriers to market growth.

(v) Capacity

Presently in Nigeria, human and institutional capacity needed for the development of renewable energy is under performing. Capacity building in four areas are most lacking, namely; training of manpower to install, operate and maintain renewable energy technology, development of manufacturing capabilities, development of critical mass of scientists, engineers, and economists, to design an effective and functional institutional framework. Human and institutional capacity building at all levels would be required to sustain the scientific, engineering and technical skills relevant for the design, development, fabrication, installation and maintenance of renewable energy technology in Nigeria.

(vi) Poorly Developed Cross-sectoral Linkages

In some of the most successful renewable energy programs, it is an imperative that key sectors of the economy drive the demand for renewable power production. In Nigeria, renewable energy is inadequately linked to key drivers of the national economy. Such key drivers as the growth in small and medium enterprises, growing demand for water supply, developments in the telecommunication industry and the drive towards integrated rural development. Developing these cross-sectoral interfaces is important to expanding renewable energy opportunities.

(vii) Public Awareness

Awareness of the opportunities offered by renewable energies and their technologies is low among public and private sectors. This lack of information and awareness creates a market gap that results in higher risk perception for potential renewable energy projects. The general perception is that renewable energy technologies are not yet mature technologies, hence are only suited for niche markets and as such will require heavy subsidy to make it work. There is therefore a need for dissemination of information on renewable energy resource availability, benefits and opportunity to the general public in order to raise public awareness and generate activities in the area. Such process is paramount to building public confidence and acceptance of renewable energy technology. Providing information to selected stakeholder groups like the investors can help mobilize financial resources needed to promote renewable energy technology projects. The draft Renewable Energy Master Plan proposes the set up of a National Renewable Energy Development Agency (NREDA), which can assist in increasing public awareness and providing information and assistance to interested stakeholders. This is to be done together with non-governmental organizations (NGOs).

CONCLUSION

In Nigeria, as in many developing countries, providing energy to rural and urban areas has proved to be a great challenge. Nigeria as a large oil and gas economy poses an uneven playing field for renewable energy resources. There is substantial flow of resources and policy attention to the fossil fuel sector. This makes it difficult for renewable energy to gain a foothold in Nigeria. Certain
subsidies for fossil-fuel conventional energy technologies create a barrier for renewable energies to achieve a higher market share unlike the non-renewables. Presently, technology imports for conventional electricity production carry a much lower tariff than renewable energy electricity technologies. This hinders the growth of renewable energy technologies. All along, the government at all levels formulated policies towards increasing rural energy access focused on grid extension and tanker distribution of petroleum products. With increasing population, the pressures on the infrastructure for the supply of conventional energy resources will continue to increase. Again, conventional energy is depletable with extinction risk. In order to enhance the energy security of the country and establish a sustainable energy supply system, it is necessary to promote the policy of diversifying the energy supply so as to include alternative or renewable resources and technologies into the nation’s energy supply mix. Nigeria is endowed with abundant renewable energy resources like solar, wind, biomass, small hydro, etc., which have minimal supply logistic problems. Harnessing these resources will lead to decentralized use and local management of electricity, thereby making sustainable rural socio-economic development possible through self-reliance and the use of local natural resources. For this to happen, the policy makers should make renewable energy development a priority policy statement of government at federal, state and local government levels. Lawmakers should develop appropriate legal, regulatory and institutional frameworks that reduce emphasize on over-dependence on fossil fuels. By so, renewable sources of energy will gain ground in Nigeria.

REFERENCES