

## Nigeria's Energy Policy: Issues of Sustainable Energy Development in Nigeria

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### Abstract

The concerns for environmental sustainability have become the subjects of global discussion. This has prompted debates, negotiations, declarations and legislations world over. The outcome of these engagements has favoured the reduction of anthropogenic emissions that are deleterious to the environment and at the same time promote environmental sustainability in the face of economic development. One of the major sources of anthropogenic emissions has been linked to energy production. The Nigeria energy development process has gone through various policy developmental phases. This has led to the creation of some policy statements which include the energy policy of vision 20:2020 and the Renewable Energy Master Plan. This study was therefore used to critically assess the various policy issues of sustainable energy development in Nigeria. It appraised the level of development as highlighted in the policy statements and also analyzed the index of renewable energy production as stated by the policy statement. Further to this, some challenges impinging on the development and utilization of sustainable energy in the nation were identified and discussed. Some suggestions and legal proposals which may aid the promotion of renewable energy development in Nigeria and also improve the nation's energy policy are also highlighted.

**Key words:** Renewable energy development, Energy policy, Environment, Nigeria

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## **Introduction**

Energy has been defined as the ability to do work (Tippens, 2001). It is a force multiplier that enhances man's ability to convert raw materials to finished and usable goods (Ajayi and Ajanaku, 2009). The interdependence between energy availability, its supply, demand and utilization has been one of the major factors that control national development vis-à-vis population explosion and/or rural-urban integration (Hermann, 2001; Ajayi et al., 2011).

The governments of several countries around the world are always seeking ways of producing sufficient energy for the populace. They constantly look into ways of increasing and maintaining generation modules in such a way that are sustainable and efficient. However, two sources of energy production exist. These are the renewable and non-renewable energy sources. The most commonly employed of these have been the non-renewable sources of nuclear and fossil fuels origin. For instance, South Africa generates electrical energy from coal, while some focus on employing nuclear power and hydrocarbon products. Some also uses the renewable source of hydropower plants. Moreover, although these non-renewable energy sources have been proved to be adequate, the byproducts are reported to be deleterious to humans and the environment.

Sustainable electricity production has been hinged on employing the Renewable Energy (RE) sources of small and large scale hydropower, wind, solar, geothermal, biomass and other such sources. These have been found to be environmentally friendly, readily available and easily applicable. In addition to this, various international debates on sustainable development have favoured energy production from renewable sources. Many international and regional declarations have also favoured increasing generation from RE sources. For instance, the European Union ratified the Kyoto protocol in her framework accord of eliminating greenhouse gas emission level of 1990 by 20% and make renewable energy account for 20% of total energy consumption by year 2020. Further to this, the United

States of America (USA) has also intensified efforts at increasing generation from renewable sources by increasing the installed wind power capacity from 2,472.478 MW in 1999 to 40,266.96 MW in 2010. China, a country widely acclaimed to be a very high emitter of anthropogenic carbon dioxide (Chandler et al., 2002; Leggett et al., 2008; Wen, 2009; IEA, 2011) has also increased efforts of wind-to-electricity generation. Her installed capacity of 4.0 MW in 1990 went up to 567 MW in 2003. By 2010, she was reported to have the World's largest installed capacity and this is projected to reach 20 GW by 2020 (NREL, 2012). Fig. 1 presents the progression of installed wind power capacity in USA while Fig. 2 presents that for the world. It is worthy of note however that Figs. 1 and 2 demonstrate a nonlinear or exponential growth in installed capacity. These reveal a rapid rate of growth. Despite this rapid growth in world installed capacity, no country in West African region has input and only Kenya has made progress in Africa. On the African continent, only four countries generated electricity from geothermal, solar and wind sources in 2003. These countries include Kenya and Egypt with 0.3 GWh each, and, Morocco and South Africa with 0.2 GWh each. This therefore signifies a long way for sustainable energy development in Africa.

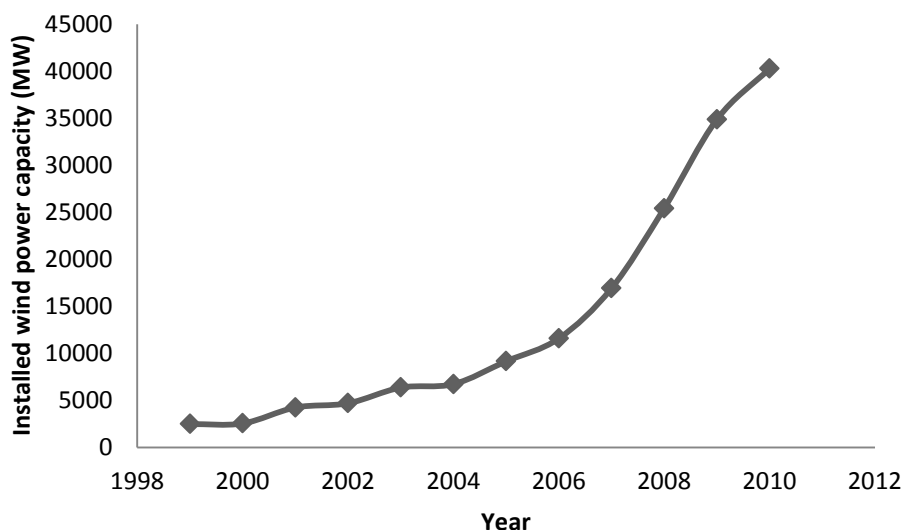


Fig. 1: Progression of new installed wind power capacity in the USA

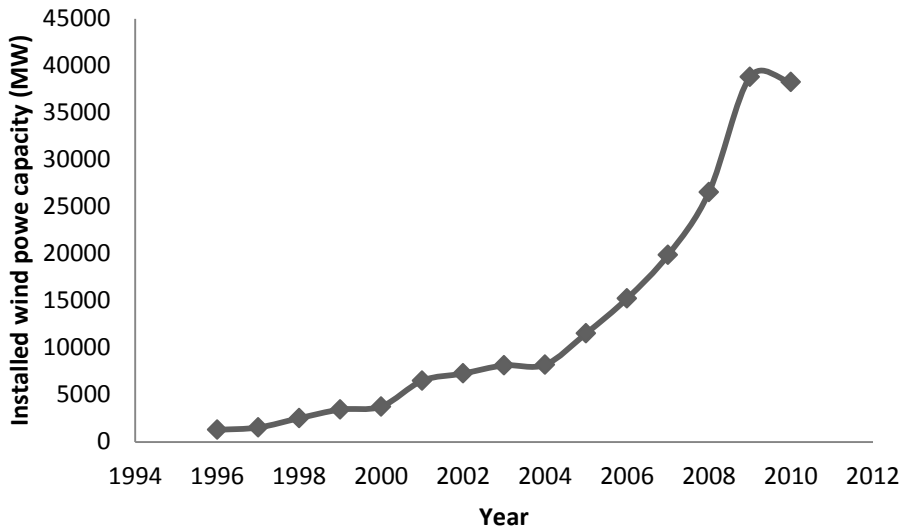


Fig. 2: Global progression of new installed wind capacity (CleanTechnica, 2012)

For the case of Nigeria, energy production, supply and demand has been through challenging past. The national power utility has not been able to produce sufficient power for Nigerians and the supply-demand imbalance has tilted in a way that favours and promotes self production through the use of fossil fuels and traditional biomass. Citizens in the rural areas have been worst hit. They mostly depend on fuel wood for energy and this encourages deforestation. Most rural communities are not connected to the national grid and the rural access of electricity is reported to be 26% in 2008 (UNDP-WHO, 2009). Today, this statistics has not improved. The government needs to embark on grid extension programme to rural areas to create an improvement. On a national scale, electricity access is put around 50 – 60% of total population (EIA, 2007; UNDP-WHO, 2009). This invariably suggests the need for more effort by both governments and private sectors. The low availability of electricity and its reliability in the urban communities has not aided business development.

Moreover, the government, in a bid to improve the energy state of Nigeria, has recently made steps to increase generation capacities to boost electricity production. However, the steps taken are in the direction of increasing thermal power generation. There are also intentions to extend the hydropower generation sources in the later future. Despite

these, as long as the majority of the rural areas are not connected to the national grid, only the urban dwellers will benefit. Improving the nation's energy supply require not only increasing generation capacities but also grid extension and diversification of energy frontiers. This will mean to extend the nation's energy sources to include the renewable energy resources of solar, wind and biomass for power generation. The RE sources has opportunities to be utilized as standalone for community utilization and also for grid connection. This suggests that rural electrification can be achieved by employing RE resources. It can also be used to boost national energy production when employed in areas with huge resource potentials. Notwithstanding, countries that promotes generation from RE resources are reported to have robust renewable energy policy.

Despite the efforts of the federal government of Nigeria at improving the condition of energy in the country, she has also developed the national energy policy and the vision 20:2020. These policy documents contain the intentions of the government at improving the state of energy in Nigeria.

### **The Nigeria's energy policy: Inferences and analysis**

The Nigeria energy policy document came to effect in 2003 to serve as a road map to a better national energy future. Based on this policy statement, the Renewable Energy Master Plan (REMP) was developed in 2005 (ECN-UNDP, 2005). REMP document is the product of the efforts of a group of consultant organized by the Energy Commission of Nigeria (ECN) in collaboration with the United Nation Development Programme (UNDP). The mandate was to look into the energy situation of the country and proffer solutions that will enhance the energy policy. In addition to this, the vision 20:2020 agenda of the federal government also contain energy statement in support of the policy. The vision 20:2020 agenda was released in

2009 (NTWG, 2009). It contains the ideology of the government at improving the economy from the present Gross Domestic Product growth rate of less than 10% to 13%.

The energy policy contains nine (9) key objectives among which are (NTWG, 2009):

- “To ensure the development of the nation’s energy resources, with a diversified energy resources option, for the achievement of national energy security and an efficient delivery system with an optional energy resource mix”
- “To generate adequate, reliable and sustainable supply of energy at appropriate costs and in an environmentally friendly manner, to the various sectors of the economy, for national development”
- “To successfully use the nation’s abundant energy resources to promote international cooperation”

Further to this, the energy statement of the Vision 20:2020 is broadly focused on the target of “meeting the demand for energy in all sectors of the economy including households, with safe, clean and convenient energy at an affordable cost” and also in a manner that is “technically efficient, economically viable and environmentally sustainable through applications of conventional and non-conventional energy sources” (NTWG, 2009; Ajayi, 2010a). The vision statement is stated as, “By 2020, the energy sector will be the major engine of the nation’s sustainable social, economic and industrial growth, delivering affordable and constant energy supply efficiently to other sectors of the economy” (NTWG, 2009; Ajayi, 2010a). In addition, REMP proposed a road map to translate the policy into implementable projects, activities and programmes by stipulating that the country should endeavour to increase the energy generation capacity from 5000MW to 16000MW by 2015 through the exploration of renewable energy resources (ECN-UNDP, 2005; Ajayi, 2010a). It envisages that the trend of demand should follow the progression of Fig. 3, while the

combined contributions of wind and small scale hydro should follow the representation of Fig. 4.

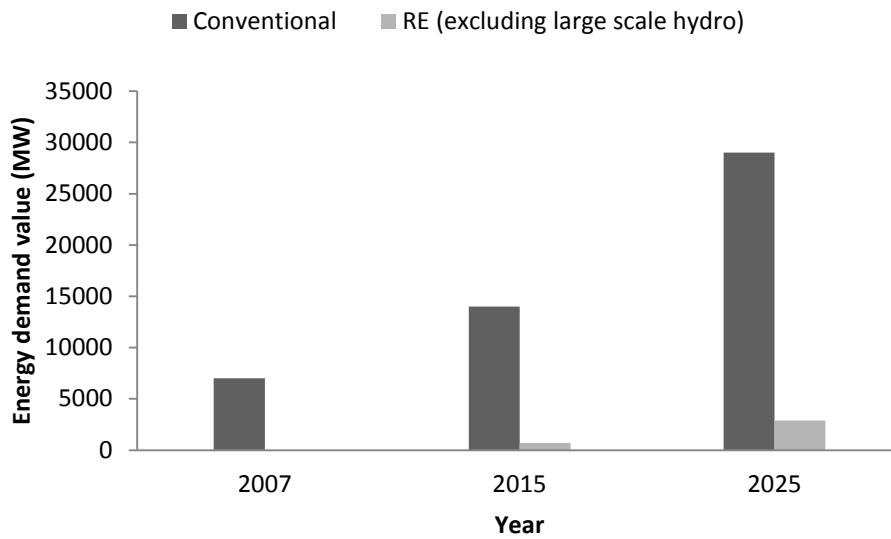


Fig. 3: Demand of energy from conventional sources (fossil fuels and large scale hydro) and other RE sources.

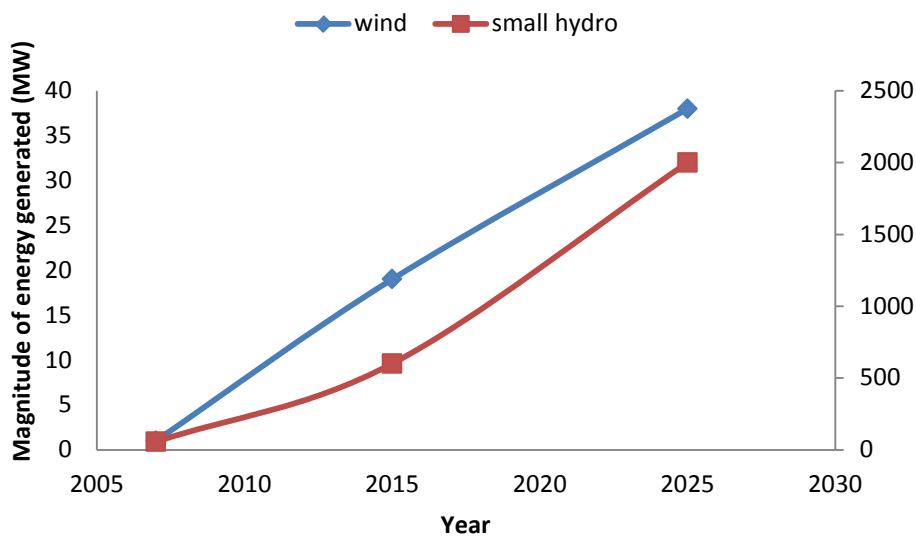


Fig. 4: Combined contributions of wind and small hydro power productions to productions from conventional sources

Fig. 3 demonstrates that the demand curve for conventional sources should move from 7000 to 29000 MW, between 2007 and 2025 while that for other RE should be from marginal to 2900 MW. The envisaged constituents of the RE are the small scale hydro, solar photovoltaic and solar thermal, biomass and wind (Ajayi, 2010a). Fig. 4 on the other hand shows that, the

energy additions from wind and small scale hydro should grow from 1 to 38 MW and 56 to 2000 MW respectively.

Considering the aforementioned, it is clear that the government intend to generate electricity from RE resources. Nonetheless, most important is the question as to how the policy has led to sustainable energy development and power generation. Another is to know the extent the policy and vision statement deliver on promoting grid electricity from the highlighted RE sources. Despite the targets marked out in the plan, the nation is yet to generate grid electricity from wind, solar, or biomass. Some governments has began utilizing solar energy for street lighting and the Lagos state government has also began to build capacity for biogas generation from landfills wastes.

Even though there is potential for wind energy utilization in Nigeria, especially in the Northern parts of the country, there is still no grid electricity from wind, neither is there a community powered by wind turbines. Eight years to the target year of the vision statement, the nation is yet to experience sustainable energy production from wind, solar or biomass on a large scale. The efforts have only been towards promoting generation from fossil fuels based power plants. Worthy of note is the fact that, the policy regarding RE development and the issues raised in REMP have not yet began implementation. Although the REMP document was the result of the initiatives of the federal government parastatal in collaboration with UNDP, it is yet to be passed into law.

Regardless of the fact that the governments desires and are willing to implement the policy statements, they cannot single handedly carryout the implementation to an enviable level. Collaboration with the private sector cannot be overemphasized. Moreover to promote and encourage private partnership, some policy issues that discourage the growth of RE development must be addressed and strategies put in place to further its development.



## **Hindrances to RE policy implementation**

Going through the various policy statements on RE development and utilization, there are certain issues which must be addressed to further the development and also accelerate the growth of RE utilization in Nigeria. These policy issues when properly implemented may attract investors into Nigeria. Some of the hindrances to the policy implementation include the following:

### *Weak government motivation*

The policy statements and the documented intentions are clear evidence of the government to generate electricity from RE resources. These documents contain roadmaps and target dates of implementation. On a short term analysis, how have the government been able to meet with the challenges. The government may need to do more to actualize the intentions. This may require releasing sufficient resources and setting up implementation committee to oversee the establishment of renewable energy projects across the country. The government has made efforts to increase generation capacities from fossil fuels power plants. They also need to focus on RE development.

### *Lack of economic incentives*

The energy policy document and especially the REMP document contain roadmap to translate the policy into implementable projects, activities and programmes (ECN-UNDP, 2005). It however lacks the selling point. This is the part of a policy that is attractive to investors. What incentives are in place for RE marketers, how the government does intends to aid or support willing investors. The government needs to develop incentives such as tax holidays for RE investors, provide low or interest free loans to aid RE technology investment, develop appropriate feed-in tariff for grid connected renewable electricity, legalise the right

to connect renewable electricity to the national grid, and the obligations for national electric utility to purchase RE (Ajayi, 2010b).

#### *Multiple taxations*

In Nigeria, the occurrence of multiple taxations can be a hindrance to business development. Tax payment to federal, state and local governments can be harmonized and made payable at once through a central collecting organization. Such payments should also be such minimal to the extent that could aid interests and return on investments. Tax chargeable on renewable energy projects should not be on the same rating as those from conventional sources. The value added tax and other tax payable by both consumers and marketers should be such that would aid the adoption and utilization of RE technology, especially wind and solar.

#### *Non-existent favourable customs and excise duty act to promote Renewable Energy Technologies*

Presently the customs and excise duty act of Nigeria lacks aspects that could aid easy importation of RE technology and equipments. To aid RE development and attract foreign investors, the government may need to look into the customs and excise duty act with the aim of creating sections that will be RE-specific. This by so doing will make the revenue generation from RE technology imports to be at variance from other imported goods. Marking RE technology imports as 'special' for duty free or subsidized duty will encourage investors to import technologies to promote renewable energy development.

#### **Legal proposal to aid RE technology development in Nigeria**

In a bid to attract and encourage investment in renewable energy in Nigeria and especially wind energy the government must put in place the necessary mechanisms that will aid renewable energy development and production in Nigeria. Some of the mechanisms include a

legal framework on renewable energy. Some existing laws may also necessarily need amendment for the purpose of it favouring the establishment and adoption RE for electricity production.

More so, to develop a legal framework for renewable energy in Nigeria and especially as it relates to wind energy, there is an array of laws and regulations that are applicable to the actualisation of the development of wind and other renewable energy potentials in Nigeria. Such laws include the Land Use Act cap 202, Laws of the Federation of Nigeria 1990 and the Environmental Impact Assessment Decree, No 86, Laws of the Federation 1992.

In attracting investors to realise the renewable energy master plan, the availability of land is of extreme importance. Section 1 of the Land Use Act provide “Subject to the provision of this act, all land comprised in the territories in each state in the federation are hereby vested in the Governor of that State and such land shall be held in trust and administered for the use and common benefit of all Nigerians in accordance with the provisions of this Act”.

Section 2(1) of the Land Use Act provides as from the commencement of this Act -

(a) All land in urban areas shall be under the control and management of the Governor of each State, and

(b) All other land shall, subject to this Act, be under the control and management of the Local Government, within the area of jurisdiction of which the land is situated.

The provisions of section 1 and 2 make it clear that land is held in trust for the citizens by the governor and the local authorities. As desirable as the provisions of this Act are, the problems associated with acquiring land and perfection of title to land is onerous. In any urban land transaction the governor’s consent must first be had and obtained as required in section 22 of the Act which states that “It shall not be lawful for the holder of a statutory right of occupancy granted by the Governor to alienate his right of occupancy or any part thereof

by assignment, mortgage, transfer of possession, sublease or otherwise howsoever without the consent of the Governor first had and obtained". This law therefore supposedly refers to the illegality of land transfers from one individual to another or corporate body to another. It also stipulates that the grant of consent to any land transaction is at the governor's prerogative which may take a long time. However, commercial and industry size turbines require large tract of land to accommodate wind farms. Also, when such areas required for RE projects, such as wind farm, are such that are owned by individual, group or community, the process of transfer of ownership becomes long and at times cumbersome. It is suggested that a time frame be stipulated in the act most especially when such land is to be used for RE projects such as wind farm establishment. The period stipulated will be such as to ensure the governors ratify the title deed within the allotted time frame. Such preference need to be given because energy generation from renewable sources is critical to the country's economic advancement. It is also crucial to the realisation of Vision 20: 2020 of making Nigeria one of the top twenty economies in the world. It is also imperative considering the fact that the whole world is seeking a way out from the effect of global warming. Therefore the government must be ready to fast track the process of title perfection so as not to get investors discouraged.

### ***Fiscal incentives***

The government in the quest to attract investors in order to develop renewable energy production must be ready to give fiscal incentives to promote wind energy production. This is because, large expanse of land need to be acquired and cleared for road constructions to access wind farms, especially when such farms are located away from urban areas. Also, equipment importation is another activity that characterise wind energy production. Therefore, for the benefits of companies that chose to invest in rural areas, section 34 of the

Companies Income Tax Act, Cap 60, Laws of the Federation of Nigeria 1990 Act, Cap. C21, Laws of the Federation of Nigeria 2004 makes required provision. This provides that “where a company incurs capital expenditure on production of facilities like electricity, water, tarred road or telephone for the purpose of trade or business which is located at least 20 kilometres away from such facilities provided by the government, there shall be allowed to such company in addition to an initial allowance under second schedule to this Act an allowance (hereafter called rural development allowance)”.

In addition to the aforementioned, there are other incentives packaged by government as stimulants to encourage investors and attract business partners to participate in trade and commerce in Nigeria. Some of these incentives are contained in the Nigeria Investment Promotion Commission Act, Cap 117, Decree No 16 of 1995, Laws of the Federation of Nigeria. Such incentives as contained in the law are discussed below.

#### *Pioneer status*

The grant of Pioneer Status to an industry is aimed at enabling the industry concerned to make a reasonable level of profit within its formative years. Such profits made in the early years of the business are to be reinvested in the business. Pioneer status is a tax holiday granted to qualified industries anywhere in the Federation. Industries qualified for the status of a pioneer company are granted seven year tax holiday in respect of industries located in economically disadvantaged local government area of the Federation. There are only sixty nine approved industries that have been accorded pioneer status. In order for joint venture company or a wholly foreign owned company to qualify for pioneer status it must have incurred a capital expenditure of not less than five million Naira, whilst that of qualified indigenous company should not be less than N150, 000.00. This incentive is attractive to renewable energy investors and marketers. Therefore, for the purpose of attracting foreign

investors, who are unaware of this provision, the pioneer status must be made popular by inputting it into the energy policy to deliberately favour RE development.

#### *Tax relief for research and development*

Research and Development (R&D) is a fundamental prerequisite for industries that desire to compete favourably in the market place. To encourage R&D, the government offers up to 120% of expenses on R&D as tax deductible. Although such R&D activities must be carried out in Nigeria and are connected with the business from which income or profits is derived. Also, for the purpose of R&D on Local raw materials, 140% of expenses are allowed. Where the research is long term, it will be regarded as a capital expenditure and will be written off against profit. The result of such research could be patented and protected in accordance with internationally accepted Industrial Property Rights. This is another incentive that directly favours RE development. What is left is for the government to make it a part of the national energy policy on RE development. It enables RE technology developers to cut cost while at the same time maximise profit. It also makes RE development competitive with other energy sources as it can serve as subsidy from the government. R&D practitioners in RE development can also take advantage of this provision to further research and hasten development.

#### *Capital allowances*

Capital allowance is money spent on fixed assets but deducted from profits before the taxes are calculated. It is an untaxed expenditure In Nigeria only seventy five percent capital allowances can be granted on assessable profit for manufacturing industries in any year of assessment, and 66% in case of others, except such companies in agro allied industries that are not affected by this restriction. If leased assets are used in agro allied ventures, the full

(100%) capital allowance claimed will be granted. Moreover, where the leased assets are agricultural plants and equipment, there will be an additional investment allowance of 10% on such expenditure. Based on this, the government need to make this provision applicable to RE investors, just as it is to agriculturists. Companies that choose to invest in renewable energies may be excluded from the restrictions and granted 100% capital allowance. The government should also be ready to give higher percentage as additional investment allowance greater than what is obtainable for leased agricultural plants and equipments.

#### *Investment in infrastructure*

This is a form of incentive granted to industries that provide facilities that ordinarily, should have been provided by government. Such facilities include access roads, pipe borne water and electricity. Twenty percent (20%) of the cost of providing these infrastructural facilities, where they do not exist, is tax deductible. Thus, RE investors and marketers need to be included on the list of potential beneficiaries of this provision.

#### **Conclusion**

The study has been used to assess the policy issues of Nigeria energy system with focus on renewable energy development, adoption and utilization. Critical analyses were carried out on the renewable energy policy statement of the nation's energy policy using the vision 20:2020 and the Renewable Energy Master Plan as case study. The strategies, road maps frameworks and renewable energy policy intentions of the government were exposed and the challenges which may have limited the growth of renewable energy development and utilization in Nigeria were discussed. Some legal proposals which can aid the promotion of renewable energy development were also highlighted and discussed.

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