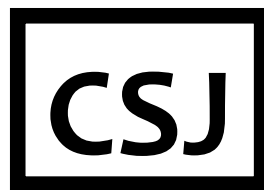


# **BUDGETING FOR CLIMATE CHANGE IN THE ENERGY SECTOR**



**CENTRE FOR SOCIAL JUSTICE (CSJ)**

*(Mainstreaming Social Justice In Public Life)*

First Published in 2016

By

**Centre for Social Justice (CSJ)**

No.17, Yaounde Street, Wuse Zone 6, P.O. Box 11418, Garki Abuja

Tel: 08055070909, 08127235995

Website: [www.csj-ng.org](http://www.csj-ng.org)

Email: [censoj@gmail.com](mailto:censoj@gmail.com)

Twitter: @censoj

Facebook: Centre for Social Justice, Nigeria

Blog: [csj-blog.org](http://csj-blog.org)

**Centre for Social Justice (CSJ)**

## Table of Contents

List of Tables and Figures .....	iv
Acronyms .....	v
Acknowledgement .....	vi
Executive Summary .....	vii
1.1 Introduction .....	1
1.2 Policies on Energy and Climate Change .....	3
1.2.1 The National Policy on Environment .....	3
1.2.2 National Adaptation Strategy and Plan of Action on Climate Change for Nigeria (NASPA-CCN) .....	3
1.2.3 Intended Nationally Determined Contributions (INDC) .....	5
1.2.4 National Renewable Energy and Energy Efficiency Policy for the Electricity Sector (NREEP) and Allied Policies .....	5
2. Coordinating Ministries .....	7
3.1 Trend of Budget Allocation to Energy and the Federal Ministry of Power from 2013-2016 .....	7
3.2 Programmes and Projects and the Positive Impact of Budget Allocations on Climate Change .....	9
3.3 Negative Impact of Budget Allocations on the Climate .....	14
3.4 Other Policy Provisions, Gaps and Challenges with the Allocations .....	17
4.1 Budget and Policy Recommendations to Implement Mitigation and Adaptation in the Energy Sector .....	20
References .....	23

## **LIST OF TABLES**

Table 1: Trend Allocations in the 2013-2016 Budget of the Federal Ministry of Power

Table 2: Composition of Power Allocations 2013-2016

Table 3: Positive Impact of Budget Allocations on Climate Change

Table 4: Procurement of Clean Cook Stoves 2012-2016

Table 5: Budget Allocations with Negative Impact on the Climate

Table 6: Hydropower Projects in 2016 Allocations

## ACRONYMS

CBN	Central Bank of Nigeria
CCN	Climate Change for Nigeria
CO <sub>2</sub>	Carbon Dioxide
COP21	Paris Climate Conference
COPD	Chronic Obstructive Pulmonary Disease
CSJ	Centre for Social Justice
DISCOs	Electricity Distribution Companies
FGN	Federal Government of Nigeria
FMoE	Federal Ministry of Environment
FMoP	Federal Ministry of Power
GHGs	Greenhouse Gases
IEA	International Energy Agency
INDC	Intended Nationally Determined Contributions
MDAs	Ministries, Departments and Agencies of Government
NASPA	National Adaptation Strategy and Plan of Action
NCEF	National Clean Energy Fund
NEEAP	National Energy Efficiency Action Plans
NEP	Nigeria Energy Policy
NERC	Nigeria Electricity Regulatory Commission
NIIMP	Nigeria Integrated Infrastructure Master Plan
NNPC	Nigeria National Petroleum Corporation
NREEEP	National Renewable Energy and Energy Efficiency Policy
PPPs	Public Private Partnership
SDGs	Sustainable Development Goals
UNFCCC	United Nations Framework Convention on Climate Change
USD	United State Dollars
WHO	World Health Organisation

## **ACKNOWLEDGEMENT**

Centre for Social Justice acknowledges the support of Embassy of the Federal Republic of Germany towards the research and publication of this Study. We acknowledge the research of our key facilitators and resource persons Chukwuma Smart Amaefula and Eze Onyekpere. We further appreciate the contributions of Huzi Ishaku Mshelia, Fidelis Onyejegbu and Uzochukwu Eke towards the proof reading of the Study.

## EXECUTIVE SUMMARY

The global ecosystem suffers from the harmful effects of climate change. According to IEA (2015), the energy sector accounts for roughly two thirds of all anthropogenic Greenhouse Gases (GHGs). This has informed the global campaign and call for clean and sustainable energy generation and consumption. According to World Bank data (2013), increasing energy efficiency and exploring renewable (sustainable) sources of energy have been central in the efforts towards reducing GHGs emission in many countries in recent years. The international response to climate change was launched at the Earth Summit in Rio de Janeiro in 1992, with the signing of the UN Framework Convention on Climate Change (UNFCCC). Several other summits that followed led to the 2015 Paris Climate Conference (COP21) where 195 countries including Nigeria adopted the first ever legally binding global climate change agreement.

Nigeria's Intended Nationally Determined Contributions (INDC) states that climate change will have significant effects and is already impacting on the energy sector in Nigeria. In particular, rising temperatures would result in increased energy demand for air conditioning, refrigeration and other household uses. This is in a context of severe shortage of energy supply. The Federal Government of Nigeria (FGN) states that providing access to energy for all Nigerians is a priority. At present, a significant share of demand for energy and electricity in particular, remains unmet. The current grid is unable to reliably serve the existing domestic, commercial and industrial customer base. A shortfall in generation capacity has led to the proliferation of small generators, which are inefficient and polluting. Most rural communities remain off the grid, about 60% of the population lack access to electricity (Nigeria's INDC 2015). At the current rate of grid expansion, they will largely remain under-served. The potential to both provide energy access and to reduce emissions is enormous. Energy is a cross cutting issue which impacts other sectors; for instance, increasing fuel-wood consumption contributes to deforestation with consequences for desertification and soil erosion<sup>1</sup> which in turn negatively affects livelihoods, job creation, economic growth and the adequacy of the standard of living.

The Study reviewed key policy frameworks on energy and climate change and their fiscal provisions. These include the National Policy on Environment, National Adaptation Strategy and Plan of Action on Climate Change for Nigeria (NASPA-CCN), INDC, National Renewable Energy and Energy Efficiency Policy for the Electricity Sector

---

<sup>1</sup> See the National Renewable Energy and Energy Efficiency Policy for the Electricity Sector (NREEEP). The right to an adequate standard of living is a human right provided under article 25 of the standard setting Universal Declaration of Human Rights and article 11 (1) of the International Covenant on Economic, Social and Cultural Rights to which Nigeria is a signatory.

(NREEEP), National Energy Efficiency Action Plans (NEEAP). The Study reviewed the allocations to the energy sector over the period 2013-2016 in the budget of the Ministry of Power and a few other allocations from other ministries relevant to energy. It concludes with the following budget and policy recommendations.

**(1)** Full costing of the INDC/NDC, renewable energy and energy efficiency policies to provide a guide for MDAs seeking public funding for renewables.

**(2)** Review the costing of the Nigeria Integrated Infrastructure Master Plan to mainstream climate change adaptation and mitigation strategies into the costing.

**(3)** Increased public funding of renewable energy projects and consequent gradual reduction in funding non-renewable energy; low hanging fruits will include renewable energy to power the office buildings of all MDAs.

**(4)** FGN should promote energy efficiency measures starting from retrofitting all existing public buildings housing MDAs and ensuring that new constructions incorporate energy efficiency.

**(5)** Risk assessment of major energy infrastructure and preparation of guidelines and policies for the construction of new climate change mitigating energy projects

**(6)** Intensive rural electrification on and off-grid driven by cost-efficient renewable energy solutions. This will alleviate the energy poverty in the rural areas and will double as an avenue where many small entrepreneurs can find work in the sector.

**(7)** Further to the above, NERC should amend the Mini Grid Guidelines to ensure that renewable energy investors have the enabling environment and certainty to invest, recoup their costs and get reasonable returns on their investment.

**(8)** NERC needs to design and implement feed in tariff as a support measure to incentivize investments in renewable energy by guaranteeing a reasonable tariff for a particular period of time, up to 10-15 years. These support measures need to be reviewed periodically and phased out in time as the share of renewable energy increases and renewable energy becomes competitive with conventional sources.

**(8)** The Central Bank of Nigeria should consider the establishment of a special single digit interest fund for the promotion of renewable energy.

**(9)** FGN can also use targeted financial programmes to support the mainstreaming and access to energy efficient appliances. For instance, FGN should consider establishing a National Clean/Renewable Energy Fund to be deployed to promote the use of solar panels, energy efficient appliances and other clean energy equipment. It could also be deployed to the provision and distribution of clean stoves for rural women. This Fund



could be an expansion of the already existing Ecological Fund and its use will now be guided by more transparency and accountability and value for money. This will call for increased legislative and civil society oversight over the expenditures of the Fund. Other sources of revenue for the Fund will include penalties and fines for violation of environmental laws and regulations. The Fund will help ameliorate the high start-up cost of renewable energy investments.

**(10)** FGN should consider incentives such as income tax rebates, to facilitate private financing of solar and other renewable energy solutions.

**(11)** Fiscal measures in the form of low tariffs, import duty waivers, should be extended to raw materials and parts for the local production of renewable energy machineries and parts, i.e. solar panels, inverters, small hydro machines, wind propellers, etc. FGN should also consider extending tax credit, holidays, pioneer status to companies producing renewable energy components.

**(12)** FGN should stop the funding of the proposed nuclear energy plant and rather spend the money on renewable energy solutions.

**(13)** FGN should stop the allocation of public funds for feasibility studies and construction of coal fired energy plants. Rather, FGN should spend the money on renewable energy solutions. Leave the coal in the ground.

**(14)** Further to the above, FGN should consider stopping the granting of licenses to private sector investors for coal fired energy plants.

**(15)** In the event FGN insists on using coal for electricity generation, it should introduce a levy on coal plants per metric tonne of coal produced and or imported into the country. The proceeds of the levy should go to an Environmental Remediation Fund or the National Clean Energy Fund to finance environmental remediation and or research and innovative projects in clean energy technology.

**(16)** Beyond solar energy, FGN should consider other renewable options including wind, mini hydro, biomass energy generation and distribution.

**(17)** In funding renewables, resources should not be so thinly spread over so many projects. Projects should be included in the budget on the basis of available resources rather than having so many uncompleted renewable energy projects.

**(18)** Increased funding for research and development specifically to build local capacity for the development and servicing of renewable energy machines, equipment and appliances.

**(19)** Refocusing educational curriculum in the universities and polytechnics to include specialization and courses in renewable energy technologies.

**(20)** The full removal of consumer and producer subsidies for fossil fuels can help stabilize government budgets and reduce emissions.

**(21)** FGN should consider the use of LPG for transportation and domestic use. This will reduce costs and the dependence on petrol and diesel. Locally fabricated clean cook stoves should be popularised through public private partnerships.

**(22)** The Standards Organisation of Nigeria, Consumer Protection Council and other regulatory agencies should regulate standards of imported and locally produced renewable energy technologies to ensure that quality and standards are met. Currently, low quality solar panels, batteries and other renewable energy products dominate the Nigerian renewable energy market.

## 1.1 INTRODUCTION

The global ecosystem suffers from the harmful effects of climate change. According to IEA (2015), the energy sector accounts for roughly two thirds of all anthropogenic Greenhouse Gases (GHGs). This has informed the global campaign and call for clean and sustainable energy generation and consumption. According to World Bank data (2013), increasing energy efficiency and exploring renewable (sustainable) sources of energy have been central in the efforts towards reducing GHGs emission in many countries in recent years. The international response to climate change was launched at the Earth Summit in Rio de Janeiro in 1992, with the signing of the UN Framework Convention on Climate Change (UNFCCC). Several other summits that followed led to the 2015 Paris Climate Conference (COP21) where 195 countries including Nigeria adopted the first ever legally binding global climate change agreement.

Nigeria's Intended Nationally Determined Contributions (INDC) states that climate change will have significant effects and is already impacting on the energy sector in Nigeria. In particular, rising temperatures would result in increased energy demand for air conditioning, refrigeration and other household uses. This is in a context of severe shortage of energy supply. The Federal Government of Nigeria (FGN) states that providing access to energy for all Nigerians is a priority. At present, a significant share of demand for energy and electricity in particular, remains unmet. The current grid is unable to reliably serve the existing domestic, commercial and industrial customer base. A shortfall in generation capacity has led to the proliferation of small generators, which are inefficient and polluting. Most rural communities remain off the grid, about 60% of the population lack access to electricity (Nigeria's INDC 2015). At the current rate of grid expansion, they will largely remain under-served. The potential to both provide energy access and to reduce emissions is enormous. Energy is a cross cutting issue which impacts other sectors; for instance, increasing fuel-wood consumption contributes to deforestation with consequences for desertification and soil erosion<sup>2</sup> which in turn negatively affects livelihoods, job creation, economic growth and the adequacy of the standard of living.

These challenges and concerns lie at the doorsteps of the Federal Ministry of Power, related federal agencies, states, local governments, the private sector and civil society. The details in Box 1 below tell the story and present the picture of the electricity and energy scenario in Nigeria.

---

<sup>2</sup> See the National Renewable Energy and Energy Efficiency Policy for the Electricity Sector (NREEEP). The right to an adequate standard of living is a human right provided under article 25 of the standard setting Universal Declaration of Human Rights and article 11 (1) of the International Covenant on Economic, Social and Cultural Rights to which Nigeria is a signatory.

### *Box 1: Extant Energy Scenario and Challenges in Nigeria*

While accessibility and availability of energy is imperative, the decision on the source of energy to be adopted also dictates the pace of environmental improvements or degradation and the sustainability of the ecosystem. Invariably, the choice of energy source determines the safety of the Nigerian environment, the cleanliness of the air we breathe; the friendliness of the weather; fertility of the soil and whether lands will not be washed away by flood, if not broken by drought. Our energy choice and administration will determine if all Nigerians will eventually have access to stable electricity.

Currently, no fewer than 55.6 per cent<sup>3</sup>, that is 95 million, out of 170 million Nigerians have no access to grid electricity. The remaining 75 million people who are connected to the grid face substantial power interruptions. Over 60 per cent of the Nigerian population use firewood for heating. This is a development which has placed the country in the ranks of countries with the highest deforestation rate<sup>4</sup>. It has led to erosion, air pollution, desertification, food shortages and other economic and environmental ills from adverse climate change. The proportion of land area covered by forest has consistently fallen over the past 20 years and not much has been done to counter this<sup>5</sup>.

At least, 30 per cent of our population depend on kerosene for their energy needs<sup>6</sup>; exposing this fraction of our population to kerosene's health hazards. The World Health Organisation (WHO) estimates that breathing kerosene fumes is the equivalent of smoking two packets of cigarettes a day and two-thirds of adult females with lung cancer in developing nations are non-smokers<sup>7</sup>. They are mothers who cook for their families. Indoor air pollution by kerosene fumes kills 1.5m people per year.

Nigerians have spent over N17.5 trillion on the purchase, maintenance and fuelling of generators in the course of five years, which is an expenditure of N3.5 trillion in a year<sup>8</sup>. This includes the sum spent by government agencies, blue chip companies, small and medium scale enterprises, banks, other corporate entities and traders across the country who have no other option but to rely on generators.

The ever-worsening power supply has led many Nigerian factories to close down, effectively increasing the rate of unemployment and insecurity. Many Nigerian manufacturers have chosen to relocate to neighbouring countries to reduce their expenditure on energy. Not only is the high cost

<sup>3</sup> World Development Indicators 2015.

<sup>4</sup> Energy Mix Report (Retrieved 23/03/2014): 'Working towards alternative energy in Nigeria'. <http://energymixreport.com/working-towards-alternative-energy-in-nigeria/>

<sup>5</sup> Nigeria 2013 MDG Report.

<sup>6</sup> It is important to note that the country has spent at least N1 trillion over the past four years (2009-2013) to subsidise kerosene, yet the product is neither available nor is it sold at the official NNPC pump price.

<sup>7</sup> WHO; Fuel for Life: Household Energy and Health

<sup>8</sup> Committee on Public Inquiry on Metering in the Nigerian Electricity Supply Industry set up by the National Electricity Regulatory Commission, 2015.

of procuring private energy and a substantial increase in the industrial tariff for electricity affecting Nigerian manufacturers, but also the unavailability of petroleum products to power the acquired generators.

The 2015 Federal budget made provisions for generators, their fuelling and lubrication. About 550 Ministries, Departments and Agencies (MDAs) have stand-by generator sets. The Federal Government allocated N815 million for the purchase of fuel and lubricants for cars and generators in the Presidency, Office of the Secretary to the Government of the Federation and parastatals under them in the 2015 Budget. The 2015 Budget also includes N12,734,332 that will be used for the Vice-President's plants and generators. Other agencies under the Presidency were also not left out of the provision for fuel and lubricants. An extract from the provisions for the maintenance of plants/generators, purchase of power plant, fuel and lubrication for generators in the 2015 Budget amounts to an estimate of N8.28 billion.

Not only do these generators cost a fortune to purchase and install, fuelling and maintenance costs are very high (adding to increased cost of overheads). The proliferation of generators produces an exceptionally high level of CO<sub>2</sub> emissions and noise creation. Generator fumes comprise a lethal cocktail of poisonous and environmentally unfriendly gases, including carbon monoxide and other noxious products produced from incomplete combustion of hydrocarbon fuels, notably petrol (gasoline), diesel or a mixture of petrol and engine oil. Exposure to emissions from such combustion engines (silent killers) have been associated with a range of health effects, including lung cancer, chronic obstructive pulmonary disease (COPD), low birth weight, cataracts, pneumonia, and tuberculosis, etc.

*Source:* Green Policies and Budget: A Policy Brief for Sustainable Energy in Nigeria, CSJ 2015

Essentially, the Nigerian energy challenge negatively impacts on health, job creation, cost of governance, cost and ease of doing business and presents a perfect economic, social and environmental case of the need to change a process and mode of energy generation, transmission and distribution that is not serving the purposes for which it was set up.

## **1.2 POLICIES ON ENERGY AND CLIMATE CHANGE**

### **1.2.1 The National Policy on Environment**

The National Policy on Environment calls for specific attention to be paid to the following in energy production vis, energy source, the fuel for generation, mode of generation, storage, transmission, use and conservation. It called for the promotion of energy efficiency and paying proper attention to renewable energy derivable from hydro, solar, wind and biomass whilst encouraging the use of other energy forms that are environmentally safe and sustainable. Further, the Policy seeks the monitoring and controlling of the levels of particulates, toxic chemicals and noxious gaseous effluents of energy production and use such as CO, CO<sub>2</sub>, NO<sub>x</sub>, SO, and non-methane hydrocarbons.

## 1.2.2 National Adaptation Strategy and Plan of Action on Climate Change for Nigeria (NASPA-CCN)

NASPA identifies the challenges and key impacts of climate change on energy as follows in Box 2.

### *Box 2: Key Impacts of Climate Change on Energy in Nigeria*

#### **Key Impacts of Climate Change**

The economic value of oil and gas investment in Nigeria's coastal and offshore areas is in the trillions of US dollars. This investment is at risk from the negative impacts of climate change, including rising sea levels, heavy storms, floods, high winds and shoreline erosion. Climate change is also expected to negatively impact the already limited electrical power supply through impacts on hydroelectric and thermal generation. Service interruption is also expected to result from damage to transmission lines and substation equipment impacted by sea level rise, flash floods and other extreme weather events. Climate change impacts resulting in increased fuel-wood scarcity will increase pressure on the remaining forest resources, resulting in further degradation of the environment and negative impacts on rural livelihoods.

#### **Temperature**

Increased temperatures, especially in the northern part of Nigeria, will cause increased energy demands in urban areas for cooling purposes and more private generator use.

#### **Rainfall**

1. Decreased rainfall in the north will reduce availability of trees/shrubs and biomass for fuel and affect hydroelectric output due to changing water levels in reservoirs.
2. Increased rainfall intensity in coastal and rainforest zones in the south of the country may cause problems such as system disruptions, electricity distribution cuts, and damage or destruction of transmission lines due to erosion.

#### **Extreme Weather Events**

Extreme weather events may cause collapse or overload of energy infrastructure.

#### **Sea-Level Rise**

Rising sea levels, increased intensity and frequency of storm surges will cause flooding, which can impact near-shore energy infrastructure.

A major part of NASPA's climate change response on energy was focused on its goal which is to take pre-emptive measures to reduce vulnerability of critical energy infrastructure to climate change impacts. It was less focused on reducing the carbon footprints of the energy sector. However, it calls for:

- Increased protective margins in construction and placement of energy infrastructure through higher standards and specifications.
- Risk assessment and risk reduction measures to increase the resilience of the energy sector.
- Integrating climate change concerns into the implementation of the current energy master plan, including climate change impacts on future energy demands caused by excessive heat.
- Develop policies for decentralised renewable energy resources<sup>9</sup>.

<sup>9</sup> NASPA at page 48 and page 7 of the IDC.

NASPA placed the burden of renewable energy development on civil society organisations and communities when it stated as follows:

*“CSOs should develop and promote renewable energy for rural users to reduce pressure on forests and watersheds (for example, by encouraging use of more energy efficient wood stoves and solar cookers in rural areas)”*

### **1.2.3 Intended Nationally Determined Contributions (INDC)**

The INDC focused on the general principles of improving awareness and preparedness for climate change; mobilizing communities for climate change adaptation measures; reducing the impact of climate change on key sectors and vulnerable communities and integrating climate change into planning, education and research<sup>10</sup>. The INDC discusses innovations and investments in “clean” technologies that bring resource efficiency and produces more knowledge and jobs than “dirty” technologies. The unconditional contributions include improving energy efficiency by 20 percent below business as usual, 13 GW of renewable electricity provided to rural communities currently off-grid and ending gas flaring<sup>11</sup>. On the contributions which are contingent on international support which will reduce emissions by 45 percent below the business as usual, the key measures are an increased level of energy efficiency and a significant reduction in the use of generators, while providing access to energy for all Nigerians<sup>12</sup>. Again, the INDC energy policy focused on renewable energy which is decentralized; multi cycle power stations; scalable power stations of 20-50MW; enforced energy efficiency and use of natural gas rather than liquid fuels. Its oil and gas component called for improved enforcement of gas flaring restrictions; development of gas-to-power plants at gas flare sites (micro grid) and blending 10 percent by volume of fuel-ethanol with gasoline (E10) and 20 percent by volume of biodiesel with petroleum diesel (B20) for transportation fuels<sup>13</sup>.

### **1.2.4 National Renewable Energy and Energy Efficiency Policy for the Electricity Sector (NREEEP) and Allied Policies**

As stated in the NREEEP, the development of renewable energy sources to add megawatts to the available energy mix is a step towards improving available electricity in Nigeria. Through energy efficiency, new energy is created due to the fact that available consumers consume less thereby freeing up energy for other economic actors. The renewables include solar, wind, non-intrusive hydro, biomass to a large extent, geo thermal, wave and tidal energy. Renewable energy is about energy sources whose utilization do not lead to a depletion of the earth’s resources and have a minimal environmental impact. The objectives of this policy include ensuring the development of the nation's energy resources, with diversified energy resource options, for the

---

<sup>10</sup> Page 7 of the INDC

<sup>11</sup> According to the INDC, ending gas flaring by 2030 could save up to 64 million tonnes of CO<sub>2</sub> per year.

<sup>12</sup> Page 9 of the INDC

<sup>13</sup> Page 11 of the INDC



achievement of national energy security and an efficient energy delivery system with an optimal energy resource mix; guarantee adequate, reliable, affordable, equitable and sustainable supply of renewable energy at cost-reflective and appropriate costs and in an environmentally friendly manner, to the various sectors of the economy, for national development. It is about accelerating the process of acquisition and diffusion of technology, managerial expertise and indigenous participation in the renewable energy and energy efficiency sector industries, for stability and self-reliance; guarantee efficient, location-specific and cost-effective consumption pattern of renewable energy resources and improved energy efficiency. Others are to promote increased investments and development of the renewable energy and energy efficiency sector, with substantial private sector participation.

Renewable energy will be very cost-effective in areas far-flung from the national grid, and simply put, will impact Nigeria's electricity bottom line. Essentially NREEEP anticipates reduced carbon footprints in the electricity industry through a process that will create local capacity, jobs, diversify the sources for energy security and impact on the ability of Nigeria to adapt and mitigate climate change. To implement NREEEP will involve the collaboration of a number of government agencies and other non-state stakeholders<sup>14</sup>.

Allied to NREEEP is the Nigerian National Energy Efficiency Action Plans (NEEAP)<sup>15</sup> which:

*“has been developed with the contribution of several Nigerian stakeholders, it demonstrate FGN's commitment to matching her words with action as the National Renewable Energy & Energy Efficiency Policy (NREEEP) approved in May 2015 directs the Hon. Minister of Power to develop the NREAP within 6 – 12 months of the approval of NREEEP, 2015 – a summary of this is the intention of Nigeria to achieve an electricity vision of attaining 30,000MW of power by the year 2030 with at least 30% renewable energy in the electricity mix (Electricity Vision 30:30:30) which is vigorously pursued in a three-prong stages of attaining the stable, then the sustainable and the uninterrupted power supply in Nigeria”.*

NEEAP has been developed in furtherance of the Nigeria Energy Policy of 2003 which was reviewed and updated in 2013. NEP 2013 emphasized

---

<sup>14</sup> NREEEP was developed through a collaboration involving a number of Federal MDAs including the Federal Ministries of Power; Lands, Housing and Urban Development; Environment; Science and Technology; Water Resources; and Agriculture and Rural Development. The agencies are Nigerian Electricity Regulatory Commission, Energy Commission of Nigeria, Nigeria National Petroleum Corporation, Rural Electrification Agency, Standards Organization of Nigeria, Nigeria Power Training Institute, Nigeria Investment Promotion Commission, Transmission Company of Nigeria, Raw Materials Research and Development Council, Electricity Management Services Ltd, National Biotechnology Development Agency, National Bureau of Statistics and Infrastructure Concession Regulatory Commission.

<sup>15</sup> National Energy Efficiency Action Plans 2015-2030 adopted by the Inter-Ministerial Committee on Renewable Energy and Energy Efficiency and approved by the National Council on Power in July 2016.



*“the effective and efficient use of energy and proposes major areas to be considered for energy efficiency and conservation: residential sector, industry, transportation, services/commercial sector, agriculture, and energy efficient building designs.*

Again, the National Renewable Energy Action Plan (NREAP) restates the emphasis on mainstreaming renewable energy in the energy mix of Nigeria.

## **2. COORDINATING MINISTRIES**

Energy is a broad theme that involves a number of federal ministries. However, the two most directly related and important ones are the Federal Ministry of Power, now a part of the Federal Ministry of Power, Works and Housing and the Ministry of Petroleum Resources. The Vision Statement of the power sector is a robust and sustainable power sector that fully supports the socio – economic needs of the Nation and contributes to the emergence of Nigeria as one of the top twenty economies of the world by the Year 2020<sup>16</sup>. On the other hand, the Ministry of Petroleum Resources defines its mandate as the transformation of the oil and gas industry for increased benefit of Nigeria and its people through effective implementation of policies on hydrocarbon exploration, exploitation, production, distribution and utilization in accordance with international standards<sup>17</sup>. On the face of it, the activities of the Ministry of Petroleum Resources promote a carbon intensive production, consumption and service delivery economy. But Nigeria earns its major foreign exchange and revenue from the sector. The challenge is clearly on how to minimize or mitigate the carbon intensive nature of its operations and production systems.

Energy related projects are also found in the allocations of the Ministries of Agriculture and Rural Development, Environment, Lands and Housing, Water Resources, etc.

### **3.1 TREND OF BUDGET ALLOCATION TO ENERGY AND THE FEDERAL MINISTRY OF POWER FROM 2013-2016**

This Study is done to analyse the budget allocations, for a period of four years (2013-2016) of the Federal Ministry of Power and evaluate how the allocations key into climate change mitigation strategies in line with the National Policy on Environment, NASPA-CCN, INDC and other policy frameworks discussed above. The analysis will focus on the possibilities for the reduction of carbon footprints and other GHGs and whether this can be done within the context of increased economic growth, decent work and quality jobs<sup>18</sup>, providing education and training and public awareness on climate change and

---

<sup>16</sup> <http://www.power.gov.ng/index.php/about-us/our-structure>

<sup>17</sup> <http://petroleumresources.gov.ng/index.php/78-featured/74-article-c>

<sup>18</sup> Preambular paragraph 10 of the Paris Climate Change Agreement

energy<sup>19</sup> issues whilst enhancing gender sensitivity and local capacity building. It seeks to determine in accordance with article 2 (c) of the Paris Agreement whether financial flows are consistent with a pathway towards low greenhouse gas emissions and climate resilient development of energy sources and options.

The Nigeria Integrated Infrastructure Master Plan (NIIMP) which is the funding benchmark for the sector states that over the first 5 years, Nigeria needs to spend USD 23 billion in power, of which USD14-16 billion will be required to increase generation capacity from current levels to 20 GW by 2018; USD3-5 billion to increase transmission capacity; and USD3-5 billion to increase distribution capacity<sup>20</sup>. Table 1 below shows the allocation to power sector from 2013 to 2016. To establish the funding requirement, the total sum of USD23 billion will be divided by 5years and it comes to USD4.60billion a year. The foreign exchange dollar conversion rate of N159.9 to 1USD, N183.5 to 1USD, N199.1 to 1USD and N315 to 1USD for the years 2013, 2014, 2015 and 2016 respectively will be used to find the naira value<sup>21</sup>. The Minister for Works, Power and Housing is reported to have indicated that of the total allocation of N 456,936,811,203 to the Ministry in 2016, 23% of this amount will be spent on power<sup>22</sup>. It is this 23% of the overall Federal Ministry of Works, Power and Housing vote that we will use to calculate the allocation to power in 2016.

Table 1 shows the trend of allocations to the Federal Ministry of Power 2013-2016.

*Table 1: Trend Allocations in the 2013-2016 Budget of the Federal Ministry of Power*

Year	Overall Federal Budget (N Millions)	Total Allocation to Power (N Millions)	Vote to Power Sector as a % of Overall Vote	\$4.60bn NIIMP Requirement	Variance Between NIIMP and allocation to Power
2013	4,987,220,425,601	77,565,547,652	1.56	735,540,000,000.00	657,974,452,348.00
2014	4,695,190,000,000	63,212,100,633	1.35	844,100,000,000.00	780,887,899,367.00
2015	4,493,363,957,158	9,606,813,831	0.21	915,860,000,000.00	906,253,186,169.00
2016	6,060,677,358,227	105,095,466,577	1.73	1,449,000,000,000.00	1,343,904,533,423.00

Source: Approved Budget, Budget Office of the Federation (2013-2016) and the NIIMP

Table 1 shows that the Federal Government voted 1.56%, 1.35%, 0.21% and 1.73% of the overall federal allocations to the power sector in 2013, 2014, 2015 and 2016 respectively. This is an average allocation of 1.21% of the overall budget over the four year timeframe. The variance for the four years cumulatively amounts to N3,689,020,071,307 whilst it came up to an average of N922.255 billion a year. The

<sup>19</sup> Preambular paragraph 14 of the Paris Climate Change Agreement.

<sup>20</sup> [http://www.niimp.gov.ng/?page\\_id=1190](http://www.niimp.gov.ng/?page_id=1190)

<sup>21</sup> [FX-rate.net/NGN/?date\\_input](http://FX-rate.net/NGN/?date_input)

<sup>22</sup> Vanguard February 16, 2016.

total allocation to power in 2015 was exceptionally low and stands in sharp contrast with that of 2016. The overall budget for 2016 is higher by 29.08% and 34.88% when compared to the 2014 and 2015 votes respectively. The high sums in the variance column show the level of funding gap in the sector. It is acknowledged that some of the funds projected in the NIIMP were expected to come from the private sector. However, Table 1 still shows that the FGN is lagging behind in achieving its set power sector infrastructural goals through the NIIMP.

When the allocations are disaggregated into recurrent and capital expenditure, the picture that emerges is shown in Table 2.

*Table 2: Composition of Power Allocations 2013-2016*

Year	Total Allocation to Power (₦ Mn)	Recurrent Expenditure (₦ Mn)	% of Recurrent Expenditure to Total Power Allocation (₦ Mn)	Capital Expenditure (₦ Mn)	% of Capital Expenditure to Total Power (₦ Mn)
2013	77,565,547,652	4,217,589,189	5.44	73,347,958,463	94.56
2014	63,212,100,633	3,397,810,244	5.38	59,814,290,389	94.62
2015	9,606,813,831	4,476,813,831	46.60	5,130,000,000	53.40
2016	105,095,466,577	7,813,533,023	7.43	97,281,933,554	92.57

Source: Approved Budgets, BOF

Table 2 shows that FGN allocated over the four years, an average of 16.21% of the total power sector allocations to recurrent expenditure while it allocated an average of 83.79% of the total power allocations to capital expenditure. This trend of allocation reveals that investment in power infrastructure as articulated in NIIMP stalled in 2015 with lesser funds available for investment. It picked up in 2016. For this allocation to be meaningful, the whole voted sum should be released and fully utilized. Overall, there seems to be consistency in favour of capital expenditure in the distribution of funds between recurrent and capital expenditure over the four years of this review.

However, the NIIMP which is used as benchmark was not designed with climate change mitigation and adaptation as key factors. The implication is that its funding projections will still be less than would have been required in climate sensitive funding projection. This assertion is based on the higher upfront cost of energy efficient technologies and measures. But the low carbon energy efficient projects would be cheaper over the full life cycle when compared to carbon intensive methods of producing and distributing energy, especially electricity.

### 3.2 PROGRAMMES AND PROJECTS AND THE POSITIVE IMPACT OF BUDGET ALLOCATIONS ON CLIMATE CHANGE

Table 3 shows some of the programmes and projects that have positive impact on the environment and facilitate mitigation of climate hazards. So many of similar projects have been listed and the Study selects a few samples.

*Table 3: Positive Impact of Budget Allocations on Climate Change*

YEAR	PROJECT	ALLOCATION (₦)
2016	EROSION & FLOOD CONTROL	130,679,867
	CONSTRUCTIONS OF TOWNSHIP ROADS AND SOLAR STREET LIGHT IN SUMAILA LGA, KANO STATE	390,000,000
	URBAN RENEWAL AND EROSION CONTROL PROGRAMME IN SELECTED LOCATIONS OF CROSS RIVER CENTRAL SENATORIAL DISTRICT	354,000,000
	PROVISION OF SOLAR POWERED LIGHT AT EZEAGU IN ENUGU STATE, OUTSTANDING LIABILITY	54,731,490
	PROVISION OF SOLAR POWERED LIGHT AT BENUE STATE, OUTSTANDING LIABILITY	42,781,148
	INSTALLATION OF SOLAR STREETLIGHT AT AJAAW, IDEWURE, ANTORUN REESA ODIGBO OKITIPUPA IRELE, OYO STATE, OUTSTANDING LIABILITY	202,439,744
	PROVISION OF SOLAR POWERED LIGHT AT AWGU LGA, ENUGU STATE, OUTSTANDING LIABILITY	257,604,420
	PROVISION OF SOLAR POWERED LIGHT AT BENUE STATE, OUTSTANDING LIABILITY	159,170,937
	PROVISION OF SOLAR BOREHOLES AND STREET LIGHTS IN KIRU/BEBEJI FED CONSTITUENCY	100,000,000
	SOLAR POWERED BOREHOLES WITH RETICULATION IN Nwangene Square, Obodoakpu, Agbogugu in Agwu LGA	50,000,000
	COMPLETION OF SMALL SCALE RENEWABLE ENERGY POWER PLANTS DEVELOPMENT AND ONGOING FEASIBILITY STUDIES FOR RENEWABLE ENERGY POWER PLANTS	305,293,624
	<b>NATIONAL RURAL ELECTRIFICATION AGENCY</b>	
	PROVISION OF SOLAR STREET LIGHT AT ETHIOPE IN DELTA STATE	15,000,000
	PROVISION OF 150KW SOLAR MINI-GRID ELECTRIFICATION OF DODAN KARJI IN KAURA LGA OF KADUNA STATE	45,193,213
	SOLAR STREETLIGHT IN OGBE COMMUNITY, OREDO FEDERAL CONSTITUENCY	20,000,000
	SOLAR STREETLIGHT IN NEW BENIN MARKET COMMUNITY, OREDO FEDERAL CONSTITUENCY	20,000,000
	PROVISION OF SOLAR ELECTRIFICATION OF MOUNTAINOUS COMMUNITIES IN MADAGALI LGA ADAMAWA STATE	20,000,000
	<b>NATIONAL POWER TRAINING INSTITUTE</b>	
	RESEARCH AND DEVELOPMENT	253,453,460

	<b>NIGERIA ELECTRICITY LIABILITY MANAGEMENT LIMITED</b>	
	RESEARCH AND DEVELOPMENT	1,083,560,500
	<b>NIGERIAN BULK ELECTRICITY TRADING PLC</b>	
	RESEARCH AND DEVELOPMENT	146,250,000
	<b>OFFICE OF THE SURVEYOR-GENERAL OF THE FEDERATION</b>	
	RESEARCH AND DEVELOPMENT	58,428,612
	22020589 EROSION AND FLOOD CONTROL OF 1.5KM ROAD AT OKWARAIBEKWE-OKOROB I UMUJU COMMUNITIES IN IDEATO SOUTH LGA, IMO STATE	20,282,452
<b>2015</b>	RENEWABLE ENERGY FOR ELECTRICITY GENERATION	40,113,692
	<b>NATIONAL RURAL ELECTRIFICATION AGENCY</b>	
	CONSTRUCTION OF SOLAR STREET LIGHT FOR SAMPOU COMMUNITY, AYAMA COMMUNITY	1,013,678
	PROVISION OF SOLAR STREET LIGHT AT UWUDIM-ISORCHI IN ABIA STATE	10,000,000
	PROVISION OF SOLAR STREET LIGHT AT EBUTTE UJIOGBA, UDO IN ESAN WEST LGA, EDO STATE	44,500,000
	PROVISION OF SOLAR STREET LIGHT AT EGUARE-EBELLE, OKALO EBELLE IN IGUEBEN LGA, EDO STATE	49,500,000
	<b>ELECTRICITY MANAGEMENT SERVICES LIMITED (EMSL) HQTRS</b>	
	PROVISION OF NOS SOLAR STREET LIGHT IN OFFA TOWN AND ENVIRONS	20,000,000
	SOLAR STREET LIGHT IN IKIEWANLEN COMMUNITY, OPOJI, ESAN CENTRAL LGA, EDO STATE	20,000,000
	SOLAR STREET LIGHT IN IKINAGO COMMUNITY, OPOJI, ESAN CENTRAL LGA, EDO STATE	20,000,000
	SOLAR STREET LIGHT IN OKHORE COMMUNITY OPOJI, ESAN CENTRAL LGA, EDO STATE	20,000,000
	SOLAR STREET LIGHT IN EKHU COMMUNITY OPOJI, ESAN CENTRAL LGA, EDO STATE	20,000,000
	SOLAR STREET LIGHT IN IKI COMMUNITY OPOJI, ESAN CENTRAL LGA, EDO STATE	20,000,000
<b>2014</b>	RENEWABLE ENERGY FOR ELECTRICITY GENERATION	337,390,000
	PROVISION OF SOLAR STREET LIGHTS IN IMO EAST SENATORIAL	19,800,000
	SOLAR STREET LIGHTS IN SELECTED 15 TOWNS IN ANAMBRA STATE	19,800,000
	CONSTRUCTION AND INSTALLATION OF SOLAR POWERED STREET LIGHTS IN ANAMBRA SOUTH SENATORIAL DISTRICT	19,800,000
	PROVISION OF SOLAR STREET LIGHTS AT EBUTE UJIOGBA, UDO IN ESAN CENTRAL WEST LGA, EDO	49,500,000
	PROVISION OF SOLAR STREET LIGHTS AT EGUARE-EBELLE, OKALO EBELLE IN IGUEBEN LGA, EDO STATE	49,500,000
	PROVISION/INSTALLATION OF SOLAR STREET LIGHTS @ ORLU/ORSU/ORU EAST FEDERAL CONSTITUTENCY, IMO STATE	24,750,000

	CONSTRUCTION OF SOLARSTREET LIGHT AT KAYAMA KPOLOKUMA LGA	19,800,000
	PROVISION AND INSTALLATION OF SOLAR STREET LIGHT IN 25 COMMUNITIES IN NIGER STATE	99,000,000
	PROVISION AND INSTALLATION OF SOLAR STREET LIGHT IN AKPUOGA/ONUOGBA/OBINAGU/UGURUOMA/NCHOTACHA IN NIKE LGA, ENUGU STATE	29,700,000
	PROVISION AND INSTALLATION OF SOLAR STREET LIGHT IN UDI COMMUNITY IN UDI LGA, ENUGU STATE	44,550,000
	PROVISION AND INSTALLATION OF SOLAR STREET LIGHT IN AMAECHI AWKUNANAW IN ENUGU SOUTH LGA, ENUGU, STATE	39,600,000
	GREENFIELD DEVELOPMENT OF NAPTIN ABUJA CHQ	1,091,550,823
	EROSION CONTROL ON TRANSMISSION LINES AND FACILITIES	30,342,997
	PROVISION OF SOLAR STREET LIGHT ACROSS PORTHARCOURT FED. CONSTITUENCY 11	25,700,000
	PROVISION OF SOLAR STREET LIGHT AT OLUGBOBIRI OPOROMA TOWN SOUTHERN IJAW LGA, BAYELSA STATE	19,800,000
<b>2013</b>	RENEWABLE ENERGY FOR ELECTRICITY GENERATION eg. BIOMASS, BIOFUELS (EIS)	1,413,112,459
	SOLAR STREET LIGHTS AT OYE MARKET, OJOTO OBOFIA IDEMILI SOUTH	30,000,000
	CONSTRUCTION SOLAR STREET LIGHT AT OPOJI, USUGBENU, EWU AND UGBEGUN	120,000,000
	RENEWABLE ENERGY EFFICIENCY AND CONSERVATION	100,000,000
	<b>NATIONAL RURAL ELECTRIFICATION AGENCY</b>	
	SOLAR STREET LIGHTING FOR NOCK AND TUNGA NOCK IN JABA LGA, KADUNA STATE	45,000,000
	REPAIR OF SOLAR STREET LIGHT AT ANIOCHA OSHIMILI	80,000,000
	CONSTRUCTION OF SOLAR STREET LIGH AT AKATUBGE STREET, UMUEZEMA VILLAGE AND ENVIRONS, OJOTO OBIOFIA	75,000,000
	SOLAR STREET LIGHT TTHRONEROOM THRUST MINISRIES AND ENVIRONS	40,000,000
	CONSTRUCTION OF SOLAR STREET LIGHT AT IRUEKPE,UJUELEN, IDUMELO AND ILLELA	120,000,000
	CONSTRUCTION OF SOLAR STREET LIGHT AT EGUARE IGUEBUE,EKPON,EWOSSA AND AMALOR	120,000,000
	SOLAR STREET LIGHT FROM UZEBBA GRAMMAR SCHOOL TO AOMA MARKET TO UKHUUEDE –HOSPITAL	35,000,000
	SOLAR POWER STREETLIGHT AT OKPOROENYI, BENDE LGA, ABIA STATE	20,000,000
	SOLAR POWERED STREET LIGHT IN OGWOGHOROANYA-EKE AVUTU - ORIE EHUME - UMUNGWA RD, OBOWO LGA OF IMO NORTH SENATORIAL DISTRICT	30,000,000
	SOLAR POWERED STREET LIGHT IN NKWO UMUEZEALA MARKET IN UMUEZEALA-AMA, EHIME MBANO LGA, IMO SOUTH SENATORIAL DISTRICT	30,000,000



	<b>NATIONAL POWER TRAINING OF NIGERIA</b>	
	GREENFIELD DEVELOPMENT OF NAPTIN CORPORATE HQs (PERMANENT SITE)	1,750,000,000
	<b>NIGERIA ELECTRICITY LIABILITY MANAGEMENT LIMITED</b>	
	RESEARCH AND DEVELOPMENT	435,598,151

Source: Budget Office of the Federation (2013-2016)

One of the major line items in the budget of the Federal Ministry of Power in the four years period under study has been provision/installation of solar energy to some identified locations in the country. Solar energy as a renewable energy source has been recognized as a major mitigation strategy due to its carbon-free usefulness. However, allocations to this line item are not sufficient enough to ensure its spread to all locations of the country in need of such power. It is doubtful at this rate of investment whether the country will meet the target of the unconditional contributions in the INDC including improving energy efficiency by 20 percent below business as usual, 13 GW of renewable electricity provided to rural communities currently off-grid. This rate of public investment cannot guarantee the intention of Nigeria to achieve an electricity vision of attaining 30,000MW of power by the year 2030 with at least 30% renewable energy in the electricity mix (Electricity Vision 30:30:30) as detailed in NREAP. The preponderance of street lighting projects gives the wrong impression that solar energy is only useful for street lights and may be unsuitable for other purposes.

Again, these solar lighting are stand-alone projects not connected to medium size or large scale solar power stations which generates energy for entire communities for use beyond street lighting - providing energy for use in other domestic, commercial and possible industrial applications. Others projects include erosion control programmes which restores the land and disrupts land degradation, solar powered boreholes, a few solar renewable energy power plants, solar mini grid electrification, research and development and green field development of an agency's headquarters.

Providing for research and development without disaggregating it further into the specific details of the research is not a best practice worthy of replication. There is the need for specificity in R&D. Collaborations are expected between federal MDAs working on renewables especially the Ministry of Power is expected to work with agencies such as the National Agency for Science and Engineering Infrastructure which is already engaged in research and production of solar panels and accessories<sup>23</sup>. Targets for local value added in both quality and quantity of products will be set as a basis for popularizing solar energy. This will boost local capacity, create jobs and guarantee the sustainability of the renewable energy agenda.

<sup>23</sup> NASENI undertakes this through NASENI Solar Energy Limited.

The allocations to the Federal Ministry of Environment sought to respond to the energy and carbon challenge through the Clean Cook Stoves Mechanism. The allocations were also targeted at preventing deforestation which is related to food insecurity and soil degradation<sup>24</sup>. Table 4 tells the story.

Table 4: Procurement of Clean Cook Stoves 2012-2016

<b>MINISTRY OF ENVIRONMENT, 2016</b>			
<b>CODE</b>	<b>PROJECT</b>	<b>TYPE</b>	<b>AMOUNT (N)</b>
ENVT201624018070	PROCUREMENT OF CLEAN COOK STOVES TO PREVENT DEFORESTATION IN SIX (6) GEO-POLITICAL ZONES (YOBE, LAGOS, ANAMBRA, RIVERS, KWARA, KATSINA)	NEW	46,250,000
<b>MINISTRY OF ENVIRONMENT, 2014</b>			
ENVIRT081006509	MAPPING OF CHARCOAL PRODUCING AREAS AS SOURCE OF GHG EMISSION & INTRODUCTION OF ENERGY EFFICIENT STOVES (COAL BRICK STOVES) AS MITIGATION OPTION	NEW	4,000,000
ENVIRT114007092	PROCUREMENT OF CLEAN COOK STOVES AS AN ANTIDeforeSTATION STRATEGY IN 6 GEO-POLITICAL ZONES (KANO, TARABA, CROSS RIVERS, IMO, KWARA AND ONDO)	NEW	90,000,000
<b>MINISTRY OF ENVIRONMENT, 2013</b>			
	INTRODUCTION OF CLEAN COOK STOVES IN THREE GEOPOLITICAL ZONES TO REDUCE DEFORESTATION.		55,000,000
<b>MINISTRY OF ENVIRONMENT, 2012</b>			
	CLEAN COOK STOVES IN AKWA IBOM STATE	NEW	50,000,000
	CLEAN COOK STOVES IN KWARA STATE		20,000,000

Source: Budget Office of the Federation

Over the period of four years, only N265.250m was budgeted for this transition from fuel wood to clean cook stoves. Again, in 2014, in the Ministry of Science and Technology, there was counterpart funding in the sum of N5 million for the establishment of clean cook stove standard testing and training laboratory; training of artisans, women and craftsmen, and procurement of equipment at NCERD, Nsukka. These are paltry sums and do not show sufficient political will to mainstream the stoves in the target population. However, there was another sum of N9.2 billion that passed through the Ministry of Environment for the procurement and distribution of the 750,000 Clean Cook Stoves and 18,000 Wonder Bags. The contract later degenerated into a scandal that

<sup>24</sup> Nigeria is facing one of the highest rates of deforestation in the world. The traditional fuel wood cooking system is inefficient and uses up to 90 percent more fuel wood than the clean cook stoves; endangering the cardiovascular health of women and the girl child and facilitating large CO<sub>2</sub> emissions.



rocked the Ministry. It is the expectation that the adoption of the clean cook stoves should be championed by public funds but will eventually bring in private sector operators who will mass produce and market the stoves at subsidized prices facilitated by fiscal policy incentives.

### 3.3 NEGATIVE IMPACT OF BUDGET ALLOCATIONS ON THE CLIMATE

Table 5 shows the allocations and projects that have a negative impact on the climate.

*Table 5: Budget Allocations with Negative Impact on the Climate*

Year	Project	Allocation
2016	COAL TO POWER GENERATION DEVELOPMENT IN NIGERIA IN ENUGU AND GOMBE/BENUE/KOGI	234,979,698
	ADVERTISEMENT AND ENGAGEMENT OF TRANSACTION ADVISOR ON COAL IPP	128,556,588
	MAINTENANCE OF PLANTS/GENERATORS	8,684,942
	PLANT / GENERATOR FUEL COST	40,916,796
	<b>NATIONAL RURAL ELECTRIFICATION AGENCY</b>	
	MAINTENANCE OF PLANTS/GENERATORS	85,246
	PLANT / GENERATOR FUEL COST	1,278,689
	<b>ELECTRICITY MANAGEMENT SERVICES LIMITED (EMSL) HQTRS</b>	
	MAINTENANCE OF PLANTS/GENERATORS	2,099,925
	PLANT / GENERATOR FUEL COST	6,999,750
	<b>NATIONAL POWER TRAINING INSTITUTE</b>	
	MAINTENANCE OF PLANTS/GENERATORS	5,883,949
	PLANT/ GENERATOR FUEL COST	4,220,910
2015	INTERNATIONAL TRAVEL & TRANSPORT: TRAINING	5,932,652
	INTERNATIONAL TRAVEL & TRANSPORT: OTHERS	11,972,502
	MAINTENANCE OF PLANTS/GENERATORS	772,906
	COAL FIRED POWER PLANT (FEASIBILITY STUDIES) AT ENUGU(LOT1), GOMBE, BENUE &KOGI STATES(LOT 2	35,813,775
	<b>NATIONAL RURAL ELECTRIFICATION AGENCY</b>	
	MAINTENANCE OF PLANTS/GENERATORS	85,000
	PLANT/ GENERATOR FUEL COST	1,075,000
	<b>ELECTRICITY MANAGEMENT SERVICES LIMITED (EMSL) HQTRS</b>	
	MAINTENANCE OF PLANTS/GENERATORS	4,550,000
	PLANT/ GENERATOR FUEL COST	10,500,000
	<b>NIGERIA ELECTRICITY LIABILITY MANAGEMENT LIMITED</b>	
	MAINTENANCE OF PLANTS/GENERATORS	1,377,000
PLANT/ GENERATOR FUEL COST	2,703,068	
2014	<b>NATIONAL POWER TRAINING INSTITUTE</b>	
	INTERNATIONAL TRAVEL & TRANSPORT: TRAINING	675,869

	MAINTENANCE OF PLANT/GENERATORS	12,364,000
	INTERNATIONAL TRAINING	2,095,195
	PLANT/GENERATOR FUEL COST	11,780,000
	<b>NIGERIA ELECTRICITY LIABILITY MANAGEMENT LIMITED</b>	
	INTERNATIONAL TRAVEL & TRANSPORT: TRAINING	2,444,247
	INTERNATIONAL TRAVEL & TRANSPORT: OTHERS	2,169,868
	MAINTENANCE OF PLANT/GENERATORS	1,084,934
	PLANT GENERATOR FUEL COST	1,031,751
<b>2013</b>	INTERNATIONAL TRAVEL & TRANSPORT: TRAINING	20,110,636
	INTERNATIONAL TRAVEL & TRANSPORT: OTHERS	36,158,384
	MAINTENANCE OF PLANTS/GENERATORS	1,124,785
	INTERNATIONAL TRAINING	25,183,363
	MOTOR VEHICLE FUEL COST	7,622,916
	<b>NATIONAL RURAL ELECTRIFICATION AGENCY</b>	
	INTERNATIONAL TRAVEL & TRANSPORT: TRAINING	1,500,000
	<b>NIGERIAN ELECTRICITY REGULATORY COMMISSION</b>	
	INTERNATIONAL TRAVEL & TRANSPORT: OTHERS	25,549,138
	MAINTENANCE OF PLANTS/GENERATORS	7,000,000
	PLANT / GENERATOR FUEL COST	10,000,000
	<b>NATIONAL POWER TRAINING INSTITUTE</b>	
	INTERNATIONAL TRAVEL & TRANSPORT: TRAINING	13,000,000
	MAINTENANCE OF PLANTS/GENERATORS	2,364,000
	INTERNATIONAL TRAINING	8,100,000
	PLANT / GENERATOR FUEL COST	3,780,000
	<b>NIGERIA ELECTRICITY LIABILITY MANAGEMENT LIMITED</b>	
	PLANT / GENERATOR FUEL COST	1,420,000

Source: Budget Office of the Federation (2013-2016)

It is expected that as the lead MDA championing renewable energy in Nigeria that departments and arms of the Ministry should be requesting and getting allocations to run their offices with renewable energy. But this is not the case as the surfeit of fossil energy fired generators still gets provision in the power sector budget.

The insistence on providing for coal fired energy plants is surprising in a day and age that most advanced countries are either phasing out coal technology or setting targets to either reduce or phase out their contribution to the energy mix. Starting feasibility studies or construction of a coal plant which locks in investments over the long term period of about 30-40 years is definitely not a wise investment decision. Coal exploitation and energy generation comes with a number of health, environmental and

global warming hazards that may not be easily mitigated<sup>25</sup>. Again, if countries and companies that produce and service these coal plants are in the phase out mood, sourcing the spare parts and optimal functioning of these plants will become a big challenge in the next couple of years. Insisting on outdated dirty technology when there is an opportunity to leapfrog and enter the renewable age is not a wise investment decision. International air travel is a necessity but it must be managed in such a way that minimizes costs including the carbon foot prints of the ministry and its agencies.

### **3.4 OTHER POLICY PROVISIONS, GAPS AND CHALLENGES WITH THE ALLOCATIONS**

Under Service Wide Votes, there is the financing of the implementation of Nigeria's Nuclear Power programme with a vote of N2 billion. Earlier, the 2015 budget gave a vote to the Nigerian Atomic Energy Commission for the same purpose. Nigeria plans to build a 2,400 megawatts nuclear power station to increase available electricity. Considering Nigeria's relatively low access to technology and inability to successfully manage less complicated power generating technologies, it seems the desire backed by budgetary funds to acquire nuclear technology is misplaced. This conclusion comes against the background of hazardous incidents, which have been difficult to manage, in nuclear reactors from more advanced countries like Japan - the Fukushima Daiichi 1 nuclear disaster. Germany in 2011 announced its intention to phase out nuclear power plants by 2022 with eight of the seventeen reactors operating in Germany already shut down. The ability to handle radioactive waste is not yet available locally.

Provision of solar energy is a key strategy to mitigate climate change. Some of the allocations are very poor. For example, only N247,947 was allocated to provision of Solar Farm at Umuoka Community in Udi LGA of Enugu State in 2015 under the Rural Electrification Agency. Some of the projects have been repeatedly provided for over three years indicating that the provisions were either insufficient or monies were not released or utilized. Care must be taken to ensure that full value is derived from the allocations through the deployment of economy, efficiency and effectiveness of spending.

The entirety of the whole solar electrification projects (like street lights and mini grids) in the 2015 budget amounts to the sum of N533,900,867, while that of 2016 came up to N4,000,345,838. The undulating allocations do not show a trend of consistent allocations to meet set targets. It is recommended that that renewable energy interventions to meet set targets be properly costed and the financing spread across the years so that on a year to year basis, the adequacy or inadequacy of the funds provided will become clear.

---

<sup>25</sup> See *Coal Atlas, Facts and Figures on a Fossil Fuel*, Heinrich Boll Stiftung and Friends of the Earth International; 2015.

Other sources of renewable energy including wind, mini hydro, biomass, etc. were virtually neglected in the allocations over the study period thereby creating the impression that they are not sustainable sources of energy or that they are not ecologically or economically viable in Nigeria. But this does not represent the true state of facts about renewables in Nigeria.

In the 2016 Federal Budget, the following projects in Table 6 received some allocation.

*Table 6: Hydropower Projects in 2016 Allocations*

CODE	PROJECT	TYPE	AMOUNT (N)
MOPWH161021632	Generation of 700 MW from Zungeru Hydropower Project	New	500,000,000
MOPWH161021634	Generation of 700 MW from Zungeru Hydropower Project	New	113,465,000
MOPWH161021636	Generation of 700 MW from Zungeru Hydropower Project	New	139,426,180
MOPWH161021638	Generation of 700 MW from Zungeru Hydropower Project	New	126,624,383
MOPWH161121600	Generation of 700 MW from Zungeru Hydropower Project	New	93,767,500
MOPWH161021640	Generation of 700 MW from Zungeru Hydropower Project	New	100,000,000
MOPWH161021642	Construction of 3,050 MW Mambilla Hydropower Project	New	407,708,311

Source: Budget Office of the Federation, 2016

It is imperative that proper feasibility studies and Environmental Impact Assessments be done in connection with these hydroelectric projects in terms of their impact on land use and emission of GHGs. The reservoirs will depend on the size of the electric generators and the topography. Flooding is usually an outcome of the management of hydroelectric reservoirs and its environmental impact includes destruction of forests, wildlife habitat, agricultural land and scenic lands<sup>26</sup>. It may involve the relocation of entire communities which may negatively impact on livelihoods, food security and gainful employment for the communities affected. Experts have posited that:

*Estimates for life-cycle global warming emissions from hydroelectric plants built in tropical areas or temperate peatlands are much higher. After the area is flooded, the vegetation and soil in these areas decomposes and releases both carbon dioxide and methane. The exact amount of emissions depends greatly on site-specific characteristics. However, current estimates suggest that life-cycle emissions can be over 0.5 pounds of carbon dioxide equivalent per kilowatt-hour<sup>27</sup>. To put this into context,*

<sup>26</sup> See Environmental Impacts of Hydroelectric Power [http://www.ucsusa.org/clean\\_energy/our-energy-choices/renewable-energy/environmental-impacts-hydroelectric-power.html#.WEwYaH0jrIU](http://www.ucsusa.org/clean_energy/our-energy-choices/renewable-energy/environmental-impacts-hydroelectric-power.html#.WEwYaH0jrIU)

<sup>27</sup> IPCC, 2011: IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation. Prepared by Working Group III of the Intergovernmental Panel on Climate Change [O. Edenhofer, R.

*estimates of life-cycle global warming emissions for natural gas generated electricity are between 0.6 and 2 pounds of carbon dioxide equivalent per kilowatt-hour and estimates for coal-generated electricity are 1.4 and 3.6 pounds of carbon dioxide equivalent per kilowatt-hour<sup>28</sup>.*

Just as hydroelectric power impacts negatively on climate change, climate change also impacts on the ability of dams to generate hydroelectric power. If there is a drought, diversion of water or any reason that drains the reservoir levels or makes water unavailable in sufficient quantities to drive the turbines, the electricity to be generated will reduce. If these hydroelectric projects are to achieve their goals of supplying clean energy, then the impact of the changing climate on availability of water to drive the turbines over the years needs to be carefully projected<sup>29</sup>. Vulnerability analysis and clear adaptation measures is needed.

A major gap was the absence of public funds or fiscal policies that address the energy efficiency targets of the country which seeks 40 percent energy efficiency by 2030 at the rate of 2.5 percent improvement per annum. There should be a structured and measurable process of meeting the targets through investments by the public and private sectors. Policy provisions did not also address and encourage the use of natural gas rather than liquid fuel. Micro grid promotion through the development of gas-to-power plants at gas flare sites were not provided for.

Beyond public funding, policies can be used to attract private sector investments in renewable energy. A key challenge to expanding electricity availability using renewable energy to un-served and under-served<sup>30</sup> communities is the draft Mini Grid Regulations which requires inter alia for the licensing of an isolated Mini Grid (of not more than 1MW), vide section 7: (b) *confirmation of the Distribution Licencee's expansion plans approved by the Commission through the Commission to ensure that the Mini Grid activities will not interfere with the expansion plans into the designated Unserved Area;* (c) *written consent of the Distribution Licencee of the intended area where the operational period of the Mini Grid Developer will be within the five year expansion plan of the Distribution Licencee;* (d) *the intended geographic location is an Unserved Area.* Essentially, the exclusivity granted to Electricity Distribution Companies (DISCOs) by the Nigerian Electricity Regulatory

---

Pichs-Madruga, Y. Sokona, K. Seyboth, P. Matschoss, S. Kadner, T. Zwickel, P. Eickemeier, G. Hansen, S. Schlömer, C. von Stechow (eds)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1075 pp. (Chapter 5 & 9). See also National Academy of Sciences. 2010. Electricity from Renewable Resources: Status, Prospects, and Impediments. Washington, DC: The National Academies Press. Online at [http://www.nap.edu/openbook.php?record\\_id=12619](http://www.nap.edu/openbook.php?record_id=12619).

<sup>28</sup> IPCC, 2011: IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation.

<sup>29</sup> Climate Change Impacts on Hydropower; <http://www.hydroworld.com/articles/2015/03/climate-change-impacts-on-hydropower.html>

<sup>30</sup> "Underserved Area" means an area within a Distribution Licencee's Network with an existing but poorly supplied or non functional distribution system. By this definition, the whole of Nigeria is an underserved area.

Commission trumps the rights of Nigerians to access electricity. Mini grids can operate in isolation from DISCOs or to be connected to a Distribution Licensee's network. Mini grid operators will only operate until the DISCO extends service to the area and thereafter will acquire the mini grid subject to the payment of compensation. This is not an enabling environment for an investor to project the costs of a renewable energy investment and the appropriate returns to the investment to encourage rational investors to set up shop.

#### **4.1 BUDGET AND POLICY RECOMMENDATIONS TO IMPLEMENT MITIGATION AND ADAPTATION IN THE ENERGY SECTOR**

**(1)** Full costing of the INDC/NDC, renewable energy and energy efficiency policies to provide a guide for MDAs seeking public funding for renewables.

**(2)** Review the costing of the Nigeria Integrated Infrastructure Master Plan to mainstream climate change adaptation and mitigation strategies into the costing.

**(3)** Increased public funding of renewable energy projects and consequent gradual reduction in funding non-renewable energy; low hanging fruits will include renewable energy to power the office buildings of all MDAs.

**(4)** FGN should promote energy efficiency measures starting from retrofitting all existing public buildings housing MDAs and ensuring that new constructions incorporate energy efficiency.

**(5)** Risk assessment of major energy infrastructure and preparation of guidelines and policies for the construction of new climate change mitigating energy projects

**(6)** Intensive rural electrification on and off-grid driven by cost-efficient renewable energy solutions. This will alleviate the energy poverty in the rural areas and will double as an avenue where many small entrepreneurs can find work in the sector.

**(7)** Further to the above, NERC should amend the Mini Grid Guidelines to ensure that renewable energy investors have the enabling environment and certainty to invest, recoup their costs and get reasonable returns on their investment.

**(8)** NERC needs to design and implement feed in tariff as a support measure to incentivize investments in renewable energy by guaranteeing a reasonable tariff for a particular period of time, up to 10-15 years. These support measures need to be reviewed periodically and phased out in time as the share of renewable energy increases and renewable energy becomes competitive with conventional sources.

**(8)** The Central Bank of Nigeria should consider the establishment of a special single digit interest fund for the promotion of renewable energy.



**(9)** FGN can also use targeted financial programmes to support the mainstreaming and access to energy efficient appliances. For instance, FGN should consider establishing a National Clean/Renewable Energy Fund to be deployed to promote the use of solar panels, energy efficient appliances and other clean energy equipment. It could also be deployed to the provision and distribution of clean stoves for rural women. This Fund could be an expansion of the already existing Ecological Fund and its use will now be guided by more transparency and accountability and value for money. This will call for increased legislative and civil society oversight over the expenditures of the Fund. Other sources of revenue for the Fund will include penalties and fines for violation of environmental laws and regulations. The Fund will help ameliorate the high start-up cost of renewable energy investments.

**(10)** FGN should consider incentives such as income tax rebates, to facilitate private financing of solar and other renewable energy solutions.

**(11)** Fiscal measures in the form of low tariffs, import duty waivers, should be extended to raw materials and parts for the local production of renewable energy machineries and parts, i.e. solar panels, inverters, small hydro machines, wind propellers, etc. FGN should also consider extending tax credit, holidays, pioneer status to companies producing renewable energy components.

**(12)** FGN should stop the funding of the proposed nuclear energy plant and rather spend the money on renewable energy solutions.

**(13)** FGN should stop the allocation of public funds for feasibility studies and construction of coal fired energy plants. Rather, FGN should spend the money on renewable energy solutions. Leave the coal in the ground.

**(14)** Further to the above, FGN should consider stopping the granting of licenses to private sector investors for coal fired energy plants.

**(15)** In the event FGN insists on using coal for electricity generation, it should introduce a levy on coal plants per metric tonne of coal produced and or imported into the country. The proceeds of the levy should go to an Environmental Remediation Fund or the National Clean Energy Fund to finance environmental remediation and or research and innovative projects in clean energy technology.

**(16)** Beyond solar energy, FGN should consider other renewable options including wind, mini hydro, biomass energy generation and distribution.

**(17)** In funding renewables, resources should not be so thinly spread over so many projects. Projects should be included in the budget on the basis of available resources rather than having so many uncompleted renewable energy projects.

**(18)** Increased funding for research and development specifically to build local capacity for the development and servicing of renewable energy machines, equipment and appliances.

**(19)** Refocusing educational curriculum in the universities and polytechnics to include specialization and courses in renewable energy technologies.

**(20)** The full removal of consumer and producer subsidies for fossil fuels can help stabilize government budgets and reduce emissions.

**(21)** FGN should consider the use of LPG for transportation and domestic use. This will reduce costs and the dependence on petrol and diesel. Locally fabricated clean cook stoves should be popularised through public private partnerships.

**(22)** The Standards Organisation of Nigeria, Consumer Protection Council and other regulatory agencies should regulate standards of imported and locally produced renewable energy technologies to ensure that quality and standards are met. Currently, low quality solar panels, batteries and other renewable energy products dominate the Nigerian renewable energy market



## REFERENCES

Centre for Social Justice (2015). *Green Policies and Budget: A Policy Brief for Sustainable Energy in Nigeria*.

Climate Change and Energy; International Energy Agency (IEA), World Energy Outlook Special Report, 2015. Pg 77.

Draft Mini Grid Regulations, Nigerian Electricity Regulatory Commission, 2016.

Federal Ministry of Environment (2015). *Nigeria's Intended Nationally Determined Contribution*. Submitted by the Federal Government of Nigeria Being a Requirement by Conference of Parties to the United Nations Framework Convention on Climate Change (COP-UNFCCC) in Preparation for the Adoption of Climate Change Agreement at the Paris Conference on Climate Change.

Federal Ministry of Environment Special Climate Change Unit (2011). *National Adaptation Strategy and Plan of Action on Climate Change for Nigeria (NASPA-CCN)*. Prepared by the Building Nigeria's Response to Climate Change (BNRCC) Project. Available at <http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=27C7F6A7FD5FCAAD495C69457F2C5F7D?doi=10.1.1.367.6707&rep=rep1&type=pdf>

Federal Ministry of Petroleum Resources Website. *Mandate*. Available at <http://petroleumresources.gov.ng/index.php/78-featured/74-article-c>

Federal Ministry of Power (2015). *National Renewable Energy and Energy Efficiency Policy (NREEEP)*. Approved by FEC for the Electricity Sector. Federal Republic of Nigeria.

Federal Ministry of Power Website. *Mission & Vision*. Available at <http://power.gov.ng/>

Heinrich Böll Stiftung and Friends of the Earth (2015). *Coal Atlas 2015: Facts and Figures on a Fossil Fuel*. Würzburg, Germany: Phoenix Print GmbH. Available at <https://www.boell.de/sites/default/files/coalatlas2015.pdf>

Hydroworld.com. *Climate Change Impacts on Hydropower*. Available at <http://www.hydroworld.com/articles/2015/03/climate-change-impacts-on-hydropower.html>

IEA (2015). *Climate Change and Energy*. World Energy Outlook Special Report, 2015. Pg 77. Available at <https://www.iea.org/publications/freepublications/publication/WEO2015SpecialReportonEnergyandClimateChange.pdf>

IPCC, (2011). *IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation*. Prepared by Working Group III of the Intergovernmental Panel on Climate Change [O. Edenhofer, R. Pichs-Madruga, Y. Sokona, K. Seyboth, P. Matschoss, S. Kadner, T. Zwickel, P. Eickemeier, G. Hansen, S. Schlömer, C. von Stechow (eds)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1075 pp. (Chapter 5 & 9).

National Academy of Sciences (2010). *Electricity from Renewable Resources: Status, Prospects, and Impediments*. Washington, DC: The National Academies Press. Online at [http://www.nap.edu/openbook.php?record\\_id=12619](http://www.nap.edu/openbook.php?record_id=12619)

Nigeria Millennium Development Goals 2013 Report. Available at [http://www.ng.undp.org/content/dam/nigeria/docs/MDGs/UNDP\\_NG\\_MDGsReport2013.pdf](http://www.ng.undp.org/content/dam/nigeria/docs/MDGs/UNDP_NG_MDGsReport2013.pdf)

Union of Concerned Scientists Website [Accessed 20/12/2016]. *Environmental Impacts of Hydroelectric Power*. Available at [http://www.ucsusa.org/clean\\_energy/our-energy-choices/renewable-energy/environmental-impacts-hydroelectric-power.html#.WEwYaH0jrlU](http://www.ucsusa.org/clean_energy/our-energy-choices/renewable-energy/environmental-impacts-hydroelectric-power.html#.WEwYaH0jrlU)

WHO 2006. *Fuel for Life: Household Energy and Health*. France: WHO. Available at <http://www.who.int/indoorair/publications/fuelforlife.pdf>

World Bank (2013). *CO<sub>2</sub> Emissions (Metric Tonnes Per Capita)*. Carbondioxide Information Analysis Centre, Tennessee, United States. Available at <http://data.worldbank.org/indicator/EN.ATM.CO2E.PC>