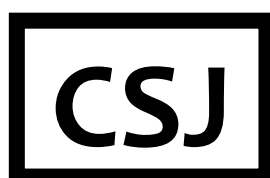


IMPLEMENTING THE NIGERIAN ELECTRICITY MARKET STABILISATION FACILITY: A REVIEW



Centre for Social Justice (CSJ)
(Mainstreaming Social Justice in Public Life)

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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

Email: censoj@gmail.com

Twitter: @censoj

Facebook: Centre for Social Justice, Nigeria

Blog: csj-blog.org

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ACRONYMS

ANED	Association of Nigerian Electricity Distributors
ATC&C	Aggregate Technical, Commercial and Collection Losses
CBN	Central Bank of Nigeria
CO ₂	Carbon Dioxide
DISCO	Distribution Companies
FCMB	First City Monument Bank
FDI	Foreign Direct Investment
GENCOs	Electricity Generation Companies
GW	Gigawatt
IRENA	International Renewable Energy Agency
IRP	Interim Rules Period
MDAs	Ministry, Department and Agencies of Government
MO	Market Operator
MoU	Memoranda of Understanding
MPSP	Market Participants, Service Providers
MWH	Mega Watt per Hour
MYTO 2	Multi Year Tariff Order 2012
NACOP	National Council on Power
NELMCO	Nigeria Electricity Liability Management Company Limited/Gte
NEMSF	Nigeria Electricity Market Stabilization Facility
NERC	Nigerian Electricity Regulatory Commission
NESI	Nigerian Electricity Supply Industry
NGC	Nigeria Gas Company Limited
NPL	Non-Performing Bank Loans
NREAP	National Renewable Energy Action Plan
PHCN	Power Holding Company of Nigeria
RE	Renewable Energy
T&D	Transmission and Distribution
TEM	Transitional Electricity Market
US\$	United States Dollar

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EXECUTIVE SUMMARY

The Central Bank of Nigeria in December 2014 set up the Nigeria Electricity Market Stabilization Fund (NEMSF) in a bid to solve the liquidity challenges that faced the Nigeria Electricity Supply Industry (NESI). It aimed to settle the outstanding payment obligations due to market participants, service providers and gas suppliers under the Interim Rules Period. Its overall objective is to put NESI on the part of economic viability and sustainability.

The CBN NEMSF did not attain the desired objectives for which it was set up as the liquidity challenges in the electricity market still remains; it has actually gotten worse. It was reported that the current liquidity crisis in the electricity market stood at about N1 trillion as at December 2016. A total sum of N120.2 billion out of the fund's N213.41 billion was disbursed to various qualified market participants before the fund was suspended as a result of operating technical issues which led the DISCOs to declare force majeure. It is also a fact that remittances of the DISCOs to the Market Operator have not improved as data presented in this work showed a cumulative payment of N8.65 billion out of N23.88 billion for Q₁ 2016. An empirical analysis presented in chapter 5.0 showed that NEMSF did not contribute to improvements in power supply. The issue of non-performing bank loans points to the fact that most investors in the electricity market do not have the financial capability to drive viability in the market, therefore making a case for new capable investors to be brought in.

The analysis in the work used three scenarios to show the amount of megawatts the CBN NEMSF would have achieved if invested in renewable energy. Using the IRENA scenario, NEMSF would have yielded 866.67 MW; Egyptian scenario 541.67 MW and the Kenyan scenario 401.29 MW. On the average of three scenarios, it would have yielded 603.19 MW.

The full recommendations are as follows.

To achieve the accelerated growth of the sector, the following recommendations are imperative.

1. Special Renewable Energy Fund: CBN should consider a single digit interest fund dedicated to the expansion of renewable energy solutions in the country. Such a fund should also support skills acquisition, capacity building and local production of renewable energy components.

2. Develop Capacity to Earn Carbon Credits: Nigeria should take steps to build the capacity to earn carbon credits under various climate change and environmental agreements.

3. Use Favourable Policies to Attract Investment: One way of improving power generation capacity is by ensuring that favourable policy environment is in place as

this will attract investors to invest more in the country's power sector. Adopting and implementing a power-source specific strategy whereby:

- solar producers are given a waiver of grid usage charges for solar power generators for a given number of years; and
- hydro producers are permitted 100% foreign FDI and no customs duty on key capital goods imports, as was the case in India, will go a long way in improving the status quo.

4. More Investors Are Needed: More investors are needed because the present set of investors have shown lack of financial capacity. The investors should come into:

- The distribution end of the value chain beyond the present core investors who lack the financial resources to improve distribution. The investment space should be liberalized beyond high network investors to include organized labour, community groups, cooperatives and ordinary Nigerians.
- The transmission part of the value chain should benefit from private sector investments instead of the current state of being state owned.

5. Employing Efficient Power Generation Technologies: The choice of appropriate technology for power generation is one of the means through which the nation's capacity utilisation can be significantly improved from the current level. The technologies' selection process needs to consider multiple factors such as performance efficiency, risk of outdated technology and price. A good approach would be to evaluate options based on a 'total cost of ownership' perspective rather than the 'lowest price' approach.

6. Swifter Execution of Power Projects: Making the best out of the execution lead time is vital to ensure that the nation's power generation infrastructure is ready and functional. Using the Mambilla project as example¹, avoiding delays especially as it regards to land acquisition, project clearances, procurement and construction, should be given top most priority. Thus, the government and the industry players need to put in place a joint tracking mechanism to monitor progress and facilitate escalation to the right stakeholders whenever necessary.

7. Maintenance and Replacement of Failing Infrastructure: Replacing or repairing equipment which are failing and susceptible to breakdown should be the immediate focus of efforts being made to bring about growth in capacity utilisation. There is also the need to imbibe the culture of proactive and regular maintenance so as to significantly reduce the impact of breakdowns and its frequency.

¹ Which was began in 2003 but is yet to deliver due to a plethora of issues.

Since investment in the NESI cannot be guaranteed unless low liquidity challenges in the value chain is tackled, the following can be done to guarantee private investment in NESI to ensure improved power supply:

- **Ensure that all Funds Collected by DISCOs are Remitted Appropriately:** The National Council on Power (NACOP) should prevail on National Regulatory Commission (NERC) to collaborate with the CBN to carry out forensic audit of all the accounts of the DISCOs with the commercial banks throughout the country to confirm the exact revenues of the DISCOs. Appropriate sanctions should be meted to any DISCO found to be collecting enough revenue that will enable it to pay for the MO and NBET invoices but have not done so.
- **Address Low Liquidity Level in the Power Sector Value Chain:** If the audit exercise reveals that DISCOs are not collecting enough revenues as they should, National Council on Power (NACOP) should arrange a round table meeting with the DISCOs and NERC to examine the reasons for the poor level of revenue collection and work towards solutions that will be implemented immediately for the growth and sustainability of the industry.
- **Cost Reflective Tariff:** In the long run, make the tariff cost reflective and incentivize DISCOs that are improving on their capacity and reduction ATC&C losses.

1.1 Introduction

Nigeria's power sector faces numerous challenges. These range from gas shortages, pipeline vandalism, inadequate funding, unprofitable prices and corruption. The cumulative effect of these challenges is worsening power outage. Sequel to the handing over of the Power Holding Company of Nigeria (PHCN) successor companies to private participants in November 2013, the Nigerian Electricity Supply Industry (NESI) had faced liquidity challenges emanating from many factors which include insufficient gas supply and higher baseline Aggregate Technical, Commercial and Collection Losses (ATC&C) than what had been assumed under the current Multi Year Tariff Order 2012 (MYTO 2).

The Central Bank of Nigeria (CBN) in December 2014 expressed its desire to ensure improved liquidity in the electricity market by seeking to put NESI on the path of economic viability and sustainability. It announced that it will invest in the Refinancer² to be set up to provide a facility which will be aimed at settling outstanding payment obligations due to market participants, service providers and gas suppliers that accrued during the Interim Rules Period (IRP Debts) and also the Legacy Gas debts of the PHCN generation companies owed to gas suppliers and the Nigeria Gas Company Limited (NGC) which have been transferred to the Nigeria Electricity Liability Management Company Limited/Gte (NELMCO). It was also said by the CBN management that the funds will be used by DISCOs to buy meters and transformers in order to improve their capacity while the GENCOs will acquire equipment to replace some of their obsolete ones so as to improve their capacity³.

The Refinancer will be set up by the CBN and will refinance the facility by repaying the lenders for payments made to market participants, service providers, NGC and gas suppliers for the settlement of the IRP Debts and the Legacy Gas Debts. The funds to be used by the Refinancer for this purpose will be raised by the issuance of debenture notes by the Refinancer to be fully subscribed by CBN in accordance with the powers granted to the CBN⁴. The facility is to the tune of N213, 417, 694, 034.34 (N213.417 billion). A CBN appointed administrator will manage the Refinancer.

1.2 Background to the CBN NEMSF Intervention

There was a huge liquidity challenge in the electricity market as there was liquidity shortfall in the value chain of the NESI. This was as a result of a couple of issues namely: the power sector tariff under the Interim Rules Period (IRP) was non-cost reflective in that what was charged as electricity tariff (under MYTO 1) by the market was less than the marginal cost of producing the electricity. Secondly, there was a

² The special purpose vehicle to be set up by CBN and NERC for the purpose of implementing the CBN-NEMSF.

³ Godwin Emefiele speaking on the suspension of the facility; '*Bailout: CBN suspends N213bn Loan to DISCOs, GENCOs*'. Available at <http://www.dailytrust.com.ng/news/business/bailout-cbn-suspends-n213bn-loan-to-discos-gencos/114687.html>

⁴ Pursuant to Section 31 of the CBN Act.

backlog of unpaid tariffs for power consumed by end users (which included Government MDAs) etc. These issues resulted in the liquidity shortfall in the market and thus an urgent payment intervention was required.

The CBN intervention facility came about as a result of several entreaties made by the power generating companies (and gas suppliers owed by some of the thermal generating plants) who were not being fully paid for their monthly invoices raised in respect of power generated. Thus, the measures proposed by the CBN and its partner government agencies were to provide liquidity support and make tariff adjustments so as to incentivize commitments by electricity market participants. It was believed that the disbursements of the intervention fund will kick-start the Transitional Electricity Market (TEM).

1.3 NEMSF Terms and Conditions

The CBN, in collaboration with the Ministry of Petroleum Resources, Ministry of Power and the Nigerian Electricity Regulatory Commission (NERC), signed a Memoranda of Understanding (MoU) on the CBN Nigeria Electricity Market Stabilization Facility (NEMSF). The obligation of all parties, the terms of engagement, mode of funding, repayment, interest rate, etc. were stipulated in the terms and conditions for participation by the Deposit Money Banks in the implementation and execution of NEMSF.

Some details of the terms and conditions are as presented in Box 1 as follows.

Box 1: NEMSF Terms and Conditions

Mode of Funding	<ul style="list-style-type: none"> a. The CBN shall subscribe to debenture notes issued by the Refinancer in the total sum of the facility amount. b. Each lender shall make available (for the benefit of the beneficiaries) the amount of its commitment in the facility to the Refinancer.
Refinancing	The Refinancer shall refinance the facility by paying the lenders in proportion to each Lender's commitment in accordance with the DISCO Disbursement Refinance Agreements and the amended and restated DISCO Disbursement Agreements.
Role of the Administrator	The Administrator shall administer and manage the CBN-NEMSF for and on behalf of the Refinancer.
Tenure	The facility shall have a tenure of 10 years.
Moratorium	There shall be a moratorium period of 12 months on the principal amount.
Charges	The facility will attract an all-inclusive charge of 10% per annum on the outstanding balance and payable monthly in accordance with the transaction documents.
Disbursement	All amounts to be disbursed under the CBN-NEMSF must be as confirmed by NERC and the market operator and approved by the Refinancer. The Refinancer shall disburse

	<p>the facility for the following purposes:</p> <ol style="list-style-type: none"> Settlement of all legacy gas debts owed to NGC and the gas suppliers; and Settlement of all IRP debts owed to the beneficiaries. <p>Provided that disbursement shall only be made on the fulfillment (or waiver) of all the conditions precedent in the form and substance satisfactory to the Refinancer and in accordance with the disbursement agreements and provided further that the disbursement shall be utilised in accordance with the permitted utilisation as defined and described in the disbursement agreement.</p>
Beneficiaries of the Facility	Market Participants, Service Providers, NGC and gas suppliers to who IRP Debts and Legacy Gas Debts are owed.
Terms of Engagement of the Banks	<ol style="list-style-type: none"> The collection banks and the principal collection bank, may in accordance with existing agreements with any DISCO, charge such fees as are payable by the collection bank and the principal collection bank on behalf and for the benefit of the DISCO in the normal course of business. The banks shall, with respect to the CBN-NEMSF and the accounts administration agreement, act in accordance with instructions given to it by the Refinancer based on the transaction documents and in the absence of instructions from the Refinancer, the banks shall act (or refrain from taking action) reasonably in ensuring and protecting the best interest of the Refinancer. The collection banks and the principal collection bank shall transfer all funds under the CBN-NEMSF in accordance with their obligations under the accounts administration agreement.
Conditions for Participation – Mandate Banks	<ol style="list-style-type: none"> Approval from the CBN to each mandate bank to participate in the CBN-NEMSF in an amount approved by CBN. Necessary approval of the mandate banks according to the internal processes authorizing each mandate bank to participate in the CBN-NEMSF under these terms and conditions stipulated by CBN and in the amount approved by CBN. Execution of the requisite transaction documents by the mandate banks.
Obligations of Parties	<p>CBN</p> <ol style="list-style-type: none"> Procurement of all requisite approval for the CBN-NEMSF. Establishment of the Refinancer and subscription to the debenture to be issued by the Refinancer pursuant to the deed of debenture. <p>Refinancer</p>

	<ul style="list-style-type: none"> a. Compliance with these terms and conditions. b. Monitor the process for the fulfillment of the conditions precedent and condition subsequent to disbursement and ensure that such conditions precedent are fulfilled in a manner and form which is reasonably satisfactory. c. Refinance the lenders in accordance with the terms of the amended and restated DISCO disbursement agreement and the DISCO disbursement refinance agreement to the amount of the commitment by each lender. d. Authorize and approve the disbursement by the lenders in accordance with the relevant disbursement agreements and the liability transfer and debt settlement agreement. e. Procure that appropriate mechanisms are established for the repayment of the facility. f. Monitor the repayments being made with respect to the facility and ensure that there are no shortfalls in the repayment. g. Keep proper books of accounts and records of all disbursements and repayments of the facility. h. Render periodic reports including accounts to CBN. i. Adhere to all its obligations as stated in the relevant transaction documents to which it is a party. <p>Mandate Banks</p> <ul style="list-style-type: none"> a. Compliance with these terms and conditions. b. Transfer to the Refinancer in accordance with the terms of the amended and restated DISCO disbursement agreements the amount of the commitment for each mandate bank for the purpose of disbursement. c. Not use any monies received under the CBN-NEMSF to repay or set off any existing or future secured or unsecured obligations or liabilities of any of the market participants. d. Adhere to all its obligations as stated in the relevant transaction documents to which it is a party. <p>Collections Banks</p> <ul style="list-style-type: none"> a. Compliance with these terms and conditions. b. Provide the Refinancer with a register of all accounts operated by a DISCO and domiciled with it. c. Disclose all existing feeder collecting accounts in respect of each DISCO to the Refinancer and shall provide the Refinancer all relevant information required in respect of the existing feeder collection accounts and newly opened feeder collection accounts. d. Open and maintain the feeder collection accounts in accordance with the terms of the account
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	<p>administration agreement.</p> <ul style="list-style-type: none"> e. Immediately notify the Refinancer upon receiving a request to open any other account by a DISCO and such account shall not be opened without the prior written consent of the Refinancer. f. Immediately upon receiving either a written or verbal request to close a feeder collection account, give the Refinancer notice of such request and the feeder collection account shall not be closed without the prior consent of the Refinancer. g. Not exercise any right of set off on any monies received under the CBN-NEMSF to repay or set off any existing or future secured or unsecured obligations or liabilities of any of the beneficiaries. h. Sweep all monies standing to the balance of the feeder collection account on a monthly basis to the principal collection account on a monthly basis in accordance with the terms of the account administration agreement. i. Promptly notify the Refinancer of any circumstance within its knowledge and notice which are likely to result in an event of default under any of the transaction documents. j. Adhere to all its obligations as stated in the relevant transaction documents to which it is a party. <p>Principal Collection Bank</p> <ul style="list-style-type: none"> a. Compliance with these terms and conditions. b. Open and maintain a new principal collection account for the relevant DISCO in accordance with the accounts administration agreement. c. Provide the Refinancer with details of all relevant information of the principal collection account opened by the DISCO and domiciled with it within 5 working days of the request of such information made by the Refinancer. d. Not open any other principal collection account for the benefit of the DISCO without the prior written consent of the Refinancer. e. Not exercise any right of set off on any monies received under CBN-NEMSF to repay or set off any existing or future secured or unsecured obligations or liabilities of any of the beneficiaries. f. Upon receiving either a written or verbal request to close a principal collection account, it shall immediately give the Refinancer notice of such request and the principal collection account shall not be closed without the prior written consent of the Refinancer. g. Promptly notify the Refinancer of any circumstances within its knowledge and notice
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	<p>which are likely to result in an event of default under any of the transaction documents.</p> <p>h. Adhere to all its obligations as stated in the relevant transaction document to which it is a party.</p>
Repayment	<p>a. Repayment of CBN-NEMSF shall be in accordance with the repayment schedule to be set out in the amended and restated DISCO disbursement agreement.</p> <p>b. All transfers to be made by the principal collection banks to the Refinancer in repayment of the CBN-NEMSF shall be made without setoff, deductions or counterclaim.</p>
Default Interest Rate	<p>If the collection bank or principal collection bank fails to transfer or remit any amount under a transaction document as at the due date of such transfer or remittance, interest shall accrue on the overdue amount from the due date up to the date of actual transfer or remittance at the defaulting bank's prevailing maximum lending rate and payable by the defaulting bank. This cost shall not be passed on to the DISCO.</p>

Source: CBN website⁵

2.0 Disbursement of the CBN-NEMSF

A total sum of N18.26 billion was disbursed by CBN⁶ as the first tranche of the NEMSF to five (5) beneficiaries. These beneficiaries comprise of two (2) Electricity Distribution Companies (DISCOs) and three (3) Electricity Generation Companies (GENCOs). They are: Eko Electricity Distribution Company; Ibadan Electricity Distribution Company; Jebba Hydroelectricity Plc.; Kainji Hydroelectricity Plc. and Shiroro Hydroelectricity Plc. These beneficiaries were said to have met the conditions precedent to disbursement of the funds by the CBN management. They were also asked by the CBN management to in exchange for the intervention:

“ensure that all inputs into the generation of power are ramped up in a consistent manner; invest the funds in the necessary improvements in generation plant maintenance, transmission upgrades and distribution networks including transformers and better metering for end consumers”⁷.

The second batch of the CBN-NEMSF disbursement was made to six (6) beneficiaries comprising of three (3) DISCOs and three (3) GENCOs⁸. A total sum of N39.53 billion was disbursed to the beneficiaries. They are Enugu Electricity

⁵ Available at <https://www.cbn.gov.ng/out/2015/fprd/cbn-nemsf%20terms%20and%20conditions%20final.pdf>

⁶ On the 2nd of February, 2015 at CBN's Head office in Abuja.

⁷ CBN Governor Godwin Emefiele's welcome remarks during the disbursement ceremony. More from <https://www.cbn.gov.ng/OUT/SPEECHES/2015/GOVERNORS%20TALKING%20POINTS%20FOR%20NEMSF%20DISBURSEMENT%20CEREMONY.PDF>

⁸ This was on the 11th of February, 2015.

Distribution Company; Ibadan Electricity Distribution Company; Kano Electricity Distribution Company; Ughelli Electricity Generation Company; Egbin Electricity Generation Company and Geregu Electricity Generation Company. The beneficiaries were urged by the CBN management to properly utilize the facility by investing in the generation and distribution of electricity in the country.

A total sum of N6.9 billion was disbursed to gas suppliers as legacy debts owed them by power DISCOs. This was in continuation of the CBN-NEMSF disbursement⁹ which the CBN management said represented debts by the power sector in proportion to the obligations to repay the facility by five (5) DISCOs that have so far signed up for the facility. The DISCOs involved are Eko, Ibadan, Kano, Port Harcourt and Enugu. The gas suppliers were urged by the CBN management to complete the process of activating formal, binding agreements for gas volumes to power sector companies as well as deliver more of their existing gas output to existing power plants. Amounts ranging from N230 million to N2.04 billion were disbursed to the gas suppliers. NNPC/Chevron Joint Venture was one of the companies paid.

The fourth tranche of CBN-NEMSF disbursement¹⁰ was a total of N55.5 billion to twenty four (24) industry participants. The beneficiaries include three (3) DISCOs, 14 (fourteen) GENCOs, one (1) service provider and six gas companies. A breakdown of the N55,456,161,481 showed that all the DISCOs got N8,670,234,863.76; the GENCOs got N35,834,536,939; gas suppliers N10,491,710,788.66; all the service providers in the power value chain got a total of N459,678,889.55¹¹. This brings the total sum disbursed so far to N120.2 billion. Speaking at the fourth tranche disbursement event, the CBN governor stated that by the end of the day's event, the total disbursements under the initiative will be N120.2 billion, representing (57%) of the total amount earmarked".¹²

⁹ This was on the 12th of June, 2015.

¹⁰ This was made on the 20th of May, 2016.

¹¹ ThisDay Newspaper May 21, 2016: *CBN Disburses N55bn to 24 Power Firms as FG Seeks Improved Supply*. More from <http://www.thisdaylive.com/index.php/2016/05/21/cbn-disburses-n55bn-to-24-power-firms-as-fg-seeks-improved-supply/>

¹² Supra; ThisDay Newspaper May 21, 2016: *CBN Disburses N55bn to 24 Power Firms as FG Seeks Improved Supply*.

2.1 Results of the CBN – NEMSF

The results of the NEMSF were captured in the following excerpt from a featured article on the CBN's website titled 'Power Sector Receives CBN N120bn Boost'¹³:

"The first disbursement under the NEMSF scheme was effected on February 12, 2015 to different players in the sector. That intervention resulted in the restoration of a total of 905MW of power into the national grid among other impacts.

Specific reports from Generating Companies revealed that there was execution of capacity recovery programmes in three hydro power stations including intake under water repair project, overhaul of Unit 4 and compliant metering and supplementary protection at Shiroro Dam; overhaul of 2G6 at Jebba Hydro and rehabilitation of three units at Kainji Dam under permitted utilizations of the facility. A total of 300MW capacity increase was reported as a result of fund utilization towards rehabilitation of both plants. Others were rehabilitation of seven gas turbines at three major thermal Power Plants namely Geregu, Transcorp Ughelli, and Ibom Power Plants.

The intervention has also enabled the Electricity Distribution Companies (DISCOs) to provide bank guarantees to the Nigerian Electricity Bulk Trader (NEBT); purchase of over 171,071 units of meters comprising both maximum demand and single phase meters; rehabilitation of over 332kms of 11KV lines and 130km of 0.45KV lines; 70,310 No 500 KVA transformers procurement; and construction of 34 new distribution substations and acquisition of one mobile injection substation under confirmed permitted utilization by the initiative".

This progress report of the results achieved looks fantastic and ideally should encourage both CBN and the beneficiaries to continue until the disbursement and utilization of the full amount set aside under NEMSF. However, the later part of this study may create doubts as to whether these achievements were real.

3.0 Power Sector Revenue Challenges

One of the major challenges facing the Nigerian power sector is that of non-collection of the full revenue for the power supplied to consumers. Some stakeholders in NESI are also convinced that extant tariffs are not cost reflective. The structure of the power sector value chain is such that revenues are only collected at the level of distribution. This implies that the gas suppliers, service providers, the GENCOS and the Transmission companies are paid for the gas supplied, services rendered, power supplied and transmission services rendered respectively from the revenues collected by the DISCOs. Thus, non-collection of the full revenue by DISCOs, for whatever reason is tantamount to crippling the entire power sector.

¹³ <https://www.cbn.gov.ng/FeaturedArticles/2016/articles/PowerSectorCBNBoost.asp>

Around mid-May 2016 for example, the DISCOs alleged that the debt (unpaid tariffs for power supplied) owed by government establishments including the military and security agencies alone, stood at N93 Billion, which comprises of N39.1 billion pre privatization, 39.5 billion post privatization and an outstanding interest of N15 billion which was charged the DISCOs by the bulk trader for late payment of their electricity bills¹⁴. The debt profile of government MDAs, military formations and security agencies to the DISCOs was broken down as follows: Abuja DISCO N18.6 billion; Eko DISCO N8.6 billion; Kaduna N8.2 billion; Enugu N7.2 billion; Ibadan N6.8 billion; Ikeja N5.9 billion; Port Harcourt N6.8 billion; Benin N5.8 billion; Jos N6.5 billion; Yola N2.4 billion and Kano N1.2 billion¹⁵. The Association of Nigeria Electricity Distributors (ANED) protested this by embarking on mass disconnection of all those it referred to as historic debtors¹⁶. ANED decried the non-provision for the MDAs' debt to the DISCOs in the 2016 budget despite initiating discussions with the authorities before the budget was passed. This is because it hoped that such allocation would go a long way in helping government to resolve the MDAs' indebtedness, of which only 25% belongs to the DISCOs.

The present low liquidity of the Nigerian electricity market is a threat to the achievement of the stated objectives¹⁷ for privatizing the critical components of the Power Supply Industry. The Table below reveals the performance of the DISCOs for the first quarter of 2016 regarding the payment to the Market Operator (MO) for power provided in the market.

Table 1: DISCOs Remittances to the Market Operator

Year	Market Operator's Invoice (Millions N)	Amount Paid by the DISCOs (Millions N)	% Performance
Jan-16	8,604,985,080.92	3,040,319,408.64	35.33
Feb-16	7,843,848,928.59	3,208,160,619.70	40.90
Mar-16	7,435,095,226.90	2,406,764,769.94	32.37
Total	23,883,929,236.41	8,655,244,798.28	36.24

Source: The Market Operator/Transmission Company of Nigeria¹⁸

¹⁴ Vanguard Newspaper, *N93bn Debt: DISCOs Embark on Mass Disconnection*, May 16, 2016. Available at <http://www.vanguardngr.com/2016/05/n93bn-debt-discos-embark-mass-disconnection/>

¹⁵ ANED Executive Director, Mr. Sunday Oduntan as quoted by Vanguard Newspaper, *N93bn Debt: DISCOs Embark on Mass Disconnection*, May 16, 2016.

¹⁶ These include residential, commercial, industrial and government establishments across all tiers of government.

¹⁷ To provide adequate generation capacity; robust and reliable transmission and distribution networks for enhanced service delivery.

¹⁸ A memo by the MO/TCN to the National Council on Power (NACOP) titled '*Improving Liquidity of the Nigerian Electricity Market: A Precondition for Investment in the Nigeria Electricity Supply Industry*', July 2016.

Table one shows that out of the MO's N8.6 billion worth of power supplied to the DISCOs in Jan. 2016, only N3.04 was paid for, representing a 35.33% performance. In the same vein, only N3.2 billion and N2.4 billion were remitted by the DISCOs for N7.84 billion and N7.43 billion MO's invoice for the months of February and March respectively. Cumulatively, N8.65 billion was paid by the DISCOs for a N23.88 billion power supplied to them for the three months, representing an overall performance of 36.24%. This is a very poor performance and is far from encouraging private investments and the other parts of the electricity value chain will likely run at a loss as a result of this situation.

3.1 Value Chain Losses

This is one of the key issues with power production and distribution in Nigeria. According to a PWC 2016 Power Sector Report¹⁹, the country's entire power generation capacity was estimated at 12.5 GW; that is with the assumption that the power plants are operated at a 100% operating efficiency. 3.9 GW of this capacity was actually generated, representing 31% of the total installed generation capacity. A cumulative transmission and distribution (T&D) loss of 19% of the generated 3.9 GW was recorded, that is a 7% (0.3 GW) and a 12% (0.45 GW) of the generated 3.9 GW was lost through T&D respectively. In all, the net power available was 3.1 GW which represents only 25% of the installed generation capacity of 12.5 GW. These losses, according to the report, occur as a result of technology limitations and obsolete infrastructure.

Technology and infrastructure play a key role in power generation as power plants utilisation capacity depend on the technology and also the age and condition of the infrastructure being used. Power transmission losses in Nigeria are higher in the rural areas than in the urban areas owing to the fact that infrastructure in those places is older and maintenance is not done as often as it should be. Other developing countries like Brazil and India have higher utilisation rates of approximately 50% - 60% as a result of their significant effort to attract investment in new technologies, an example worth emulating from by Nigeria²⁰. Table 2 below compares Nigeria with many other developing nations in terms power generation capacity and TD losses.

Table 2: Power Generation Capacity and T&D Losses

Country	Total Power Capacity (GW)	Utilization Factor (% of Installed Capacity)	TD Losses (% of Power Generated)
Nigeria	12.5	31	19
Brazil	121.7	55	21

¹⁹ **Powering Nigeria for the Future**; the Power Sector in Nigeria, July 2016. Check further at www.pwc.com/gmc

²⁰ Things to be done include improving the current capacity utilisation of 31% by investing in new and efficient power generation technology and also revamping the existing power plants.

Ecuador	5.4	49	15
Egypt	27.0	63	16
India	254.7	55	22
Malaysia	28.5	53	14
Mexico	62.3	55	27
New Zealand	9.5	54	10
Norway	32.3	47	9
Peru	9.7	47	13
South Africa	44.2	66	10
UK	85.0	48	8
Ukraine	55.2	40	10
Vietnam	24.5	73	33

Source: Nigeria Power Baseline Report (2015), BMI Research, PwC Analysis

This comparison paints an unpleasant picture as Nigeria ranks among the lower echelon in terms of installed power generation capacity. This is unacceptable especially when one considers the economic gains a higher efficiency installed generation capacity could bring about and that Nigeria has the potential to achieve this and also, the fact that Nigeria's peers with similar or less population than Nigeria have higher power generating capacity. Brazil with over 200 million population have a total power capacity of 121.7 GW and South Africa with a population of over 53 million has a total power capacity of 44.2 GW. The scenario is no different with respect to utilization of installed capacity as Nigeria ranks last among the selected countries with only a 31% utilization rate. Regarding losses associated with transmission and distribution, Nigeria ranks the 5th country with the highest level of T&D losses after Vietnam (33%), Mexico (27%), India (22%) and Brazil (21%). This stresses the need for improvement in these regards.

4.0 Power Generation Pre CBN NEMSF

Table 3 below presents the 2012 – 2014 power generation statistics of some power plants in Nigeria pre CBN NEMSF intervention. It presents the average amount of energy generated by the plants, their revenues and their cost of operation. The 4th quarter entry for each year were selected for simplicity as the data were quarterly presented and some plants had no data for some quarters and for some years.

Table 3: Energy Generated, Turnover and Cost of Operation

Power Plant	Year	Average Energy Generated (MWH)	Turnover (Millions N)	Cost of Operation Less Labour Cost (Millions N)
Geregu Power PLC	2012 Q4	289,367.00	2,227,398,500.00	863,240,360.00
	2013 Q4	201,606.00	2,403,575,276.19	1,214,172,059.06
	2014 Q4	207,847.00	2,094,145,139.74	1,085,035,961.76
Afam Power PLC (General Company)	2012 Q4	191,168.50	1,063,056,946.18	244,690,418.46
	2013 Q4	71,918.00	712,092,966.67	119,063,506.14
	2014 Q4	62,142.50	593,733,235.00	47,639,125.38

AES Power	2012 Q4	114,966.50	2,337,463,080.22	1,131,788,971.01
	2013 Q4	135,157.72	2,436,119,830.33	1,132,803,788.49
	2014 Q4	0	1,668,829,975.83	443,827,165.22
NAOC JV IPP	2012 Q4	243,772,503.00	2,152,200,561.80*	2,807,637,314.70*
	2013 Q4	281,218,873.00	2,262,716,952.20*	6,938,131,591.80*
	2014 Q3	286,244,413.00	2,683,299,928.80*	2,519,904,199.50*
Omotosho Electric Energy Company Ltd	2012 Q4	50,741.33	1,334,310,979.78	1,095,985,673.74
	2013 Q4	34,020.33	1,365,173,247.02	947,560,007.00
	2014 Q4	107,468.67	3,660,710,753.68	4,375,204,166.35
Olorunshogo Generation Company	2012 Q4	336,599.60	3,059,450,605.00	1,682,088,660.98
	2013 Q4	184,649.50	1,662,754,226.68	2,032,182,344.53
	2014 Q4	313,851.80	2,766,071,913.95	2,659,674,855.33
Ogorode Generation Company	2012 Q4	287,125.91	2,625,766,446.95	1,335,878,167.75
	2013 Q4	126,967.59	1,162,740,008.78	2,517,035,717.97
	2014 Q4	324,814.70	3,116,812,904.73	1,499,067,048.78
Omotosho Generation Company	2012 Q4	344,728.38	3,152,541,035.10	2,144,323,018.82
	2013 Q4	288,584.57	2,207,399,153.98	1,444,650,362.49
	2014 Q4	288,584.57	2,570,330,787.07	1,602,123,346.08
BEMN Generation Company	2013 Q4	201,120.17	1,823,397,029.25	1,184,989,989.83
	2014 Q4	500,613.88	4,700,096,722.30	2,126,137,092.49
Alaoji Generation Company	2012 Q3	1,273.43	11,645,517.35	913,122,640.00
	2013 Q4	17,442.02	158,235,404.87	807,875,511.92
	2014 Q4	784.02	7,125,971.69	791,054,862.97
Nigerian Electricity Supply Corporation Ltd	2012 Q4	7,375,650.00	187,644,535.00	74,660,238.00
	2013 Q4	7,413,946.00	189,343,023.00	94,310,622.00
	2014 Q4	8,012,866.00	202,687,647.00	84,518,937.00
Kainji & Jebba Hydro Power Plant	2013 Q4	531,728.00	5,395,887,647.96	3,176,280,000.00
	2014 Q4	809,966.00	5,791,042,786.24	2,848,244,142.00

Source: Nigeria Bureau of Statistics Website²¹

* Figures were in US\$ but were converted to Naira using historical exchange rate²²

Table 3 paints a picture of the state of things in the power plants pre CBN intervention. Based on the entries, it shows that Geregu, Afam, Olorunshogu and Alaoji recorded decreasing trend on average energy generated (MWH) pre CBN intervention while NAOC JV IPP, Ogorode, BEMN, Nigeria Electricity Supply Corporation and Kainji & Jebba Power Plants recorded an increasing trend. BEMN Generation Company ranks first in terms of revenue earned with an average turnover of N3.261 billion for the period considered. Kainji and Jebba hydro plants have a joint average of N5.593 billion, which puts them in second place with N2.796

²¹ Data compiled from Power Sector Statistics, 'Power Generation Statistics 2010 – 2014'. Available at <http://www.nigerianstat.gov.ng/report/352>.

²² \$1 to N157.1 in 2012; N159.4 in 2013 and N185.1 in 2014. <http://fx-rate.net/USD/NGN/>

billion obtained by dividing their average by 2. Omotosho Generation Company came third with a N2.643 billion average turnover for the period. Regarding cost operation for the period being considered, NAOC JV IPP has the highest average cost of operation which stands at N4.088 billion. Omotosho electric Energy Company and Olorunshogo GENCO follow with an average operation cost of N2.139 billion and N2.124 billion respectively.

5.0 Has CBN NEMSF Yielded the Desired Results?

NEMSF was established to improve the liquidity condition of the Nigeria Electricity Supply Industry. There are two contending schools of thought; one is from the DISCOs and the electricity industry whilst the second is an empirical review of the results of the intervention to determine whether there have been improvements in generation, transmission and distribution of electricity.

Only N120.2bn out of the N213bn CBN NEMSF had been disbursed by mid-2016 before the facility was suspended by the CBN. This was as a result of a number of reasons: some beneficiaries did not meet the requirements to access the fund and there were some technical regulatory hiccups that rocked the electricity market stabilization fund. The understanding was that NEMSF was to help solve the liquidity challenges in the electricity market by clearing the existing legacy debts under the interim rules period, usher in the transition electricity market and make the DISCOs bankable. The PHCN successor companies' tariffs were supposed to cover the cost of producing the electricity and also allow for some markups which will enable the DISCOs to be able to pay back the loans. But the DISCOs raised a concern that the tariff order put together by NERC was non-cost reflective and secondly, that key economic factors like exchange rate, inflation and interest rate were affecting the tariff. These together with other issues like non-payment for power supplied by the GENCOs to the DISCOs as result of a number of reasons have ensured that the liquidity challenges in the market still remains.

Liquidity challenges still persist in the market because the investors who bought the PHCN successive companies do not have the requisite financial muscle to revolutionize the industry. Findings from Bureau for Public Enterprises showed that most of the investors that own the DISCOs actually borrowed money to buy them. The implication of this is that whatever revenue raised will be used to pay back loans and nothing will be ploughed back into the company which compounds the problem being faced by the market.

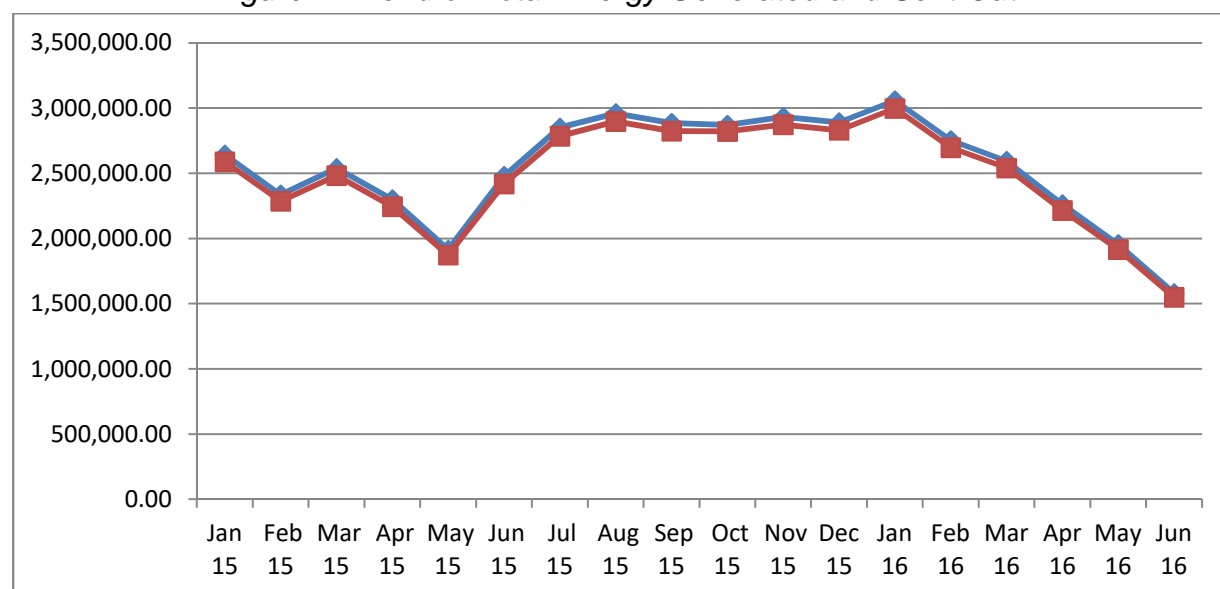
Now, it is imperative to examine the second school of thought. To establish whether or not the intervention has resulted in any improvement in power supply, we examined the data for total energy generated and sent out by the power plants in Nigeria from the time of NEMSF's first tranche disbursement to see if there has been any improvement from what was obtainable. Table 4 and Figure 1 tell the story.

Table 4: Monthly Energy Produced and Sent Out

Year	Total Energy Generated (MWH)	Total Energy Sent Out (MWH)
Jan-15	2,642,403.30	2,587,469.24
Feb-15	2,335,321.16	2,286,674.38
Mar-15	2,538,500.56	2,483,199.25
Apr-15	2,298,507.19	2,244,082.11
May-15	1,914,359.84	1,873,089.98
Jun-15	2,478,201.28	2,418,896.80
Jul-15	2,849,602.45	2,784,202.83
Aug-15	2,958,698.77	2,897,324.86
Sep-15	2,885,187.70	2,823,299.10
Oct-15	2,871,492.71	2,821,910.06
Nov-15	2,930,783.17	2,872,683.42
Dec-15	2,889,914.98	2,829,612.73
Jan-16	3,058,076.77	2,997,264.04
Feb-16	2,752,367.78	2,696,460.34
Mar-16	2,593,588.80	2,540,275.74
Apr-16	2,260,895.41	2,215,064.67
May-16	1,955,648.15	1,915,628.50
Jun-16	1,579,464.37	1,549,107.65

Source: National Bureau of Statistics Website²³

Figure 1: Trend of Total Energy Generated and Sent Out



The blue trend represents the total energy generated while the red represents the total energy sent out.

²³ Power Sector Statistics, 'Power Generation Statistics: Daily Energy Produced and Sent Out 2015 – Q2 2016'. Available at <http://www.nigerianstat.gov.ng/report/415>. The data were obtained by summing the various monthly entries.

Power sector projects are mainly long term oriented which makes results long term as well. However, one would expect to see some slight improvement in the short term given that some investments have been made. The first and second tranches of NEMSF disbursement amounting to N57.79 billion was made in February, 2015. This was followed by a N6.9 billion disbursement in June 2015 and a 55.5 billion disbursement in May 2016. But judging from the above data, these did not result in improved power generation as total energy generation series, plotted above, has been nearly linear and was decreasing towards the end of the period under consideration.

The total energy generated went down to 1.955 million MWH in May 2015 from Jan 2015 value of 2.642 million MWH. It was nearly linear around July to Dec. 2015 with a little under 3 million MWH of power generation. Power generation was highest in the period under consideration in January 2016 with a 3.058 million MWH and declined from then on to the lowest value of 1.579 million in June 2016. Based on the data collected, one can say that the disbursed N120.2 billion of the CBN NEMSF did not translate into any improvement in power supply.

5.1 Non-Performing Bank Loans (NPL)

A non-performing loan is that of which scheduled payments have not been made by the debtor for at least 90 days. NPL is either in default or close to being in default. Calls to prevent liquidity crises in the banking sector were made by the sector's stakeholders around mid-2015 as non-performing bank loans hit N649 billion.

The CBN, in the last assessment of the balance sheets of most of the commercial banks (before May 22, 2016) observed that energy companies in Nigeria were owing the commercial banks about N3.673 trillion²⁴. The banks overexposure to the oil and gas sector, which is facing the shocks of the global oil prices, has affected the banks' loan portfolio and consequently scaled down their profits at the end of 2015 financial year. The DISCOs themselves threatened to declare a force majeure²⁵ on their loans due to the challenges they face in servicing the dollar denominated loans they took when the exchange rate was just N155 to US\$.

Banks with the worrying NPLs are First Bank of Nigeria, Union Bank, Fidelity Bank, First City Monument Bank Limited (FCMB) among others. The First Bank of Nigeria net profit fell from N86 billion in 2014 to N15 billion in 2015 owing to the plummeting oil prices which affected the nation's economy. The bank's NPL stood at 22% at Q1 2016 compared to a 3.8% level in the corresponding quarter of 2015. Union bank's non-performing loans ratio stood at 16.99% at the end of 2015 and 6.9% at the end of Q1 2016. Extracts from Union Bank's financials reveal that NPL ratio increased from N9.9 billion in full year 2012 to N26.6 billion in Q1 2016. Fidelity Bank's total

²⁴ The Nation Newspaper, 22nd May, 2016: 'Worries over Banks' Non-performing Loans'. <http://thenationonlineng.net/worries-banks-rising-non-performing-loans/>

²⁵ A clause included in contracts to remove liability for natural and unavoidable catastrophes that interrupt the expected course of events and restrict participants from fulfilling obligations.

impairment charge in 2015 financial year was N5.7 billion; the bank also wrote off N2.7 billion as bad loans in the same year²⁶. FCMB's NPLs rose to N25.37 billion at the end of 2015 financial year from N22.95 billion in 2014 representing a 9.5% increase while Diamond Bank's NPLs rose from the 5.1% posted in 2014 to 6.9% in 2015²⁷. These are some examples of such non-performing bank loans.

5.2 What NEMSF Would Have Achieved if Invested in Renewable Energy

The National Renewable Energy Action Plan (NREAP) summarizes the country's intention of achieving an electricity target of 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.

If NEMSF had been invested in renewable energy, the achievements would include more megawatts of electricity, job gains, reduction of greenhouse gas emissions and possible income from carbon credits.

There is an argument that power generation investment in renewable energy (RE) technologies is costlier than that of fossil fuel power generation. A recent report by the International Renewable Energy Agency (IRENA) stated as follows:

*"Given today's installed costs, the performance of renewable power generation technologies and current prices for fossil fuels and conventional technologies, renewable technologies are now the most economical solution for off-grid electrification and for new centralized grid supply in locations with good resources ... it is not just off-grid that electricity systems remain dependent on diesel-fired generation. The falling cost of renewables means that virtually any electricity system based predominantly on oil-fired generation – such as on islands and in many countries – will see system generation costs fall by integrating renewables"*²⁸.

Flowing from the above excerpt, if the CBN NEMSF was channeled to investment in renewable energy power generation alone, there will not only be economic benefits in the form of lower power generation cost to be reaped but also environmental and social benefits. Estimates for renewable power generation costs by technology as compiled from the IRENA report titled 'Renewable Power Generation Costs in 2014' are as follows:

²⁶ The Nation Online Newspaper, 22nd May 2016. Available at <http://thenationonlineng.net/worries-banks-rising-non-performing-loans/>

²⁷ Independent Energy Watch Initiative, 21st June 2016, 'High Non-performing Loans worsen Power Supply, Cripple Banks'. Available at <http://iwin.org.ng/index.php/news/local/item/3071-http-tribuneonlineng-com-high-non-performing-loans-worsen-power-supply-cripple-banks>.

²⁸ 'Renewable Power Generation Costs in 2014', Pg. 30. Available at https://www.irena.org/DocumentDownloads/Publications/IRENA_RE_Power_Costs_2014_report.pdf

Table 5: Power Generation Cost Estimates

Technology	Estimates (US\$/kWh)
Utility – Scale Solar PV	0.08 – 0.30/kWh
Residential Solar PV systems	0.14 – 0.46/kWh
Hydropower	0.02 – 0.05/kWh
Onshore Wind	0.05 – 0.08/kWh
Biomass – Generated Electricity	0.05 – 0.15/kWh
Geothermal	0.05 – 0.10/kWh

Source: IRENA 2014 Report²⁹

Table 5 above shows the cost estimates by technology for power generation per kWh. Residential Solar PV systems has the highest estimate with an upper band of 0.46/kWh while geothermal technology has the lowest estimate of the group with an upper band of 0.10/kWh. Using the upper limits of the estimates in Table 5, the CBN NEMSF if invested in residential solar PV technology alone would yield 1,477,552,575 kWh of electricity and 8,495,927,310 kWh if invested in onshore wind technology alone³⁰.

The sum of N213.417 billion proposed for NEMSF could have generated the following megawatts of solar power using three different scenarios. At N197 to 1USD, it amounts to \$1.083 billion. In scenario 1, using the IRENA costing of \$1.25 million per megawatt, this would have generated an extra 866.67MW of electricity. In scenario 2, the cost of new solar generation in Egypt which is \$2 million per megawatt was used. This would add an extra 541.67 MW whilst scenario 3 which uses the Kenyan price model at \$2.7 million per megawatt adds new 401.24 MW³¹. The average of the MWs from the three scenarios is 603.19 MW.

In terms of job creation, the renewable energy industry has the potential of creating more jobs than the existing fossil fired industry. An example is the Solar Foundation Census from the United States which states inter alia that³²:

- *One out of every 50 new jobs added in the United States in 2016 was created by the solar industry, representing 2% percent of all new jobs.*
- *Solar jobs in the United States have increased at least 20 percent per year for the past four years, and jobs have nearly tripled since the first Solar Jobs Census was released in 2010.*

²⁹ Supra. 'Renewable Power Generation Costs in 2014', Pg. 31.

³⁰ Using historical exchange rate from <http://fx-rate.net/NGN/USD/> to convert N213, 417, 694, 034.34 to US\$ and divided by the upper limits.

³¹ At the extant prevalent rate of N305 to 1 USD, the sum of N213.417 billion proposed for NEMSF could have generated the following megawatts of solar power using three different scenarios. At N305 to 1USD, it amounts to \$699.7 million. In scenario 1, using the IRENA costing of \$.125 million per megawatt, this would have generated an extra 559.78 megawatts of electricity. In scenario 2, the cost of new solar generation in Egypt which is \$2 million per megawatt is used. This would add an extra 349.86 megawatts whilst scenario 3 which uses the Kenyan price model at \$2.7 million per megawatt adds new 259.16 megawatts. The average of the new megawatts from the three scenarios is 389.60 megawatts.

³² <http://www.thesolarfoundation.org/national/>

- *Over the next 12 months, employers surveyed expect to see total solar industry employment increase by 10 percent to 286,335 solar workers.*

Essentially, solar is not only the cleanest technology, but it produces more jobs per megawatt of installed capacity than any other sources of energy. From electricians and roofers to manufacturing line workers, sales agents and expanded solar sector will greatly benefit Nigeria with new jobs³³. In Nigeria, this will beyond creating jobs create the opportunity for capacity building and skills acquisition by millions of young Nigerians.

Beyond the megawatts and new jobs, investments in renewable energy would have helped Nigeria to meet her commitments to reduce greenhouse gas emissions. To date, Nigeria has been at the lower rung of developing countries struggling to meet their commitments to GHG emission reduction as embedded in various agreements including the new Paris Climate Change Agreement. While many developing and African countries have ratified the Agreement and have drawn up roadmaps for achieving targets, Nigeria still lacks a bankable and implementable strategy to tackle the challenge. Initiating projects of renewable energy to replace conventional ways of power generation could be Nigeria's first steps in meeting her international commitments³⁴. Again, if the NEMSF had been invested in projects from which the country could claim carbon credits, this would have been another source of revenue to the public treasury.

Based on the amount of carbon dioxide equivalent (CO₂e) displaced respectively: (654,813 tons of CO₂, 409,259 tons of CO₂, and 303,180 tons of CO₂ per annum) by the different solar power development cost scenarios above - in relation to installing Combined Cycle Gas Turbine (CCGTs), Nigeria can earn as much as ₦3.095 billion, ₦1.935 billion and ₦1.433 billion per annum as Carbon Emissions Reduction (CER) at the projected Paris Agreement carbon price of about \$24 per ton of CO₂ displaced based on scenario 1, 2 or 3 respectively. The amount can be reinvested into the development of new renewable projects and in turn, earn more carbon credits. This circle of earning is an additional incentive for continuous pursuance of low carbon development³⁵.

To incentivize the renewable industry, waivers of duty for imported components used in the renewable energy value chain is imperative whilst efforts at developing local capacity is intensified. Considering the poor state of the transmission grid which cannot wheel more than 5,500 MW of electricity, until the grid's capacity is

³³ Adapted with approval from www.geni.org/globalenergy/library/technical-articles/generation/call-for-action/seia/solar-energy-fuels-domestic-job-growth/SEIA_Policy_Priorities_12.3.08.pdf: Solar Energy Fuels Domestic Job Growth: A Blue print for Job Creation and Economic Security.

³⁴ 2017 Federal Budget Carbon Policy Brief by Centre for Social Justice.

³⁵ See Carbon Emission Reduction in the CBN NEMSF, Centre for Social Justice 2015.

expanded, new investments will make sense in the off-grid and as solar roof top panel installations.

6.0 Conclusion and Recommendations

With the current level of power generation and per capita consumption in the country, there is need to pursue accelerated growth in the power generation, transmission and distribution capacity of Nigeria. It is also clear that NEMSF did not achieve its set goals and targets leading to it being stopped before the full draw down of available funding.

To achieve the accelerated growth of the sector, the following recommendations are imperative.

6.1 Special Renewable Energy Fund: CBN should consider a single digit interest fund dedicated to the expansion of renewable energy solutions in the country. Such a fund should also support skills acquisition, capacity building and local production of renewable energy components.

6.2 Develop Capacity to Earn Carbon Credits: Nigeria should take steps to build the capacity to earn carbon credits under various climate change and environmental agreements.

6.3 Use Favourable Policies to Attract Investment: One way of improving power generation capacity is by ensuring that favourable policy environment is in place as this will attract investors to invest more in the country's power sector. Adopting and implementing a power-source specific strategy whereby:

- solar producers are given a waiver of grid usage charges for solar power generators for a given number of years; and
- hydro producers are permitted 100% foreign FDI and no customs duty on key capital goods imports, as was the case in India, will go a long way in improving the status quo.

6.4 More Investors Are Needed: More investors are needed because the present set of investors have shown lack of financial capacity. The investors should come into:

- The distribution end of the value chain beyond the present core investors who lack the financial resources to improve distribution. The investment space should be liberalized beyond high network investors to include organized labour, community groups, cooperatives and ordinary Nigerians.
- The transmission part of the value chain should benefit from private sector investments instead of the current state of being state owned.

6.5 Employing Efficient Power Generation Technologies: The choice of appropriate technology for power generation is one of the means through which the nation's capacity utilisation can be significantly improved from the current level. The technologies' selection process needs to consider multiple factors such as performance efficiency, risk of outdated technology and price. A good approach would be to evaluate options based on a 'total cost of ownership' perspective rather than the 'lowest price' approach.

6.5 Swifter Execution of Power Projects: Making the best out of the execution lead time is vital to ensure that the nation's power generation infrastructure is ready and functional. Using the Mambilla project as example³⁶, avoiding delays especially as it regards to land acquisition, project clearances, procurement and construction, should be given top most priority. Thus, the government and the industry players need to put in place a joint tracking mechanism to monitor progress and facilitate escalation to the right stakeholders whenever necessary.

6.6 Maintenance and Replacement of Failing Infrastructure: Replacing or repairing equipment which are failing and susceptible to breakdown should be the immediate focus of efforts being made to bring about growth in capacity utilisation. There is also the need to imbibe the culture of proactive and regular maintenance so as to significantly reduce the impact of breakdowns and its frequency.

Since investment in the NESI cannot be guaranteed unless low liquidity challenges in the value chain is tackled, the following can be done to guarantee private investment in NESI to ensure improved power supply:

- **Ensure that all Funds Collected by DISCOs are Remitted Appropriately:** The National Council on Power (NACOP) should prevail on National Regulatory Commission (NERC) to collaborate with the CBN to carry out forensic audit of all the accounts of the DISCOs with the commercial banks throughout the country to confirm the exact revenues of the DISCOs. Appropriate sanctions should be meted to any DISCO found to be collecting enough revenue that will enable it to pay for the MO and NBET invoices but have not done so.
- **Address Low Liquidity Level in the Power Sector Value Chain:** If the audit exercise reveals that DISCOs are not collecting enough revenues as they should, National Council on Power (NACOP) should arrange a round table meeting with the DISCOs and NERC to examine the reasons for the poor level of revenue collection and work towards solutions that will be implemented immediately for the growth and sustainability of the industry.

³⁶ Which was begun in 2003 but is yet to deliver due to a plethora of issues.

- **Cost Reflective Tariff:** In the long run, make the tariff cost reflective and incentivize DISCOs that are improving on their capacity and reduction ATC&C losses.